THE CANADIAN MINING JOURNAL

VOL. XXXI. TORONTO, Sept. 1, 1910 No. 17

The Canadian Mining Journal

With which is incorporated the
"CANADIAN MINING REVIEW"
Devoted to Mining, Metallurgy and Allied Industries in Canada

Published fortnightly by the
MINES PUBLISHING CO., LIMITED

Head Office - - Confederation Life Building, Toronto.
Branch Offices Montreal, Halifax, Victoria, and London, Eng.
London Office . . Walter R. Skinner, 11-12 Clement's Lane, London, E.C.

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

SUBSCRIPTIONS—Payable in advance, $2.00 a year of 24 numbers, including postage in Canada. In all other countries, including postage, $3.00 a year.

Advertising copy should reach the Toronto Office by the 8th, for the issues of the 15th of each month, and by the 23rd for the issues of the first of the following month. If proof is required, the copy should be sent so that the accepted proof will reach the Toronto Office by the above dates.

CIRCULATION.

"Entered as second-class matter April 23rd, 1908, at the post-office at Buffalo, N.Y., under the Act of Congress of March 3, 1879."

CONTENTS.

PEAT.

Self-appreciation is a virtue which we attempt to encourage in ourselves. Yet we feel that it can be overdone in others.

For more than two years the CANADIAN MINING JOURNAL pressed upon the attention of the Federal Mines Branch several pertinent matters. Chief amongst these were the investigation and control of explosives, the encouragement of mine rescue work, and investigation of mine accidents. Within the last few months the Mines Branch has diverted its energies to these subjects. It has made a fair beginning in that it has stimulated public interest. But, quite naturally, any efforts it can put forth must but feebly compare with the requirements of the case until such time as an effective addition be made to its present staff. In thus alluding to matters already worn threadbare, one object is to correct what we consider a very serious mistake in the policy of the Mines Branch. The organization has got on the right track in the matters mentioned above. Life saving, whether indirectly by the prevention of accidents or directly by salvage appliances, eclipses all else in importance. It is, then, with pain that we observe that part of the staff and much of the appropriation of the Mines Branch are being used for the solution of the peat problem. Both staff and appropriation are limited, very limited indeed. This disposition of its energies may be compared to the case of the man who insisted upon finishing weeding his garden, the while his house was burning.

Further to illustrate our point let us consider the present position of Canada in regard to mining accidents. Great Britain, the leading European nations, and the United States have adopted enlightened preventive measures. We have alluded so recently to these that iteration is not necessary. The Canadian government, despite the representations of many employers and our own humble but pointed remarks, has rested upon its oars until the pressure was so great that it could not be resisted. Meanwhile many lives have been lost, and, as alluded to before, the United States authorities had to be called upon for assistance in the most distressing Extension colliery catastrophe.

Now, whilst we thoroughly approve the beginning already made, we do not hesitate to state that the Mines Branch has but two courses to pursue. Either it must secure large additions to its staff, or else it must drop its interesting, but not invaluable, work in peat and such things. Peat can wait. Human lives must not be wasted.

Lest any of our readers question the fairness of our reference to peat let us here and now survey the facts, denuded of their garb of shimmering fancy.

The use of peat for fuel is older than history. In the coalless provinces of Canada, peat, like everything else that can be burned, is of importance. The Mines Branch at Ottawa has set up a Swedish peat-making plant on a bog at Alfred, Ontario. If press despatches are to be trusted, the results obtained at Alfred go far to imperil the supremacy of Pennsylvanian coal. Indeed, Dr. Haanel is reported as saying that peat, ready to be used as fuel, can be produced at the Alfred works at a cost of $1.70 per ton. He is also credited with the statement that as much heat can be produced from a ton of peat as from a ton of coal. Both statements are fantastically inaccurate, and we shall not believe without further evidence that Dr. Haanel is responsible for them.

Much effort and a vast amount of ingenuity have been expended in the past in the attempts to make use of the extensive peat deposits of Ontario and Quebec. According to the Hon. Mr. Sifton, the failure of these endeavours has been due largely to the unscientific methods and uneconomic processes employed.

Calm consideration indicates that it is scarcely likely that all previous workers in peat have been lacking in scientific knowledge, or in their grasp of the commercial aspects of the question. Nor is it probable that the installation at Alfred of a Swedish plant of a well-known type will dispel all the difficulties that hitherto have beset the manufacture of peat fuel.

The crux of peat fuel manufacture is the removal of the moisture, of which peat is singularly tenacious. The sun and the wind are the cheapest agents, but obviously a nation's supply cannot with safety be permitted to depend upon the weather. On the other hand, if artificial heat be resorted to for driving off the water, experience has shown that the cost is increased to a point at which peat cannot command a market where coal or wood is obtainable.

It may be possible, though we doubt it, that the bare manufacture of air-dried peat can be carried on at a cost of $1.70 per ton; but it is safe to say that no peat fuel will ever be put on the market in a commercial way at any such figure. Manufacturers' profits, freight charges, cost of distribution, and middlemen's commission would bring the price up to two and a half or three times the original cost. Nor is peat a substance that bears transportation well. It crumbles and breaks, and there would be an appreciable loss on arrival at distant markets. Its fuel value, also, as compared with coal is overstated. Air-dried peat contains 12 to 15 per cent. of water at least, and its calorific power is little more than one-half that of anthracite coal. Peat fuel delivered to the consumer at, say, $4.50 per ton, would be much dearer than anthracite at $6.50 or $7.00 per ton. As long as hard coal can be obtained at present prices, there is little hope of its being displaced by peat, for the consumption of which special stoves, fireplaces and furnaces are required.

Nevertheless, the carbon that nature has stored in the peat bogs of Canada, aggregating thousands of square miles in extent, may some day be required to warm the bodies and cook the victuals of Canadians. Any real advances in the preparation of peat for fuel will be welcomed. There is nothing to lead us to believe that the Mines Branch has thrown light upon the question. Meanwhile our major point is the fact that other work has an immediate and imperious call upon the Mines Branch.

ENGINEERS AS CITIZENS.

Not long ago we were asked why the mining engineer is so indifferent to his duties and privileges as a citizen. We found that the assumption and the answer demanded a deal of excogitation.

Mining engineers, like their civil brothers, are nomadic. They live on the fringe of civilization. They work. Their work demands continuous attention. They do not touch politics. Rarely do they court the muses. When they gather in convention they talk mining. In all their spare moments they talk mining. To them the rest of life is shadowy and unsubstantial.

How many mining engineers are in the House of Commons, or in our provincial legislatures? How many are prominent in the business world, or in letters, or in sports, or in anything but mining? How often do we see the mining engineer rising to high administrative positions?

We can see two handicaps under which the mining engineer labours. The more definite of these is his ignorance of office methods and of business training. For example, an operator informed us recently that he had employed a second-year student of mining as timekeeper. Here we cannot quote our informant verbatim. He was not quotable. But it appears that the second-year student was incapable alike of making his extensions correctly, and of adding up his totals. It took thirty-six hours of hard labour to correct that young man's mistakes. Yet in all probability the youth was possessed of ordinary ability. Who is to blame?

The second handicap is less definite, but none the less serious. The mental development of the mere specialist is not symmetrical. His mind is like a hammer with a broken handle. It works, but its range is sadly limited. The mining engineer, who is merely the mining engineer, is far from reaching the full development of his mentality. His vision is narrow, and, in matters not pertaining to his profession, blurred and oblique. The very nature of his work demands that he cultivate the humanities.

Of all enlightening influences good books are the best. Good books are not hard to get. They take a man out of himself. They quicken and broaden and refresh the reader. They are not luxuries, they are absolute necessaries . . . .

Later we hope to have more to say on this topic. Our immediate object is to point out that the lack of roundness in the mining engineer's education is the main cause of his obscure position as a citizen. Mining en-

gineers as a class are the salt of the earth. As public citizens they are almost negligible.

MINING OPERATIONS IN QUEBEC DURING 1909.

We have looked forward with keen expectation to the first Quebec annual report issued under the supervision of Mr. Denis. Our first feeling on receiving an execrably printed 32-page pamphlet was one of disappointment. We had hoped that the new regime in Quebec would have been signalized by a report as ample and as dignified as are those issued by other provinces. No doubt the new Superintendent of Mines has had his hands more than full. He has occupied the office for but a few months. In many directions he has re-vivified the Department of Mines and, certainly, he has inspired the provincial government to better things. These considerations induce us to overlook the slimness of the report. But the cheapness of the paper, the wretchedness of the printing, and the unutterableness of the half-tones cause us to cry aloud and spare not. The province and the Department should be thoroughly ashamed of themselves.

It is encouraging to note that the mineral production during 1909 was the highest so far recorded. The figures for 1909 are $5,552,062, whilst for the year before they were $5,458,998, an increase of $93,064. Owing to changes made in the method of gathering statistics it is probable that the increase was still larger.

The principal gains during the year were in the outputs of copper ore, cement, marble and limestone; while the chief items of loss were in bog iron ore, chrome iron ore, asbestos, mica, granite and tiles.

Since 1900 the yearly mineral production has more than doubled itself. Although the figures are still far too small, yet there appear to be healthy symptoms of growth. One strong factor in that growth is the honest endeavour of the Quebec Government to re-model the mining laws. The recent changes have been fully noticed in these columns. We need only note here the fact that Quebec has eschewed that bugbear of the prospector, "discovery."

Mr. Denis briefly reviews the status during the year of each mineral industry. An abstract of his report appears on another page. Mr. J. H. Valiquette, Assistant Inspector of Mines, contributes an analytical review of all mining accidents occurring throughout the year. To this he appends timely warnings as to the use and storage of explosives.

In the main, Quebec has every cause to look forward with confidence. Her time is coming, and coming rapidly. It will come even more rapidly when the Department is able to publish a report compatible in all respects with the dignity of the province and with the requirements of the industry.

PORCUPINE.

Three errors against which it is constantly necessary to guard are over-estimation of a prospect, assuming the presence of unproved ore, and dogmatizing upon a mine's future with insufficient data. All of us are prone to sin in any or all of these ways. And, on the other hand, we are equally prone to swing to the other extreme and to assume a guardedly nescient position.

We have watched Porcupine with hope, and fear, and trembling. The latter two sensations have now practically disappeared. We have abundant evidence to believe that in certain spots bonanzas, such as we have never known in quartz mining before, have been encountered. At one young mine, for instance, spectacularly and uniformly rich ore has been sunk in continuously to a depth of 120 feet. Within a short distance, and presumably in the same body of ore, two other shafts, slightly less deep, are in similarly rich ore. Fine gold is disseminated throughout the ore from shaft-collar to sump. Drifts are being run and still the ore maintains its character. In fact, considering the amount of work done we doubt if there has ever been any such showing on the continent. Mill returns, which, naturally, are neither full nor exact, indicate that much of the ore runs well over $100 per ton. Some of it greatly exceeds this figure. The ore body ranges from six to twelve feet in width. Its horizontal extent can not be determined for some time yet.

Some other prospects are almost equally encouraging. It is inevitable that the great majority of claims staked will prove worthless. But all securable evidence points to the fact that the clouds that for so long have hung over Ontario gold mining are at last to be dispelled.

We cannot close without adding a word of congratulation. Porcupine has suffered no plague of boomsters. The "four-flusher" is there, as he is always everywhere. But he is by no means the controlling element. The men who are making Porcupine are content to mind their own business. Neither they nor we wish to see a boom in Porcupine. For once let us witness the blessed sight of a mining camp developed on its own merits.

MINE COST DATA.

It has been well remarked that the only indication obtainable by many mine operators as to costs is the condition of their bank balance. Itemized cost statements are usually made out so late that they are of little assistance. Hence arise confusion, waste and direct loss.

The Joplin Ore Producers' Association proposes to evolve a cure for this disease. A series of daily report forms has been prepared. Forty-eight mine operators are to be requested to fill out these forms daily and send them to headquarters. Here a competent staff will transfer and systematize the data. The costs will be properly distributed and analyzed. Each company will thus have the benefit of comparison with forty-seven other operating concerns. Moreover the facts thus ascertained will prove invaluable in discussing tariff problems.

The identity of no mine will be revealed in the state-

ment. Each will be numbered, and all information is to be considered confidential.

Canadian operators, especially in our large mining districts, might well follow this example. Apart from the economies that would follow, the arrangement would induce solidarity and uniformity.

A GOOD REPORT.

A word of praise is due the Government of British Columbia and Mr. W. Fleet Robertson, the head of the British Columbia Bureau of Mines, for the high character of the Annual Report. In respect of statistical tabulations, in typography, in illustrations, in descriptive matter, the Annual Report leads all Canada.

The full special reports upon the Extension explosion are of vital interest. The Government is no longer indifferent to the unnecessary loss of life in coal mines. It has been resolved that the situation will be met at once. Other provinces are rousing themselves. The honour of leading will rest with British Columbia.

EDITORIAL NOTES.

God save the King! Mr. Julian Hawthorne has turned loose his turbid tide of titillation on poor old England. Except as inspiration for Hawthorne's pellucid prose, shares in Hawthorne silver and iron mines, are worth about as much as Confederate paper money.

We hope that the Canadian Mining Institute will make arrangements to reprint Mr. H. Mortimer-Lamb's exceedingly careful paper on the mineral industries of Canada. Mr. Lamb's paper was read in Germany before the International Mining Congress. It is a difficult matter to treat so vast a subject without becoming either too diffuse or congestingly succinct. Mr. Mortimer-Lamb's paper shows that he has evaporated off the non-essentials without volatilizing anything of value. In plain speech, he has written a good, readable, and accurate paper.

The recently issued map of the Porcupine gold area, districts of Sudbury and Nipissing, Ontario, is a careful and instructive compilation. Messrs. A. G. Burrows and W. R. Rogers, respectively geologist and topographer, are to be congratulated. The conditions under which they worked were difficult. The marginal notes from Dr. W. G. Miller's pen are instructive. With his usual discrimination Dr. Miller steers a safe course. He writes no phrase that can be warped by the "boomster." There may be, however, superfluous canniness in one sentence. "Of course," writes Dr. Miller, "experienced gold mining men will not lay too much stress on surface values." In itself this statement is perfectly true; but taken with the context it may easily suggest to the hyper-sensitive Porcupinian that Dr. Miller does not look favourably upon the gold deposits in question. However, we can always count upon fault-finding.

Northern Ontario is manifesting its intention of taking care of itself. This is evident particularly in the case of Cochrane where a bright and independent weekly newspaper, "The Northland," is now being published. "The Northland" speaks with decision and clearness on public questions. It deserves the support of the community.

Amongst the reports in the Annual Summary of the Mines Branch, Ottawa, are some notes by Dr. Alfred, W. G. Wilson. In reviewing the pulpwood situation, Dr. Wilson remarks that if a portion of the copper-sulphur ores of Quebec can be utilized at the point of production for the manufacture of pulp, the mine owners will not be the only persons benefitted.

THE PROSPECTOR.

The accompanying photogravure represents a plaster cast designed by Mr. P. Norman Nissen. The engraving by no means does justice to the figure. However, our readers will notice with appreciation the poise of the prospector. On his face, marred indeed by the photograph, is a look of whimsical endurance. He has struck his stride. He carries a heavy pack. Evidently his tump-line has gone the way of all flesh and he has resorted to a piece of rope. In detail the figure may be open to criticism; in general effect it is strong and full of meaning and life.

The prospector is not always an heroic figure. The short, wiry, tough bushman is not frequently a thing of beauty. Mr. Nissen has got nearer the truth than most artists can.

It is fair to mention that Mr. Nissen dabbles in art only on rare occasions. He is, as many Canadians know already, a mining man himself and is not without painful experience in prospecting.

REPORT OF MINING OPERATIONS IN THE PROVINCE OF QUEBEC DURING THE YEAR 1909.

Abstract of Report of Supt. of Mines, Theo. C. Denis.

The mineral production in the Province of Quebec during the year ending December 31st, 1909, amounted to $5,552,062. This is a slight increase over the figures for the previous year which were $5,458,998. Thus in 1909 we had the highest mineral production recorded so far.

It should, however, be noted that the aggregate amount for the two years cannot be fully compared with one another owing to the changes made in the method of gathering statistics of certain non-metallic substances such as building stone, lime, bricks, etc. It is very difficult to obtain complete data regarding the production of these materials and, in previous years, the Bureau of Mines had adopted the rule of taking the figures given by the Census Bureau. These figures are given only at long intervals and meanwhile the same figures were repeated from year to year.

We attempted to get the figures for 1909 by applying directly to quarry workers, lime-burners and owners of brick-yards.

This entailed considerable extra work because it was necessary to correspond with an additional number of several hundred operators. Our efforts have been successful and the results most encouraging. In the case of nearly every kind of building material the figures collected have been higher than those given for last year. It is true that they are still far from complete, but they have the advantage of being based upon direct reports.

The following table gives the mining statistics of the Province of Quebec for the year 1909. For purposes of comparison, we have added a column showing the value of the various mineral substances produced in 1908.

Products.	Wages paid to workmen	Number of work men	Quantities	Value	Value in 1908
	$		tons	$	$
Bog iron ore ...	3,082	50	3,300	4,688	30,957
Ochres	16,388	65	3,940	28,093	19,940
Chrome iron ...	20,000	60	2,470	26,604	83,740
Copper ore	69,984	175	35,100	215,580	159,588
Asbestos)			63,965	2,296,584	
)	1,349,864	3,008			2,551,596
Asbestic)			24,801	20,468	
Mica	35,884	176	.....	27,034	95,311
Phosphate	.....	.....	525	4,800	1,610
Graphite	11,866	39	.....	10,339	165
			Galls.		
Mineral waters .	1,260	5	32,537	17,246	.....
			Sq.		
Slate	10,828	30	4,000	24,000	20,056
			barrels		
Cement	125,000	30	1,011,194	1,314,551	1,127,335
			tons		
Magnesite	954	6	330	2,508	520
Marble	70,000	125	.....	130,000	
Flag stones ...	2,225	10	.....	8,500	3,600
Granite	122,780	268	.....	149,064	250,000
Lime	42,504	99	.....	105,489	96,000
Limestone	241,269	699	.....	457,143	223,580
Bricks	205,764	853	M.93,891	584,371	525,000
Tiles, drain tiles, pottery, etc. . (partly estimated)	.....	.....	.....	125,000	270,000
				$5,552,062	$5,458,998

We give below a table showing the value of the yearly mineral production of the Province of Quebec since 1900. It will be seen that in ten years the figures have more than doubled and it may be presumed that this increase will continue in the future.

Year.	Value.
1900....	$2,546,076
1901....	2,997,731
1902....	2,985,463
1903....	2,772,762
1904....	3,023,568
1905....	3,750,300
1906....	5,019,932
1907....	5,391,368
1908....	5,458,998
1909....	5,552,062

Mining Law.

During the session of 1909, the Legislative Assembly of the Province of Quebec enacted some amendments to the Quebec mining law. The changes are important and we deem it advisable to give a summary of the principles. As to details regarding the steps to be followed in order to conform to them, they are given in the text of the Mining Law of the Province of Quebec and in a small pamphlet entitled: "The Miner's Guide," which may be obtained on application to the Bureau of Mines, Quebec.

Under the new provisions, a miner's certificate must be taken out which is valid from the date of its issue to the 1st January following. The price of the certificate is $10.00.

Any holder of a miner's certificate may prospect on public lands, whether surveyed or not, or on private lands where the mines are reserved to the Crown.

Nevertheless, if such holder of a miner's certificate wishes to prospect on private lands, he must first give good and sufficient security, subject to the Minister's approval, for any damage he may cause the surface owner through his prospecting.

Every holder of a certificate has the right to mark out himself, on the ground in unsurveyed territories, one or more claims, but not exceeding five, of rectangular shape, the sides running north and south and east and west, each claim measuring at least forty acres in area and not exceeding two hundred acres in all.

In surveyed territories the holder of a miner's certificate may stake out only one or two claims, each of one hundred acres, or of the dimensions of one lot.

The holder of a miner's certificate, who has established a claim by proceeding as above, must without delay notify the same to the Department of Colonization, Mines and Fisheries or the official at the office nearest to the place of discovery.

Within a delay of four months from the date marked on the stakes planted on the claim, he must, on pain of forfeiture of all his rights, obtain a mining license valid for one year and renewable. Such license is granted on payment of a fee of ten dollars and a yearly rental of one dollar per acre.

Or, if the holder of the certificate prefers to purchase the claim, he may do so by paying ten dollars per acre for superior metals when the lands are more than twenty miles from a railway and twenty dollars when such distance is under twenty miles. But letters-patent, giving full possession of such mining lands, are not issued

until the purchaser has exhibited specimens of the ore taken from it, accompanied by affidavits by competent and trustworthy persons establishing that the specimens exhibited come from such lands and that he has spent, within maximum delay of two years, the sum of five hundred dollars in mining operations.

The steps to be taken to conform to the Mining Law are set forth in a pamphlet entitled: "The Miner's Guide," copies of which can be obtained free of charge by applying to the Department of Colonization, Mines and Fisheries, Quebec.

Iron.

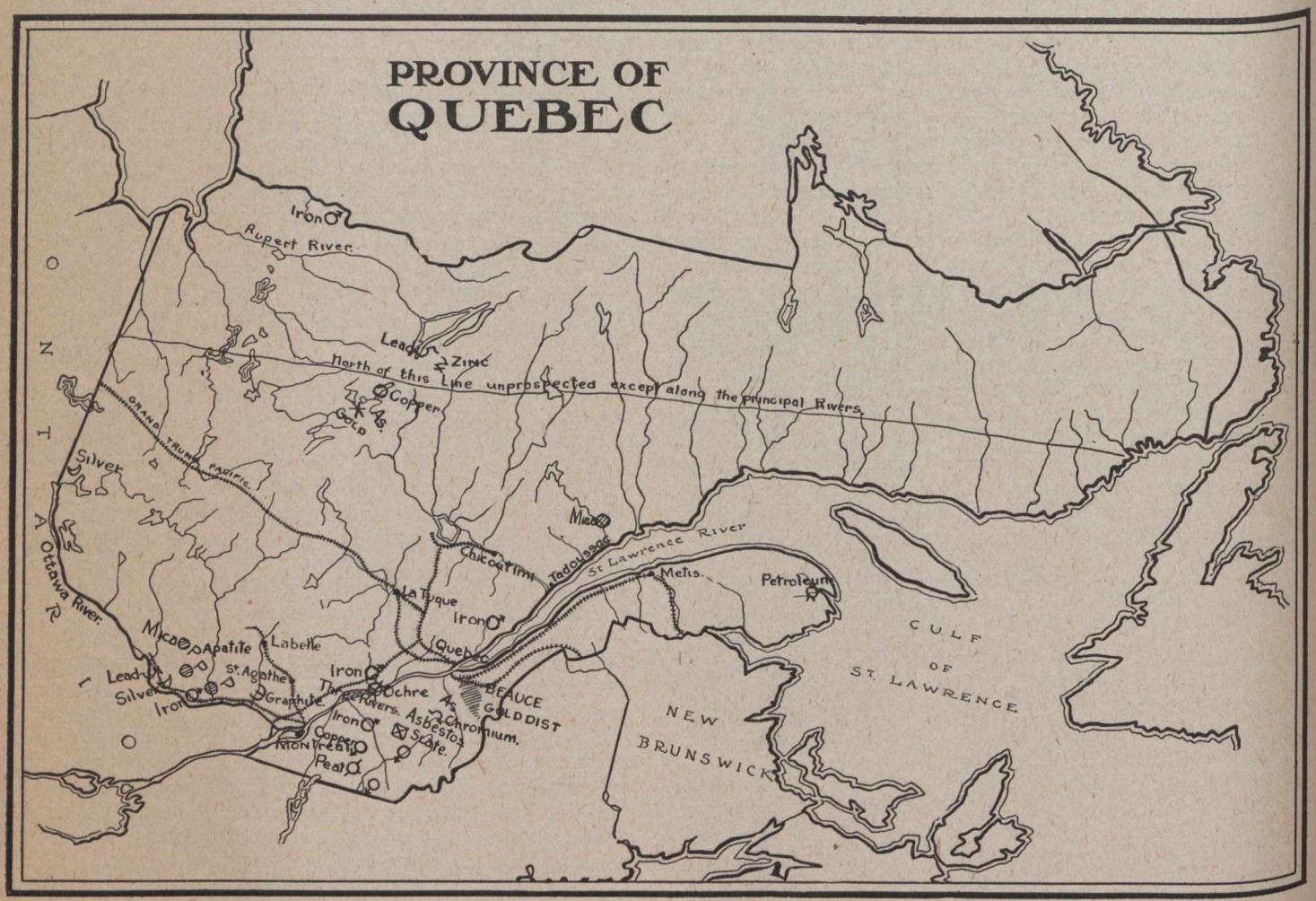
The Canada Iron Corporation, Limited, is the only siderurgical company operating in the Province of Quebec. That company has two blast furnaces at Drummondville and one at Radnor Forges, where charcoal pig iron is produced.

The whole of the ochre came from deposits in the vicinity of Three Rivers which have been worked for a long time. A portion of these ochres is calcined and used in making mineral paints, and the remainder in purifying lighting gas. Shipments of calcined ochre amounted in 1909 to 1,940 tons valued at $25,093, while the gas companies took 2,000 tons valued at $3,000.

The ochre deposits of that region cover large areas. One of the latter, at St. Malo, has been followed for a length of several miles, its width is from 300 to 600 feet and its depth varies between one and twenty feet.

Chrome.

During the year only 2,470 tons, valued at $26,604, were shipped. This is a marked decrease as compared with the previous year. The operators say they have considerable quantities of chrome iron ore in stock.



The iron industry has not been very active in 1909. The furnace of Radnor Forges alone was in blast, but it consumed only 3,300 tons of native ore. The chief source of supply is Ontario ore.

The following table contains a statement of the raw material used at Radnor Forges:

Imported ore	Tons,	10,256
Native bog iron ore	Tons,	3,300
Charcoal	Bushels,	641,742
Pig iron produced	Tons,	4,750

Ochres.

Our production of ochre in 1908 amounted to 3,940 tons, valued by the operators at $28,093 at shipping points.

A new company has taken over the plant and properties of the Thetford Chrome Company, lot 16, range A, Coleraine. That company is the Chrome & Asbestos Mines, Limited, which began working in June, 1909. Although there has been no production this year, preparations were being made for operations on a large scale in 1910. The whole of the concentrating works were being remodelled and twenty-five dry concentrating machines, of the Behrend system, were being put in.

It is intended to effect the concentration by crushing the ore in two jaw-crushers. It then passes into a dryer, then through rollers which crush it so that it may pass through a screen of 20 meshes to the inch. It is

afterwards sized by screens, and concentrated by Behrend dry concentrators.

Copper.

We have received returns of production of copper from only one company which works the Eustis mine.

The Albert Copper Company which owns the Albert mine at Capelton, lot 8, range 9, of the township of Ascot, did no work in 1909.

Mr. A. O. Norton, who has for some years carried on development work on a small scale at his mine on lots 2 and 3, range 11, township of Ascot, has continued to develop it, but has not yet shipped any ore.

Mr. J. McDonald, of Sherbrooke, has given an option on his property in Weedon, lot 22, range 2, Weedon Township, to a New York syndicate. A small development plant has been put up and the work of prospecting has been actively pushed. The shaft is one hundred feet deep and about one hundred feet of prospecting drifts have been run.

Some prospecting work was also done on copper deposits in the first range of St. Joseph, Beauce County.

The copper deposits of the Eastern Townships have already been the object of much study and working. One of the most recent reports dealing with the subject is that by M. John A. Dresser, entitled: "Report on the Copper Deposits in the Eastern Townships, Province of Quebec," published by the Geological Survey of Ottawa.

The most important deposits are generally in lenticular form. The average ore is low grade, but some rich zones of very high grade are met with.

The copper industry in the Eastern Townships seems, to a certain extent, to turn in a circle. The ores are not very rich, but, on the other hand, it is probable that they exist in considerable deposits and that development and prospecting work would lead to the discovery of large quantities of ore containing from 3 to 4 per cent. of copper. Such work, however, would entail considerable expense in sinking shafts, mining drifts, diamond drill boring, etc.

Low grade copper ores should be treated near the mines, which necessitates the erection of smelters. Consequently mine owners do not venture to incur the expense of development until they are sure that they will be able to dispose of the product of their mines to smelting works close by, and, on the other hand, one can understand the hesitation of manufacturers and capitalists to build and install a smelter without first being sure of the supply of ore.

A solution of this problem would be the amalgamation of several individual copper properties in a powerful company which might, after developing the deposits, operate smelters, as in the Boundary district of British Columbia where successful operations are carried on with large quantities of ore containing less than one and a half per cent. of copper, or as in Tennessee where the ores contain less than two per cent.

During the field season of 1909, Mr. A. W. G. Wilson, of the Mines Branch of the Federal Government, made a study of the copper deposits of the Eastern Townships and his report is opportune at the present moment.

Gold and Silver.

During the first six months of the year 1909, active work was resumed in connection with the gold-bearing lands of the Eastern Townships, but we have no production to record.

The right to mine for precious metals in the seigniory of Rigaud-Vaudreuil, formerly the scene of important work on the alluvial deposits of the Gilbert and Chaudiere Rivers, has been acquired by a syndicate which intends to begin operations at once. The company formed for the purpose is incorporated under the name of "The Dominion Gold Fields of Canada" with a capital of $1,000,000. It is proposed to work with steam shovels or dredges and the technical direction of the work has been entrusted to a Californian engineer.

The Marsborough Gold Fields Company, which has gold-bearing lands in the Lake Megantic region, has not sent in a report on its operations. That company put up a small stamp mill in 1908 for the purpose of making assays of the ore taken from veins of gold-bearing quartz, but we have no information as to the results.

In the County of Pontiac several companies have done some prospecting of more or less importance. It is said that very encouraging indications of the presence of argentiferous ore have been found in the Township of Fabre. It is too early yet to give an opinion regarding the value of the discoveries made in that township which lies on the east side of Lake Temiskaming, opposite the Cobalt district, but everything leads to the belief that prospecting will be actively carried on during the year 1910.

The Pontiac and Abitibi Gold Mines Company is working in the Township of Boischatel, to the northeast of Lake Opasatica, and is stated to be putting up mills for treating gold ores; the plant was transported over a road made by the company, connecting the mine with Larder Lake, a distance of about 18 miles. The lake is crossed in summer by a steamboat to reach Larder Lake city, whence a road has been made to Boston station on the Temiskaming and Northern Ontario Railway.

We also note that the Height of Land Mining Company has carried on rather extensive prospecting in the Township of Villemontel, County of Pontiac. The ores found so far consist of molybdenite and bismuth.

Asbestos.

The chief feature of the asbestos industry in 1909 was the amalgamation of several individual operators into powerful companies with large capitalization.

We note the formation of the Amalgamated Asbestos Corporation, with a capital of $25,000,000, which absorbed the following companies:

King Asbestos Mines, Thetford Mines.
Beaver Asbestos Company, Thetford Mines.
British Canadian Asbestos Company, Black Lake.
Standard Asbestos Company, Limited, Black Lake.
Dominion Asbestos Company, Limited, Black Lake.

The Black Lake Consolidated Asbestos Company, with a capital of $5,000,000, absorbed the following:

Union Asbestos Mines, Black Lake.
Black Lake Chrome and Asbestos Company, Black Lake.
Dominion Chrome Company, Black Lake.
Imperial Asbestos Company, Black Lake.

It is stated that great advantages will result from the merging of the mining interest into these two companies. In the first place the cost of management will be greatly decreasel by being centralized. It will be easier to establish for the trade, a methodical and standard classification of the various grades of asbestos and the importance of this feature cannot be exaggerated.

In the past, there has been no recognized standard and the various qualities of the different mines did not correspond to one another, to the great confusion of

the consumer who could only judge of what he bought on seeing samples. The Amalgamated Asbestos Corporation has already taken measures towards standardizing, but some time will be needed to effect such changes, which will certainly result in advantages both to the producer and to the consumer.

The value of the total production of asbestos in Canada in 1909 is slightly below that of the previous year, but it must not be inferred from this that there has been the slightest decline in the industry. On the contrary, the decrease is rather due to the fact that some important companies have made preparations during the year to greatly increase the production of their mills in 1910, and such changes have led to periods of inactivity while the necessary changes were being made both in buildings and plant.

On the other hand, it cannot be denied that the capitalization of the two above-mentioned companies is very high and, although several of the amalgamated mines are among the best and most important in the districts of Thetford and Black Lake, the high capital will certainly militate against a rapid increase in the shares of the companies.

However, the reserves of asbestos-bearing rocks are very large. Depths of 200 feet below the surface have been reached in some quarries and, at that depth, no marked change has been noted in the percentage of asbestos in the rock extracted. There is no doubt that there is no reason to fear any diminution in quality for a long while.

We have received reports of the production of nine companies representing fourteen mines in operation. The total value of the asbestos produced amounted to $2,296,584, not including $20,468 worth of asbestic which is an inferior product obtained in the course of the preparation of asbestos for the market.

But, besides these nine companies, about an equal number were preparing to produce in 1910. The companies having works and mills under construction in 1909 were:

The B. and A. Asbestos Company, East Broughton.
Berlin Asbestos Company, East Broughton.
Belmina Consolidated Asbestos Company, Belmina.
Frontenac Asbestos Mining Company, East Broughton.
Black Lake Consolidated Asbestos Company, Black Lake.
Jacobs Asbestos Mining Company, Thetford.

There are also three other projected mills and the Bell Asbestos Mines Company is altering its plant so as to increase its capacity to 1,000 tons of rock a day. It should be noted that the tendency is to build mills of ever-increasing capacity. Some years ago model mills were fitted up to treat from 200 to 300 tons of rock per diem, while at present they are being put up with a capacity of from 1,000 to 1,200 tons.

Prospecting has likewise been carried on at various places in the serpentine belt. An important discovery is mentioned on lots 23 and 24, range A, of Coleraine, where a new company, the Thetford Asbestos Syndicate, with its offices in the Liverpool, London & Globe Building, Montreal, has had considerable work done. This company will soon be in a position to produce.

On the whole, the asbestos industry of the Province of Quebec is flourishing. Almost the whole of the world's production of this substance comes from Canada and Russia and, in 1909, Canada's proportion was nearly four and one-half times greater than that of Russia. In fact, the asbestos mines of the Province of Quebec shipped 63,965 tons last year, while those of the Ekaterinburg district, in the Ural Mountains, during the same period, was 814,134 poods, equal to about 14,500 tons, according to an article which appeared lately in the commercial and industrial gazette of St. Petersburg.

The Canadian asbestos is obtained by working the deposits of the serpentine belt running through the Eastern Townships of the Province of Quebec. There are three very distinct asbestos-bearing areas which are, in order of importance: The Thetford, Black Lake area, the Danville area and the East Broughton area.

The serpentine belt consists of igneous and metamorphic rocks comprising peridotites, pyroxenites, diabases, granites and serpentinous talcous schists. Although the serpentine rocks occupy a much more limited total area than the other constituents of the belt, they are much more important from the economic standpoint and are more easily recognizable through their particular characteristics. Serpentine results from the alteration of intrusive masses of peridotite or olivine rock and in this altered rock are the veins of asbestos which belong to the chrysotile variety. The relations between the vari-altered rock, are the veins of asbestos which belong to the chrysotile variety. The relations between the various constituents of that belt of rocks are complicated and have not yet been established with any degree of certainty, but everything leads to the belief that they are old and it is probable that the rocks are of Cambrian age.

The percentage of asbestos in the rock extracted from the mines varies greatly in proportion to the veins running through it. It sometimes amounts to a maximum of from 12 to 15 per cent., but, as an average of mining operations extending over a period of one year, the yield does not generally exceed four or five per cent.

The presence of this mineral in the Ural Mountains was discovered about 200 years ago, but it was not systematically mined until about 25 years ago. As in Canada, the methods followed at the outset were very primitive, but the industry has been developed and many of the mines are now provided with the most modern plant, the motive power being electricity.

The principal mines are situated about 57 miles to the north of Ekaterinburg in the Ural Mountains. According to a paper read by Mr. Kriganouski at a meeting of the Imperial Academy of Sciences, in 1903, the mining district covers an area of 18 miles from north to south, and of 2 to 3 miles from east to west. The mines are limited to a mass of serpentine resting on schistose rocks to the west and cut off by a granitic intrusion on the east. The serpentine is traversed by dykes of diabase and porphyry and also by veins of quartz. Asbestos is not found everywhere in the serpentine; on the contrary the deposits are in ellipsoidal areas whose main axis invariably runs north and south and which attain a maximum length of 3,500 feet. The fibres of the veins are perpendicular to the walls as in the case of the Canadian asbestos. The richest asbestos-bearing rock yields over 50 pounds of asbestos to the cubic yard of rock, but, in other mines, the yield is from 28 to 33 pounds.

The work is done in open cuttings, the quarries not being deep; so far the depth has not yet exceeded 70 feet. The serpentine is, as a rule, soft enough to be got out without the use of explosive, but, as the depth increases, the rock becomes perceptibly harder and dynamite is used in the deeper workings.

Russian asbestos is said to be not as silky as Canadian asbestos and is not as easily woven.

The Mica Industry.

This industry has been inactive during the year 1909. The figures we have received in connection with the production show a considerable decrease from the year 1908. The quantity of mica from the Province of Quebec for which a market was found in trade and industry in 1909, is valued at $27,034 only, as compared with $95,311 in 1908. Of thirty operators who sent in returns, nineteen only had worked and thirteen only had shipped products.

The figures given above represent the value of the mica shipped. There are, therefore, considerable quantities of this material in stock awaiting an improvement in the market and a rise in prices, for shipment. The conditions of the mica market have been very unfavourable during the year; prevailing prices have been below the average.

Phosphate of Lime.

Phosphate of lime may be considered as a secondary product extracted while mining mica, for, at current prices, that substance could not be worked solely on its own account. The shipments in 1909 amounted to 525 tons, valued at $4,800. The whole of this quantity was used by the Chemical and Fertilizer Company, of Buckingham.

Graphite.

Active operations have been resumed in the graphite industry of the Buckingham region. In 1908, work was limited to prospecting and experimenting, but this year products to the value of $10,399 were shipped.

Operations were confined to the Buckingham district. Nothing was done in the vicinity of Calumet or Grenville.

Some work has also been begun by a Montreal syndicate, the Graphite Limited, Board of Trade Building, Montreal, which has prospected in ranges 6 and 7 of the Township of Amherst.

It should be noted that a considerable amount of prospecting has been done in various places, which augurs well for the year 1910.

Magnesite.

Work was continued in 1909 on the magnesite deposits of Grenville Township, in Argenteuil County. A quantity of 630 tons, valued at $2,508, was shipped to Montreal.

These deposits have attracted much attention for some years because they are the only ones in Canada capable of being worked. As mentioned in previous yearly reports on mining operations in the Province of Quebec, the most important use to which it is put is as a refractory substance for lining various high temperature metallurgical furnaces. For this purpose there would be a considerable market in the United States and Canada for the product of the Grenville deposits.

Magnesite, when used as a refractory substance, is calcined and crushed. After undergoing this process it is worth from $25 to $37 per ton of 2,000 pounds in New York. It should be noted, however, that for this use magnesite must be very pure, that imported from Greece containing an average of 95 per cent. of carbonate of magnesia. The operators working the Grenville deposits assert that they can meet the consumers' demands as regards purity.

So far a depth of fifteen feet only has been reached and it is said that the magnesite at that depth is already purer than at the surface.

The present means of transportation are a serious obstacle to the rapid development of these deposits. The mine is about thirteen miles from Calumet, the nearest shipping station. No shipment can be made in summer over the road connecting the two points; thus the operations are limited to a few months in winter when loads can be conveyed over the snow roads.

The company operating there is the Canadian Magnesite Company, Eastern Townships Bank Building, Montreal.

Portland Cement.

The manufacture of Portland cement is one of the most flourishing in the Province of Quebec. This year we have to record a marked increase in production over 1908.

The chief feature of this industry in 1909 was the merging of the various companies manufacturing cement in the province into an association whose influence has a national character. In fact, the Canada Cement Company has acquired the three large cement factories of our province, together with several others in the Provinces of Ontario, Alberta and British Columbia. It is expected that the result of this amalgamation will be a considerable saving in the cost of management and especially of transportation, by which consumers will certainly benefit.

The manufacture of cement has made remarkable progress for some years past. Previous to 1904 there was but one factory in operation, whose production varied between 25,000 and 40,000 barrels a year. In 1905, the International Cement Company, of Hull, began producing and since then the figures have grown year by year as may be seen by the following table:

Year.	Quantity. (barrels)	Value.
1904	33,500	$ 50,250
1905	254,833	408,000
1906	406,103	625,570
1907	.....	640,000
1908	801,695	1,127,335
1909	1,011,194	1,314,551

Building Materials.

The figures we give this year in connection with other building materials, such as lime, building and ornamental stone, bricks and other clay products, slate, marble, etc., are necessarily very incomplete because there are many producers of slight importance from whom it is difficult to obtain reports. The same remark applies in the case of mineral waters.

It will be seen by the general table that we have recorded a production of marble valued at $130,000. This is the product of the Missisquoi Marble Company, whose quarries are at Philipsburg. That company has installed a modern mining plant and very complete dressing works. The product is a very fine ornamental stone which finds a market in the United States and Canada. A considerable proportion of the product in 1909 was sent to Buffalo in the rough state. Some marble was also shipped from Philipsburg to Ottawa, Toronto, St. Catharines, Winnipeg, Edmonton, Victoria, Halifax, Moncton and other points in Canada.

Three methods of precipitating gold and silver from cyanide solutions by means of zinc ore are in vogue. First, zinc dust is mixed with the solution and the precipitate is treated in filter presses; or second, the solution is passed through a spongy mass of zinc shavings, the precipitate being cleaned off by hand-washing; or, third, the solution is passed over zinc plates which are automatically cleaned of the precipitate.

ABSTRACT OF REPORT OF MR. JAMES ASHWORTH.

The accompanying plan was prepared by Mr. W. F. Robertson and his assistant, Mr. Nation, from plans and information supplied to them, and also an enlarged plan of same, which was of very valuable assistance to every witness who was called before the Court. Mr. Shepherd also prepared large diagrams of some of the separate parts of the mine, and these figured prominently in the enquiry. In addition to these plans, Mr. Robertson also prepared a drawing on a large scale of the "cave" in No. 2 1-2 level, showing graphically the condition of this particular length of the level.

The Wellington Colliery Company did not produce any plans or explanatory drawings. The first point of importance that presented itself to me was the very small volume of air in circulation in No. 4 counter-level, but I was assured that this was due to the disorganized condition of the mine, although it was the eighth day after the explosion. No great mechanical damage was in evidence on No. 4 West level, but when we reached No. 3 West level there were evidences of contrary forces which required the most careful attention. The first of these was a damaged boot torn off the foot of a labourer named Milos, whose body was found ten or twelve yards on the out-bye side of it, thus indicating that at the time of the explosion his foot had been held fast, possibly by a track-frog, and that the force which affected him had torn his right foot out of this boot, splitting the top of it from the lace-holes to the toe and partly separating the sole from the top, also breaking the fibula of his right leg, and projecting his body out-bye with such force that the top part of his skull was terribly fractured, and this injury caused his immediate death. Dust was also driven into the skin of the face and through his pants into his leg. Still farther out-bye pieces of brattice-cloth showed evidence of contrary forces, and near the foot of room 24 two bodies were found close behind a trip of three loaded cars. They were slightly burned, and some timber was piled on the top of them. The mule drawing the trip appears to have been killed instantaneously, as there is no evidence of its kicking. A strong force had also come down Nos. 24 and 25 rooms from towards No. 2 1-2 West level, tearing down the brattice-cloths and some timber also. Near the face end of the level is room 29, and the condition of this room evidently demanded careful investigation.

Samples of dust were taken off the coal which had fallen from the face, and also off a shovel. Other samples of dust were taken in the level for microscopical and analytical examination. In the level close to the in-bye chute of No. 29 room the body of the miner working in this room was found, and was certified by the doctor as being only burned on the hands. At the face of room 29, which had only recently been started, I found evidence of blasting, and the appearance and position of the coal and of the miners' tools led me to infer that it had had some connection with the explosion, particularly as the fallen coal was thickly coated with dust. I probed behind the coal and distinctly felt that a portion of the shot-hole still remained. On calling the attention of Mr. F. H. Shepherd and Mr. Andrew Bryden to this fact, they assured me that the shot had been fired the day before, and that the fireman said he found it when he made his rounds in the early morning before the explosion. This difference of opinion came to public notice in the Coroner's Court, when Mr. Shepherd expressed his disagreement with my deductions, and the Court was adjourned after the Coroner had directed that the jury should visit the mine and see whether or not there had been a shot-hole behind the broken coal. Mr. Hawthornthwait, M.P.P., Mr. Wolflin, U. S. A. Geological Survey, Mr. Cosier, the fireman in question, and others accompanied the party. The result was that my statement of fact was completely verified; and there was the further evidence that the shot had been fired on the morning of the explosion, and that Mr. Shepherd had been very seriously misled by the fireman Cosier. This shot had therefore been fired before the arrival of Mr. Alex. Shaw, who, having temporarily taken up the duties of the usual shot-lighter, had told the men that he would be in the mine by 9 o'clock to attend to the shot-firing. Microscopical examination

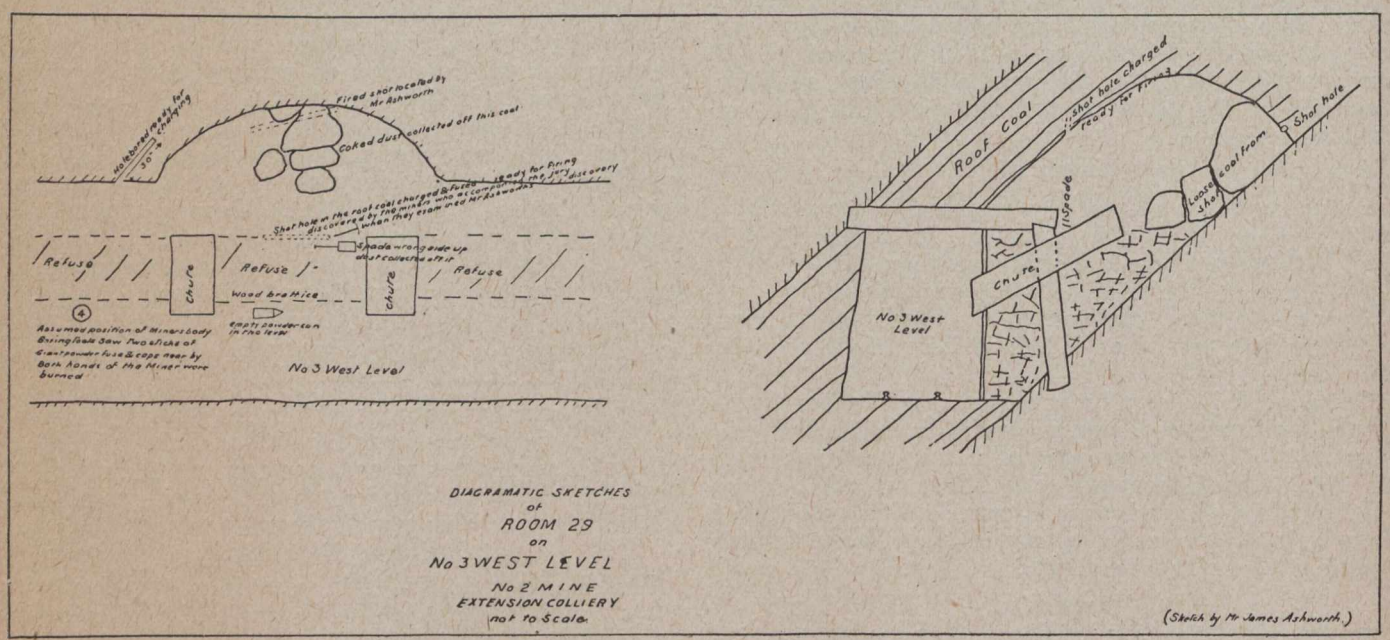


Fig. 1. Diagrammatic Sketch of Room 29.

by myself and others of the dust collected off the coal shows plainly that it has been affected by considerable heat, and this is also proved by the appended chemical analysis:

"Moisture, 9.69; Volatile Combustible Matter, 21.60; Fixed Carbon, 28.70; Ash, 20.01. The coking of the coal particles of this dust is very distinctly shown under the microscope, also in a sample taken off the top of the coal on the loaded cars between Nos. 23 and 24 rooms."

No. 29 room had an inclination of about 60 degrees, and was fitted with two chutes, down which the coal at this point. On every occasion when I inspected No. 3 West level I found not less than 3 per cent. of fire-damp mixed with the ventilating air-current.

Proceeding into No. 2 1-2 West level, I found a similar percentage of fire-damp. In No. 27 room there had been a heavy "cave" of the roof coal and practically everything in the room was buried under it. The miner working here, A. Keserich, had left his room for some reason or other, and was found in the level on the out-bye side of the stall, and where the roof had not fallen. His body was the most severely burned of any in the

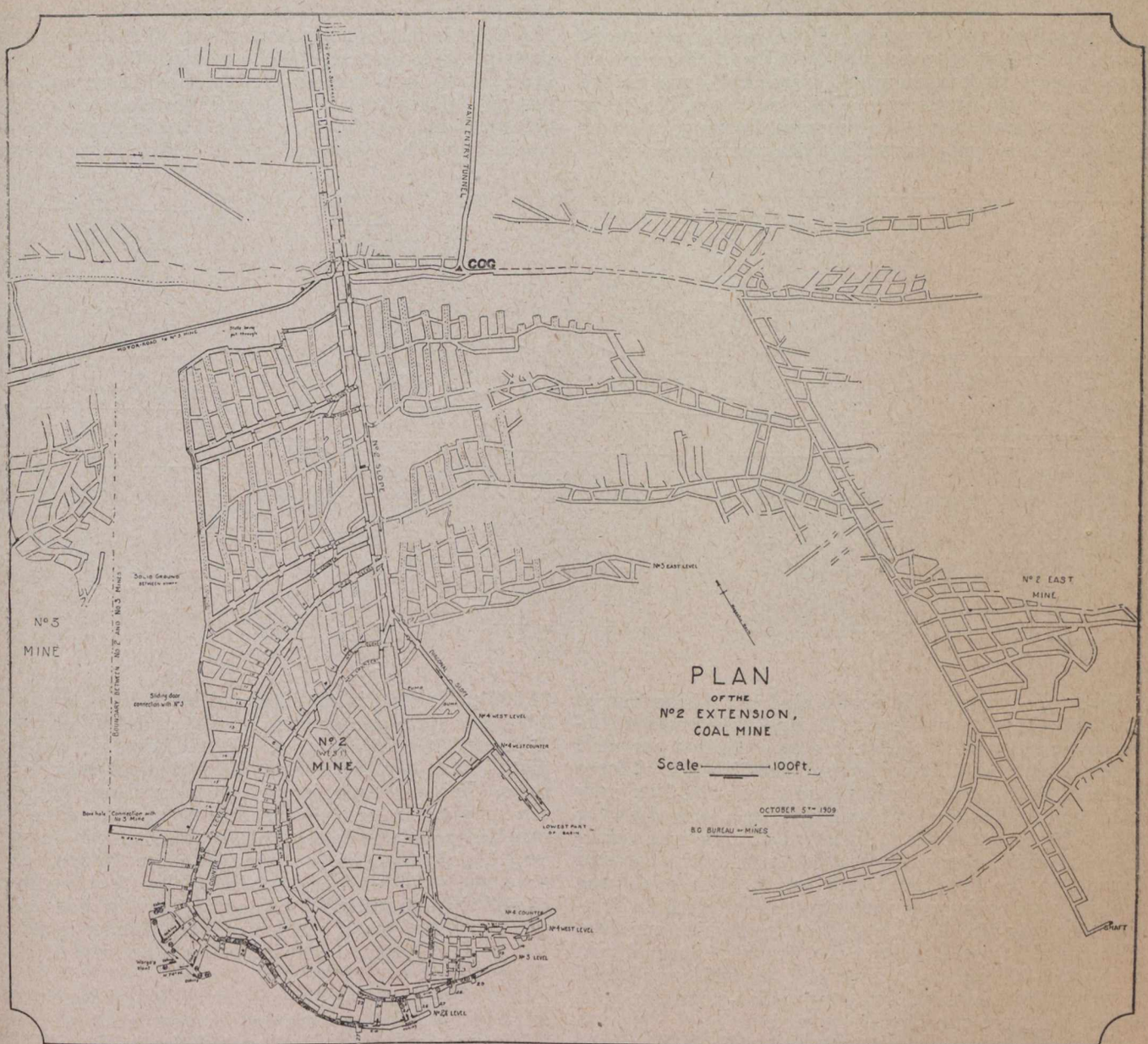


Fig. 2. Plan of Extension Colliery No. 2.

ran to the level where it was loaded into cars. The body of the miner Thomas, who worked in it, was recovered by a man who crawled in and brought it out of the level before it was considered safe to take a lighted lamp so far, and therefore the exact spot where it was found is only approximately known. The doctor who examined Thomas's body certified that it was burned on the hands and that the man died from carbon-monoxide poisoning. Why he should be burned on his hands only, seems a mysterious feature, but it shows that flame was present mine, and the doctor certified that the hair, moustache, head, neck, hands, and left side of the chest were burned by fire. Farther out-bye a heavy "cave" of roof coal had taken place for a length of 240 feet (see Mr. Robertson's plan). The top of this cave was coated with dust affected by heat, as shown under the microscope, and therefore it had been deposited after the fall took place. The chemical analysis shows: Moisture, 3.69; Volatile Combustible, 27.70; Fixed Carbon, 36.00; Ash, 32.61.

Out-bye of this fall was a bridge of 36 feet long, where the roof had not fallen, but the timber supporting it had been knocked out by a force from the out-bye side, which had also thrown some of it on to the talus of the 240-foot fall. This force was caused by another cave of 239 feet in length, which at the east or out-bye end was 18 feet high. It was evident, therefore, that this cave took place after the explosion, and that the first-referred-to cave occurred before the explosion. This reasoning is further supported by the fact that some of the timbering that had been set up to support the roof of the first length was standing upright, with the fallen coal all around it.

The ignition and explosion of the fire-damp brought down by the first cave was undoubtedly the force which caused the main explosion and burned the men in the headings on the higher side of the level from No. 20 to No. 26, and also caused the pressure, burning, and percussive effects demonstrated in these working places.

degrees Fahrenheit. The mine was absolutely wet in the majority of places. A test was made with the Pieler spirit-lamp in the whole current of the return air, and although the tip of the flame was ill-defined, it was considered to be equal to a 2 per cent. content of fire-damp. The evidence given as to the volume of air circulating through this mine was so various that your legal representative, Mr. Harold Robertson, asked the coroner to send Mr. Dick, Inspector of Mines, to visit the mine and report the volume passing at three separate points. The estimate given by Mr. Dick in his evidence-in-chief was 17,500 cubic feet at the delivery end of the return, and at the same place Mr. Shepherd had 28,080 cubic feet as his measurement. Mr. Bryden gave three separate estimates of the volume of air in circulation: Firstly, of 90 per cent. of the whole return for the working places; then 25,000 cubic feet; and, later, 10,000 cubic feet at the faces. Mr. Dick reported to the coroner that he measured in the mine return air-way

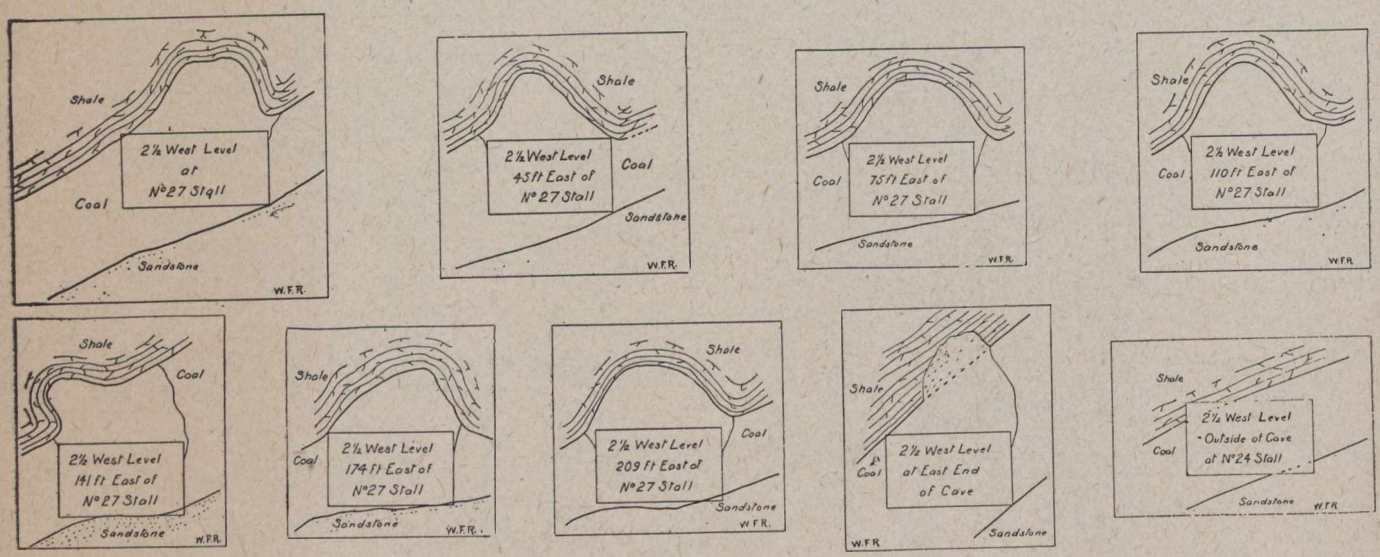


Fig. 3.

When the whole of the return air from this section of No. 2 mine was tested for fire-damp in the crosscut between Nos. 19 and 20 rooms, it showed fully 3 per cent. of fire-damp. Another evidence of the direction of force on No. 2 1-2 West level was found where No. 15's body was found. This boy had been driving a mule drawing two empty cars, and it is surmised that he was riding on the front car when he was blown into the car and burned on the face, neck and hands. The mule was either blown or jumped into the first car with its forelegs and was killed. The only animal which survived the explosion was a mule in No. 4 level. Several men on No. 2 1-2 West level, out-bye of the fall, were killed in various places on the level by carbon-monoxide poisoning, and were also slightly burned.

On the 16th inst. I accompanied Mr. F. H. Shepherd and Mr. Bryden to make tests on the volume and humidity of the air circulating in No. 2 West mine. The whole volume of return air amounted to 28,080 cubic feet per minute. For some reason or other the anemometer would not work in the crosscut between Nos. 19 and 20 rooms on No. 2 1-2 West, and no further tests could be made. Hygrometer tests were made in many places and all proved that the air in the mine was practically saturated with moisture, and in no case was there less than 5.10 grains per cubic foot, and not more than 5.51 grains per cubic foot. The greatest heat of the air inside the mine was only 59 degrees, and the lowest 52 34,500 cubic feet; in the intake in No. 4 West level, 16,000 cubic feet; and between Nos. 3 and 4 West levels, 6,600 cubic feet per minute. These figures were so conflicting that Mr. Robertson did not cross-examine on them. It is, however, important to consider them very seriously when deciding whether or not the mine was supplied with a sufficiency of air to dilute the gas produced, and to make the mine safe for shot-firing. I have not the least hesitation in saying that, on every one of the five visits I paid to this mine, it was unsafe to fire shots of black powder or giant powder in any of the working places on Nos. 2 1-2 and 3 levels of No. 2 West mine.

The English Royal Commission on Mines appointed a sub-commission to report on the ventilation of mines. After examining mines in England, Scotland and Wales, they suggested that 2 per cent. of fire-damp in the volume of air circulating in any working place should be considered dangerous. This suggestion, however, did not receive the approval of the coal-owners, and a minimum of 3 per cent. was suggested by one district as an alternative, and because the majority of officials cannot detect 2 per cent. of gas with an ordinary safety lamp. The matter is still *sub judice*, I believe.

As previously stated, there was at least 3 per cent. of gas present in the air ventilating Nos. 2 1-2 and 3 levels of No. 2 West mine of the Extension colliery, and therefore, on this basis, the volume of air was inade-

quate. What percentage of gas was called a "cap" by the Extension mine officials was not very clear, but the impression conveyed to my mind was that only such gas was reported as would bring the air-current very close up to the explosive point—that is, far above 3 per cent. The officials, however, stated in evidence that they considered a half-inch cap dangerous, and some thought 3 per cent. was dangerous.

In Messrs. Dick and Bryden's reports on the volume of air circulating in the mine, a leakage of not less than 27,900 cubic feet of air per minute was unaccounted for, and this leakage shows how important it is that the intake air in a mine should always be measured and compared with the whole of the return volume, and to thus ascertain the percentage of loss. The current of air ventilating the western part of No. 2 mine was also complicated by a current of air coming from No. 4 level east, and thus when the explosion occurred the after-lamp driven into the slope through the doors of Nos. 2 1-2, 3, and 4 levels was compelled to circulate with the air into the eastern part of the mine and return through No. 4 West counter-level. The west side might, therefore, have been more quickly cleared of after-damp if a heavy curtain hanging in the diagonal slope to divert the air into No. 4 East had been lifted up, and thus permitted more air to enter No. 4 West counter. It is surprising, therefore, to find that twelve men escaped alive. The question as to whether or not other five men lost their way is immaterial, because they were hemmed in on all sides by after-damp.

I have to suggest, firstly, that the ventilation of the east and west sides of No. 2 mine be by entirely separate air-currents; secondly, that the use of safety-lamps be made compulsory as the means of lighting; thirdly, that only permissible explosives be used in place of black and giant powders; fourthly, that shot-firing be permissible only under statutory regulations; fifthly, that no shot be fired where there is more gas present than would be indicated by a blue cap 1-4 inch high.

Increasing the Number of Inspectors.—The popular idea appears to be that more men should be appointed to examine and report on mines, and that such reports should be equal to the standard report of a colliery fire-boss. Personally, I do not think that it will work out as satisfactorily as it might appear probable to do at first sight, because such an inspection lowers the status of an inspector, who, from my point of view, should be equal to a first-class certificated manager, and should be able to supervise the manager and his officials, in the same way that a first-class certificated manager supervises his under-officials. On this basis an inspector of mines would take a more general view of mining, and would in no sense relieve the fire-boss of his responsibility, nor himself assume and responsibility for the safety of a coal-mine.

Cause of the Explosion.

Although the first cause of this explosion has not been positively ascertained, yet it has been demonstrated that if fire-damp had not been present there would have been no explosion, because coal-dust took no very pronounced share in it. If, therefore, a shot fired in No. 29 room on No. 3 West level were the initial cause, then it is clear that the ventilation was too small in volume to keep the mine clear of gas; but if the fall of roof in No. 27 room of No. 2 1-2 West level came down without the assistance of the disturbance caused by the shot in No. 29 room, then I should say that this very large fall of roof coal, which could not have been foreseen, brought down a large volume of fire-damp, and that the explosion originated at the open light of the miner No. 16, as shown on the accompanying plan.

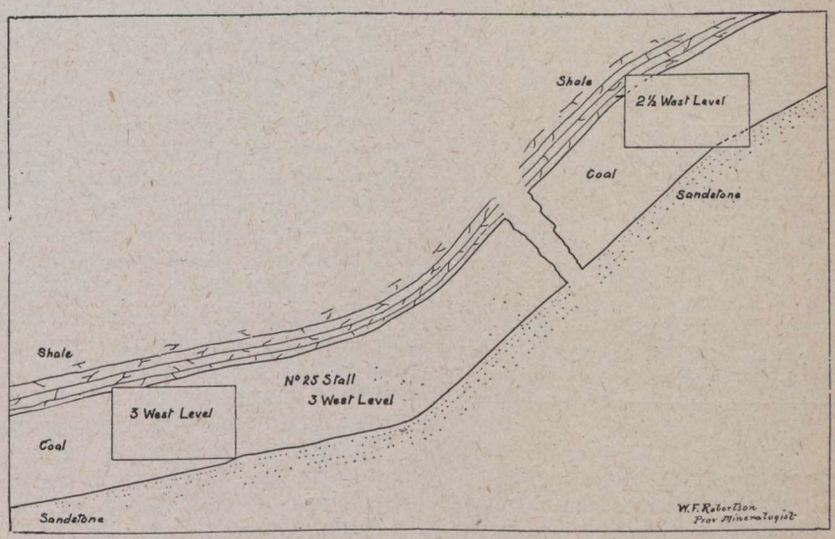


Fig. 4.

I have lastly to recommend that double doors be made compulsory in all cases where the system of ventilation is similar to that of the slope district of the mine in question.

Below I apend the report of Mr. S. D. Wark, of the Crow's Nest Pass Coal Company, Limited, Fernie, B.C., on a sample of dust from No. 29 room of No. 3 West level of the Extension mine, No. 2 district:

"Two slides were made, one of coal and another of the dust, and examined under the microscope, the object being to try and detect a difference, if any, in the structure of the two. An examination of the dust showed in a convincing way that it had been subjected to fire. It showed a steely grey appearance very much like coke, the boiling or swelling in the process of coking being very pronounced. The coal, on the other hand, showed no such alteration.

"By way of comparison, another slide was made from our own coke, and its likeness to the dust was very distinct.

"Following this, a test was made to try and detect whether any of the volatile matter had been driven off.

The sample was first dried for about an hour until it ceased to lose weight, and when examined again the steely appearance was quite evident to the naked eye, differing entirely from the dried coal-dust. An analytical comparison of the two samples shows the following:

	Moisture.	Vol. Matter.	Fixed Carbon.	Ash.
(29)	9.69	21.60	48.70	20.01—100%
Coal	1.05	35.00	56.95	7.00—100%

and, therfore, a decided contrast in the volume of their volatile contents.''

* * * * *

Since writing and forwarding my report on the No. 2 Extension mine explosion, I have received a copy of the plan prepared by Mr. W. F. Robertson, blue prints of Messrs. W. F. Robertson and F. H. Shepherd's

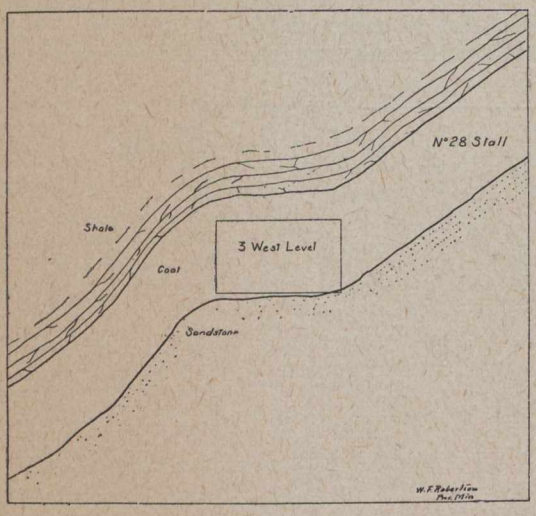


Fig. 5.

sketches, and also a copy of the verdict of the jury.

I notice that the plan does not show the entire course of the ventilation before the explosion, and, consequently, the direction in which the ''auxiliary'' current of air from the down-cast shaft, marked in the right-hand bottom corner, passed through some portion of No. 2 east workings, and was then added to the intake air entering No. 4 West counter-level. The ''cap'' of fire-damp found in No. 4 West counter-level probably came along with this auxiliary air-current. The plan shows single doors on Nos. 1 1-2 and 2 West levels, as well as on Nos. 2 1-2, 3 and 4 levels, and that coal working was proceeding on No. 1 1-2 level. These single doors evidently account to some extent for the great loss in the volume of the intake air-current entering the lower part of the mine.

With reference to the verdict of the jury, the principal point calling for attention is the apparent assumption that the fall or cave of roof coal in No. 2 1-2 West level took place under normal conditions, and without the assistance of any disturbing influence. It is, however, quite clear that there were other and prior manifestations of force preceding this cave. Thus there was the shot in No. 29 room of No. 3 West level, which was specially uncovered by the coroner's order for the jurymen to see, and the blowing of the man Milos (No. 6 body) out of his boot.

The positions in which the bodies of several men were found, away from their working places, showed that something had scared them before the explosion occurred at the cave-in on No. 2 1-2 West level. Thus No. 2 and 3 men had run out quite 200 feet from the face of No. 3 level; Nos. 7 and 8 had run about the said distance out of the face of No. 2 1-2 West level, and No. 16 had gone out of No. 27 room on the same level. Only one of these men, No. 16, was burned. The absence of burns on bodies Nos. 7 and 8 is of the greatest importance, because Mr. Shepherd fixed on the end of No. 2 1-2 West level as being the place where the explosion originated, for he says, ''the explosion was caused by the compression of the atmosphere in the face of No. 2 1-2 West level.'' He also acknowledges that there was coking near the face of the level, and of the dust on the loaded car at the face—and yet the men were unburned, and one man left his cap and lamp behind him near the face. Certainly, if these men had been in their working place when the flame of the explosion entered it, they must have been killed on the spot. Mr. Shepherd, in his written evidence, stated that there was no evidence of flame in No. 3 level, but, to my mind, there are most important traces of flame at this point. First, in the fact that the hands of the miner Thomas were burned until the skin hung on them like a glove, and then the fact that the dust I collected in No. 29 stall was coked.

Other important collateral evidence has been found in No. 29 stall—namely, a hole 50 inches deep bored into the roof coal charged with nearly one whole stick of giant powder and fused ready for firing; also another shot-hole 30 inches deep on the left-hand side of the room, uncharged. It is fair to assume that Thomas had drilled a series of three holes, and then removed his drilling tackle into the level; he then charged two holes, in contravention of Rule 9A of the ''Coal Mines Regulation Act,'' and fired one, probably intending to fire the other afterwards. It is not improbable that he was preparing to charge the 30-inch hole also, as two sticks of giant powder (not in a case), fuse, and caps were close to where Thomas's body was found.

These facts confirm my original opinion that the first factors in this disaster are disclosed in the surrounding conditions of No. 29 stall on the No. 3 West level.

With regard to the jury's No. 3 recommendation, life-saving oxygen apparatus such as the Draeger, Weg, etc., is expensive to buy and expensive to maintain, and if any of these apparatus had been in use at the Extension mine they could not have saved any lives. I might, however, mention a much simpler apparatus which I have often used—namely, the Denayrouse. It consists of a mouth and nose piece and a valve for the expired air placed at one end of a strong flexible tube, which is attached by a belt to the wearer, and the other end of, say, 100 feet of tube is coupled to an air-pump. This apparatus is easily kept in order and may be stored in any convenient place underground.

The August number of the Mexican Mining Journal is a special cyanide number. Special articles from many prominent experts and operators are presented. Eighty-two pages of reading matter are given over to articles on every phase of modern cyanide practice.

The Coal Mines Regulation Act of British Columbia provides that all the officers of a company having charge of work underground shall hold Government Certificates of Competency. These can only be obtained by passing an examination before the Managers' Board. Three certificates are granted, the First-Class or Manager's, the Second Class or Overman's, and the Third Class which must be held by every shiftboss, fireboss, or shotlighter.

MINING AND METALLURGICAL OPPORTUNITIES IN CANADA.

(Written for the CANADIAN MINING JOURNAL by A. B. WILLMOTT, Mining Engineer, Toronto, Ont.)

Prefatory Note.—In the following brief article attention is called to some industries connected with mining, which apparently might be profitably established in Canada at once. Where data are available the market is given, and the source of the raw material indicated. I do not pretend that I have critically examined into all the conditions that make for success, but only that the subjects mentioned are worthy of careful study by investors looking for meritorious propositions.

I.

Soda.

The report of the Department of Customs for the year ending March 31st, 1909 (the latest available), shows a consumption in Canada of caustic soda, soda sal and soda ash valued at $479,882. There was a further consumption of salts of sodium, omitting sodium nitrate, of over $150,000, some of which might be profitably manufactured. It thus appears that there is a market in Canada at present for over half a million dollars worth of sodium products. The following table compiled from the report referred to shows the present source of the sodium compounds consumed in Canada and their value as entered at the customs house:

Countries.	Imports. Quantity. Lbs.	Value.
Soda Ash—		
Great Britain	17,686,755	$138,811
United States	4,503,266	41,124
	22,190,021	179,935
Caustic Soda—		
Great Britain	7,368,959	139,525
Germany	100	10
United States	3,334,996	67,552
	10,704,055	207,087
Soda Sal—		
Great Britain	4,230,678	24,495
United States	6,867,461	68,365
	11,098,142	92,860
Total	43,992,218	$479,882

Salt, which is the raw material for all these compounds of sodium, occurs in great abundance in Ontario. In the district bordering Lake Huron and Lake St. Clair, from Lake Erie northwards as far as Kincardine, are strata of the Upper Silurian abounding in salt. At Kincardine the salt bed is found 880 feet below the surface, at Clinton at 1,170 feet, at Courtright 1,620 feet and at Windsor 1,272 feet. The quantity of salt is inexhaustible. At Goderich the six beds aggregate 126 feet of solid salt. At Blyth a bed 80 feet thick is known; at Petrolea, one 105 feet thick; at Windsor, one 250 feet thick. All the beds are not of equal purity; the second and third at Goderich are among the purest known, yielding on analysis 99.7 per cent. of salt. These beds are exploited by driving down a casing pipe to the salt bed in which is inserted a second pipe of smaller diameter. Water is forced down the outer pipe and rises to the surface through the inner, charged with the salt which has been dissolved. These brines are largely sodium chloride, with very small portions of calcium chloride, magnesium chloride and sulphate of lime.

The production of salt from Ontario in 1908 was 79,975 tons, valued at $378,798.

That these salt beds are well adapted for the soda industry is abundantly shown by the fact that across the Detroit River the Solvay Company has a very large plant manufacturing various soda products from the same salt beds that occur in Ontario.

On seeking a suitable locality for such an industry transportation of both raw and finished products must be taken into account, and to a lesser extent the cost of fuel or power. The source of salt will naturally be some point close to the Great Lakes, like Goderich, Sarnia or Windsor. Such a point offers water transportation for the finished products as well as rail, and further permits the importation of coal for fuel at a low figure. On the other hand, if electrolytic soda is to be produced some point in the Niagara Peninsula, where electric power is cheap, would seem more suitable. At any rate Ontario affords large quantities of salt of excellent purity and cheaply produced. There are, further, cheap power and excellent transportation facilities. Added to this there is a market now for half a million dollars' worth of sodium compounds yearly and the probabilities of a great expanse.

(To be Continued.)

THE PRICE OF COAL.

There has just been issued by the Federal Department of Labour a bulky special report entitled "Wholesale Prices in Canada—1890-1909." Mr. R. H. Coats, B.A., associate editor of the Labour Gazette, is the compiler.

The tabular statements showing the wholesale prices of coal are noteworthy. In 1890, the average wholesale price per ton of 2,000 pounds on wharf at Montreal was $2.462. For four successive years the average price remained at precisely the same figure. Then, up to 1900, there were very slight drops. During 1900, the price went up to $3.075, and in the succeeding year it reached $3.498. During 1909, the average price was $3.602. The increase in price, therefore, during 20 years is only 64 cents , or about 21 per cent. of the price in 1890. These figures apply, of course, almost exclusively to Nova Scotian coal.

In 1890, anthracite sold in Montreal at an average price of $4.875. In 1909, the price was $5.683—an increase of 80.8 cents, or about 16.6 per cent. of the former price.

The El Oro mine has ore reserves totalling 441,639 tons, and averaging $8.06 in gold per ton. The ore also carries 3 ounces of silver per ton. The ore ranges in gold content from $6.15 per ton to $18.09 per ton. In the previous year the average gold content was $9.10 per ton.

THE ENGINEER GROUP, ATLIN MINING DIVISION, BRITISH COLUMBIA.

Reported High Gold Returns from Small Quantity of Quartz.

BY E. JACOBS.

British Columbia newspapers lately printed a news despatch from Atlin, in which statements were made to the effect that 20 pounds 8 ounces of gold had been obtained from 800 pounds of quartz put through a stamp mill at the Engineer mine; that three tons of selected ore on hand will return from $6,000 to $10,000 per ton; that about 200 tons of ore taken out since January will average $150 per ton; and that a 100-stamp mill is to be erected. In view of the unusually high-stated value of the "selected" ore and the impression of the importance of the mining development there, as suggested by the alleged intention to erect so comparatively large a stamp mill on the property, the information given below has been taken from provincial official reports, so that those interested may be assisted in arriving at reasonable conclusions in this connection.

The original Engineer group was owned by the Engineer Mining Company, of Skagway, Alaska. It embraced thirteen mineral claims situated in Atlin mining division, on the east side of the southern part of Taku Arm, this arm being a branch of Tagish Lake. The old route from Log Cabin, on the White Pass and Yukon Railway, via Otter Lake to Atlin, crossed Taku Arm and entered Taku Inlet, the mouth of the latter having been known as the Golden Gate. The Engineer group is about nine miles south of the Golden Gate.

In the summer of 1900 the provincial mineralogist, Mr. Wm. Fleet Robertson, paid an official visit to Atlin district, but having to proceed thence to Chilkat district before the season was far advanced, he had not time to personally examine the Engineer group. However, he obtained from the secretary of the Engineer Mining Company, then resident at Skagway, the following particulars, which were printed in the Annual Report of the Provincial Department of Mines for 1900:

"The property was taken up by a locating party of engineers of the White Pass and Yukon Railway, hence the name 'Engineer' group. The discovery was made on a small stringer of quartz carrying free gold visible to the naked eye. Assays of specimens taken from this stringer gave any results up to $13,000 per ton. Development work was begun on this stringer and continued over the greater part of the property. In following the stringer a large body of quartz was struck, running at an angle of 60 degrees with the strike of the former. Further prospecting disclosed parallel ledges and stringers, and samples of quartz were taken and assayed, but gave little satisfaction. Four tons of ore from the rich stringer was then taken out and was milled at Juneau, some $23 per ton having been saved on the plates and one per cent. of concentrate, worth $83 per ton, obtained. A tunnel was then started from the shore of the lake and was driven 250 feet through slate, the formation dipping into the mill. At 215 feet in, and not quite at right angles, this tunnel cut a quartz ledge 20 feet in thickness. The company had nine men at work during the summer."

In a prospectus issued by the company there was shown a table giving details of results obtained by fire assay of five samples, described as general average samples, and from cyanide tests of three similar samples. The assay returns in gold and silver ranged from $10.54 to $17.09 per ton, with an average of $13.05; those from cyanide tests were from $30.03 to $59.63 per ton, with an average of $40.95. It was stated that "the great presence of tellurides in the ore accounts for the small fire assay of the identical samples. All cyanide tests have been made after a preliminary roasting of the ore."

The provincial mineralogist wrote: "I shall make no comments upon the remarkable differences shown above between the fire assays and cyanide tests on identical samples. A number of selected, not average, samples of the ore were obtained from the company, certain of which showed free gold, but, although tested repeatedly by the provincial assayer, none of the ore could be found to give the reaction for tellurides, although obtained from the company as samples of the telluride ore and in order that it might be so tested."

In the Annual Report for 1904 the provincial mineralogist gives the following information relative to this group: "Since 1900 considerable money has been spent on its development by the Engineer Mining Company. The claims, which have not as yet been surveyed, extend along the lake shore and part way up the mountain, covering the bench-like foothills, which are some 400 feet higher than the lake. The property has not been worked this past year. A tunnel, driven to crosscut a large body of quartz outcropping on the bluff above, had been started below the level of highest water mark, and had, in consequence, been flooded by the spring floods. The tunnel ran in straight for about 200 feet, and at a point 175 feet from the portal, a drift had been made to the right for about 115 feet, from which exploratory cross-cuts, etc., had been run to the extent of about 75 feet in all. The tunnel had cross-cut through slate, cutting in its length several small quartz veins, and the main vein was developed by the drift which showed the quartz to be from 7 to 20 feet wide. This main quartz lead continued in the drift for about 80 feet from the tunnel intersection, when it seemed to disappear into the wall, and the subsequent exploratory workings had not picked it up again, except as small stringers. The quartz is white and vitreous in appearance, showing very little mineralization, while samples therefrom gave only a trace in gold. The tunnel had been laid with steel rails, and well equipped with cars, blacksmith shop, sheds, etc. This is the largest showing of quartz seen on the property, but it is not the showing for which the stamp mill was brought in. That showing is located some 600 feet further to the south along the beach at the original point of discovery. Here, a small stringer of quartz at right angles to the general trend of the larger quartz vein—viz., east and west—cuts from the shore into the hill, on which from the beach a shaft had been sunk 30 feet, and from this shaft it is reported most of the rich samples taken from the property were obtained. Where this stringer should cut the hill, and 100 feet above high water, a 3-compartment shaft had been sunk for 70 feet. This was well equipped with a Joshua Hendy steam hoist and locomotive boiler, all covered over by

the frame of a fine building, which had never been completely boarded in, but was left unfinished. Just below, near the beach, has been erected the frame-work of a stamp mill and bins, all excellently built, but only half completed, while on the beach in a cabin is apparently the complete machinery for the mill which has never been erected."

The foregoing information, it should be kept in mind, relates to the Engineer group as officially described in the years 1900 and 1904 respectively. There was also a brief reference to the property in the Annual Report of 1902, as follows: "Some development work was done during last winter, and a triple-discharge Hendy stamp mill complete is now being installed on the property at an estimated cost of $15,000. The mill is expected to be in position and ready for work by February 1st, 1903, and as soon as warm weather sets in it is expected to open up on the ore body and start crushing." That expectation, however, was not realized. The only official mention made of this property since 1904 was this brief notice in the Annual Report for 1908: "Two years ago the original holders of the Engineer group allowed some of their properties to lapse and they were located by local parties, who have been doing some development work during the year and who are reported to have discovered some very rich ore. This rich ore is only found in small stringers, but I am informed that several larger and better defined ledges have been discovered on the properties."

Of course, it may be that the Engineer mine mentioned in the press despatch recently published, is distinct from that the official information above quoted relates to, but the probabilities are that the properties are identical. If so, it would appear that it is not reasonable to conclude that anything like sufficient development work has been done and ore blocked out to afford justification for the erection of a 100-stamp mill. It is not at all unlikely that a comparatively small quantity of selected and unusually rich quartz was accumulated during the time it was regarded as prudent to "keep quiet" pending the obtainment of a good title to the property, but beyond that it will be well to await full and thoroughly reliable particulars before giving full credence to the recently-published statements concerning this mine. It is satisfactory to learn that the Provincial Department of Mines has sent Mr. Herbert Carmichael, provincial assayer and assistant to the provincial mineralogist, to investigate on the spot and thereafter make an official report to the Minister of Mines. Meanwhile it will be well to suspend judgment, for recent experience has shown how utterly unreliable some of the so-called mining news published by newspapers has been.

THE ELECTRIC OPERATION OF THE INDIANA STEEL PLANT.

By Frank C. Perkins.

At Gary, Indiana, the new works of the United States Steel Corporation is very largely operated by electric power and the controlling apparatus of the Cutler-Hammer type utilized at the Indiana Steel Plant is of special interest.

The accompanying illustration, Fig. 1, is a view of the rail mill at Gary, Indiana, looking across the rail transverse and bloom shear table. In the pulpit immediately behind the bloom shear will be seen the starting panel for the bloom shear motor and the controlling apparatus for the stop motor. The illustration, Fig. 2, is a view underneath the tilting table at the 3-inch roughing mill, while at the left will be seen the automatic limit switch for stopping the table at the top and bottom, while at the right will be noted the disc brake and the conduits and methods employed in bringing the power cables to the apparatus. The electrically-operated 3-high roughing roll at Gary, constructed by the United Engineering and Foundry Company, of Youngstown, Ohio, will be noted in illustration, Fig. 3, which also shows the operating pulpits and controlling apparatus.

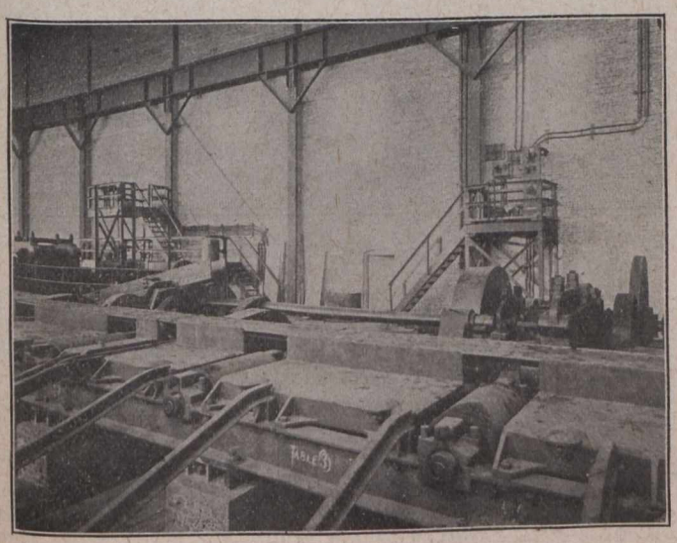


Fig. 1.

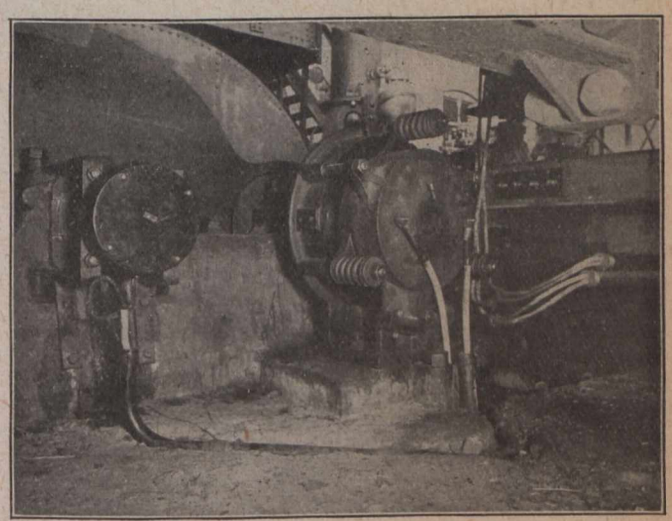


Fig. 2.

A typical contactor controller installation at the electrically driven rail mill at Gary, is shown in the accompanying illustration, Fig. 4. At the right of the control panel will be seen an auxiliary panel equipped with electric lamps for ground testing.

It is clear that the problem of control presented by the multitude of motors installed at this plant involve

many interesting features. The solution of these problems has engaged the attention of the many experts for many months and the automatic controlling devices installed at Gary represent the most recent developments in the art of electric control as applied to steel mill machinery.

There are automatic controllers in connection with motors on the transfers which make it possible for the operator to transfer the rails from one table to another by a simple throw of the lever, the motor being automatically stopped after the transfer has been completed.

There is a regulating system in the power house for use in connection with the storage battery plant, the object of this system being to maintain the power house load as near constant as possible. The various motor generator sets and converters, comprising this regulating system may be started and stopped from the bench board in the switching gallery by means of remote control field rheostats.

It is held that one of these remote control starters is remarkable for its great capacity and it is used in connection with a motor generator set which is started from the direct current end, and, although the starting current is not abnormally high, the rheostat is designed to carry 10,000 amperes under maximum working load conditions. This is believed to be the largest remote control starter ever built.

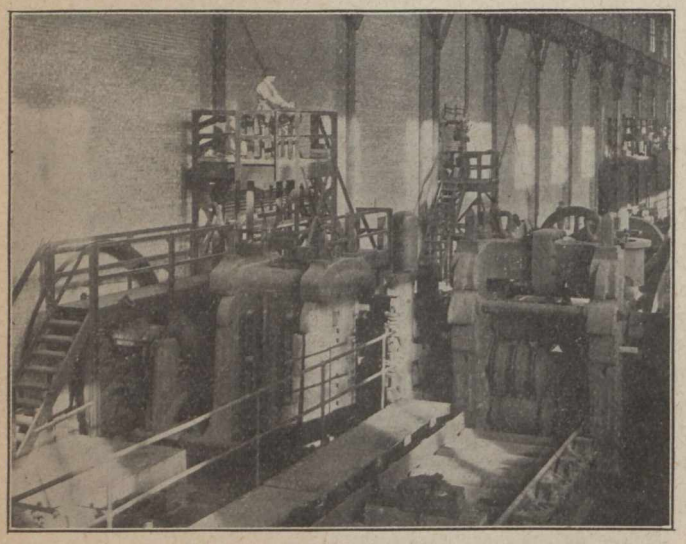


Fig. 3.

In connection with the various generators in the power house there are also installed a large number of Cutler-Hammer remote control field rheostats and field switches. The controlling apparatus is located in the basement as near as possible to the generators and are operated from the bench board located in the power house gallery. It may be stated that these rheostats used are of a unique design, they are of the "Cross head" type and are driven by means of vertical motors and are provided with automatic devices which insure the stopping of the motor at either limit of the "Cross head," travel, this is to say, either when all resistance has been cut in or cut out of circuit. Means are provided, also, for operating these field rheostats by hand in case of damage to the motor.

The controlling apparatus in the gas producer plant, where gas is generated for the open hearth is so arranged that it can automatically weigh and record the amount of coal used. At first the coal is received in the hopper-bottom cars from which it is dumped into a bin. A motor operated double skip hoist takes the coal from this bin, the door of the coal chute being automatically opened by a mechanical connection as the skip bucket settles into the pit beneath the bin. The opening of this door permits coal to discharge from the bin into the skip car and when 4,000 pounds of coal has been run into the car a counter weight is lifted and this automatically starts the hoist which lifts the loaded skip to the top where it dumps automatically and the hoist is stopped.

When the first skip car is in the dumping position, the second is lowered beneath the chute and the operation is repeated. The cycle continues as long as there is any coal in the bin and by means of a counter for counting the number of trips, the amount of coal delivered to the gas producer is accurately determined and recorded.

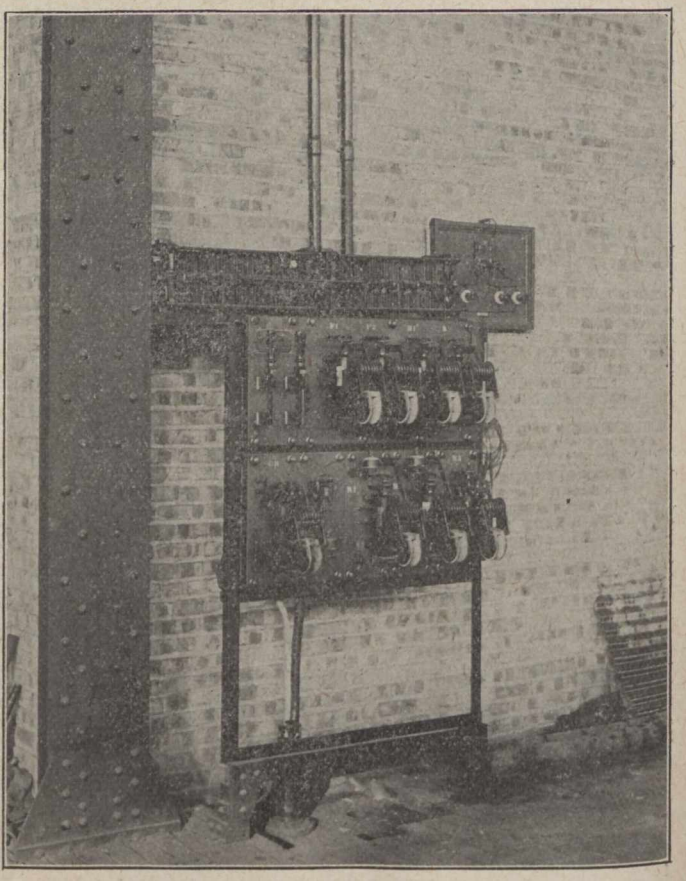


Fig. 4.

The automatic remote control devices installed in the rail mill are among the most notable at the plant. The control of the elevating and tilting tables, the bloom shear and the transfer is of special interest. The elevating table on the 48-inch blooming mill, weighing about 250,000 pounds is supported on huge bell cranks which are connected to a rotating crank driven by a 250 h.p. motor operating at 150 revolutions per minute.

Automatic controlling devices are used in the throwing of a master lever which starts the table from the lower level position and raises it to the highest level where it is automatically stopped. In lifting the table from the low to the high level, the rotating crank revolves through an arc of 180 degrees and on throwing the master lever to the reverse position the rotating crank revolves through another 180 degrees in the same direction, bringing the table to the low level once more. The operation of raising or lowering the table can be accomplished in a period of two seconds which is quite re-

markable when the masses to be accelerated, slowed down and stopped are considered.

A 75 h.p. induction motor operates the bloom shear, there is a pin on the clutch driven by a direct current auxiliary motor of 5 h.p. and the circuit of this 5 h.p. motor is interlocked with the controlling device for the 75 h.p. alternating current motor so that the former cannot be operated except when the latter is running at full speed. The latch is operated by a crank to which the 5 h.p. motor is geared. Pressure on a push-button under control of the operator, causes the motor to run long enough to revolve the crank 360 degrees thereby releasing the clutch and returning the pin to the initial or "Off' position.

It may be stated that the equipment of the tilting table is very similar in arrangement to the elevating table, one end being pivoted and the other end supported on a bell crank. The tilting table is driven by a 150 h.p. motor controlled by a Cutler-Hammer controller similar to that designed for the elevating table.

It will be noted that the steel produced in the open-hearth is cast into ingots which are delivered to the soaking pits where they are re-heated for rolling into rails; there are twelve soaking pits in all, six on either side of the rail mill. Two electrically-operated ingot buggies deliver the heated ingots to the rail mill, each buggy serving six pits.

These ingot buggies have a most ingenious system of control. On account of the length of the building in which the soaking pits are located, it is impossible for the operator stationed at the mill to see when an ingot buggy is opposite a particular pit. It was, moreover, necessary to guard against the possibility of the operator becoming confused and bringing both ingot buggies to the mill at the same time, which would result, of course, in a collision.

For guarding against this contingency a special automatic controlling system was provided and it also enables the operator to stop the ingot buggy at any of the pits by merely setting a controlling lever on the notch corresponding to the pit in front of which it is desired to halt the buggy.

It may be stated that the operator in the mill has in front of him two master levers for the control of the two buggies. Each of these controlling levers can be set in any of eight positions, one of these positions corresponding to the mill itself, six to the six soaking pits which the buggy serves, and one off position. If, when one of the ingot buggies is at the mill, the operator desires it to go to pit No. 5 and there stop, he merely moves the controlling lever to the position corresponding to pit No. 5. Immediately the buggy proceeds to that point and is there automatically stopped and there is a suitable interlock between the two controlling levers which renders it impossible for the operator to throw both levers to the mill position at the same time.

A clear track for each buggy is therefore insured. This controller equipment of the Gary electrically-operated steel plant undoubtedly represents the most up-to-date and successful in modern electric motor driven steel mill practice to-day.

The Portland Canal district has now a population of about 3,500 persons. This estimate does not include men employed on railroad construction.

A pyrite ore containing 40 per cent. recoverable sulphur usually assays between 42 and 43 per cent. Payments are customarily made on the assay values.

ARE BRITISH COLUMBIA ORES IMPROVING?

By E. Jacobs.

Among other notes on "The Financial Situation," the Toronto Globe on July 30th printed the following: "Are the British Columbia ores improving? The British Columbia Copper Company is bettering its position through increased gold values which have been encountered in its operations, and now comes the Consolidated Mining & Smelting Company with an increase in the percentage of gold in its metal production from 42.79 last year to 46.6 per cent. in the fiscal year ending June 30th. The larger percentage last year was important enough to add $458,000 to the company's receipts, in fact, the increase in the value of the metal production is due entirely to the gold. Silver and lead fell below the previous year, and copper made a very slight increase. The gross value of metal amounted to $5,911,000, and despite the very unsatisfactory condition of its markets, notably lead, the company ought to be in a position to make some dividend announcement in September."

British Columbia Copper Company.

First, as to the increase of gold shown in recent reports published relative to results obtained by the British Columbia Copper Company; probably this is due to the fact that the company has during June and July been smelting ore from its Wellington group mine, in which gold is the chief constituent of value, as well as copper ores from its Mother Lode and Oro Denoro mines. In June approximately 1,500 tons of Wellington mine ore was shipped to the smeltery, that having been the first month in which ore from that source was received at the company's works at Greenwood. Now, information obtained when I visited the mine last winter was to this effect—the greater part of the ore up to that time opened by development workings was oxidized and contained practically no metal of value other than gold, which, was stated to run from $6 to $7. per ton. In places bunches of sulphide ore, arsenical iron pyrites, had been found, some of these comparatively large; from this ore assay returns up to $20 per ton and even better had been obtained, chiefly in gold, but with about 2 per cent. copper. Allowing that 1,500 tons of oxidized ore had been smelted in June, this would probably add $9,000 to $10,000 to the value of gold recovered in that month. It may be, though, that these figures are high for June, since it is not unlikely the tonnage of copper ore smelted that month was reduced proportionately. Again, a little gold occurs in association with the copper, so that allowance should be made for this as well. These comments are not intended as a precise statement of the amount of gold recovered by the British Columbia Copper Company, but to indicate what is probably the chief factor in the improved situation alluded to by "The Globe." Since the Wellington group mine shipped about 2,500 tons of ore in July, it will easily be seen that returns for that month should show a still larger proportion of gold recovered, conditionally, of course, that the ore was smelted and not stored at the smelter.

Consolidated Mining and Smelting Company.

Now as to the larger percentage of gold shown in the returns of the Consolidated Mining and Smelting Company for the fiscal year ended June 30th, 1910, as compared with that of the immediately preceding fiscal year: if the tables printed in the Canadian Mining Journal of August 15th, be referred to (for my contribution on that date gave particulars of the opera-

tions and results of the company for its last fiscal year) it will be seen that the percentage of gold was 47.6, not 46.6 as stated by "The Globe." Without being informed as to the source of the larger proportion of gold produced at the company's big works at Trail, I state it as my opinion that most likely the increase, or most of it, came from the company's War Eagle mine, for it is well known that much ore containing a higher average gold value than usual was discovered in that mine during the fiscal year under review. It is worthy of note that the tonnage of ore from the company's Centre Star group of mines at Rossland, which includes the War Eagle, was 194,013 for the year to June 30th, 1910, as compared with 183,040 tons for that to June 30th, 1909, and it seems reasonable to conclude that the War Eagle contributed its share to the increase shown, and that of ore carrying a higher value in gold than in the preceding year mentioned. But apart from the question of the proportion of gold in the total value of metals produced during the year, the importance of which can only be properly determined by an analysis in detail of the several conditions which led to that result, there are two plain facts warranting much satisfaction with the progress made during the past fiscal year, at least as viewed from an industrial point of view. These are that (1) the tonnage of ore received was 485,457 tons in 1909-10, as against 347,417 tons in 1908-09, and (2) that there was substantial increases in gold and copper recovered, which left a considerable margin in value above the decreases in silver and lead. The quantities of metals produced in the respective fiscal years are shown in the following table:

	To June 30th, 1909.	To June 30th, 1910.
Gold, ounces	114,929	137,614
Silver, ounces	2,443,475	2,162,408
Lead, pounds	43,675,077	42,365,816
Copper, pounds	4,637,631	5,974,959

These figures show that against a loss of approximately 1,300,000 pounds in lead and 280,000 ounces in silver, there was a gain of nearly 22,700 ounces in gold and 1,337,000 pounds in copper, the final result being a gain in value of $406,000.

General Conclusions.

Speaking generally, I do not know of any changes in conditions that warrant an assumption or conclusion that there has lately been a definite improvement—that is, increase in average value—of ores mined in British Columbia. There will, of course, from time to time be changes in value of ores mined in the larger mines of the province, except in such cases as the Boundary mines from which thousands of tons of ore are taken daily. There will, also, be improvements in mill and smelter returns, the result of the use of machinery or metal-saving appliances better adapted for the recovery of the valuable metals contained in the ores treated; or, it may be, more efficient methods will be followed, so that the precentage of recovery is greater, but taking into consideration only the marketable metal contents of ores, no facts nor changed conditions have come to my notice that justify a belief or conclusion that the general run of ores mined in this province shows increased average values.

A few words in regard to the exceptions made in the foregoing paragraph—it may be added in explanation that in the case of the Granby mines, at Phoenix, the production of which over a period of seven months of the current year, to July 31st, has been on an average of 3,350 tons a day, or of the British Columbia Copper Company's Mother Lode mine, producing approximately 1,000 tons a day, the bulk mined and smelted is so large that the effect of shoots of ore of better grade being occasionally met with does not materially affect the general average value of the yearly production.

There are other instances, though, where different results are experienced, notably in such a case as that of the War Eagle mine, Rossland, where, as already intimated, a decided increase in value has been a gratifying experience within a period of probably less than twelve months. Not that such good quality ore had not previously been found in that mine, but that after the practical exhaustion of shoots found earlier, a large body of high-grade ore, the existence of which was not previously known, was found and is now being mined.

In closing, it may prove of interest to have an allusion made to the Nickel Plate mine, near Hedley, Similkameen. Eighteen or twenty months ago the then owners of that mine, which is the only comparatively large mine in British Columbia from which gold ore is being milled, were anxious to sell the property. A thorough sampling convinced a competent engineer, familiar with the mine, that it could be restored to a similar profit-yielding basis to that it had formerly occupied, so he unhesitatingly recommended its purchase by New York capitalists. To-day there is ore being mined from an ore body 80 feet in width and of an average value of $12 per ton. Further, improved milling practice and more efficient gold-saving appliances are together showing such markedly better results that this year's tonnage of ore mined and milled—should no unforeseen contingency arise to interfere with operations as now being carried on—will be at least 25 per cent. larger than in any previous year, while the average recovery of gold per ton will also be higher. To those who, like the writer in the Toronto "Globe," are not informed as to the reasons for such improvement in conditions, it may appear that higher-grade ore is being mined and milled, but to those who know the facts it is manifest that competent management and the utilization of improved methods and appliances are chiefly responsible for the decided change for the better that has been brought about.

CORRESPONDENCE.

The Editor, CANADIAN MINING JOURNAL.

The phrase "intellectual proletariat" has been in use for many years in connection with the Socialist movement, but not at all in the sense in which you employ it, as denoting ineptitude or want of training. As used by Socialists it includes those brain-workers of all kinds who are dependent for their living upon their employment by others, and, therefore, should realize that they have common interests with manual labourers who are in the same position economically, notwithstanding that the latter receive "wages," while the intellectual proletariat draws a salary or commission.

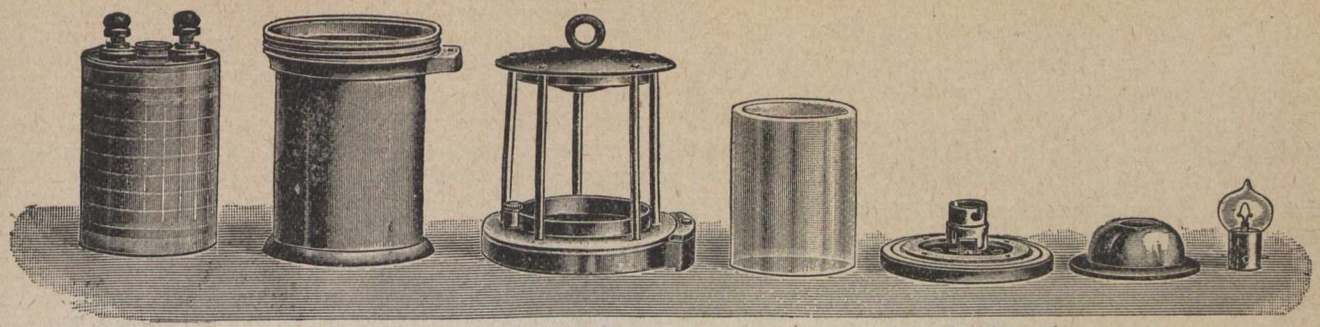
Yours truly,

PHILLIPS THOMPSON.

119 Indian Road, Toronto,
August 18th, 1910.

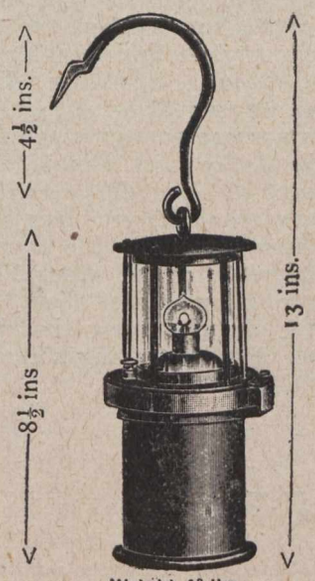
The daily duty of the 1100-lb. stamp used at El Oro, Mexico, is 10.33 tons. The ore is crushed to 6-mesh or 8-mesh. The stamps drop eight inches, 101 times per minute.

INDUSTRIAL SECTION.



THE "GOOD LUCK" MINING LAMP.

The "Good Luck" miners' safety lamp is of the newest type of self-contained electric light. The casing is one aluminium casting free from zinc. It is threaded round the upper circumference and gives a substantial fixing for the lantern base, which is bored out and threaded to suit. Thus is formed a complete, dust-proof, gas-proof, and air-tight combination. A heavy glass cylinder, ground to suit exactly, is fitted as a lantern glass and protects the lamp from all possible injury. The lamp itself is one of the latest metallic filament tungsten lamps, taking one watt per candle power, as against four watts per candle power taken by lamps of this form with a carbon filament.



Weight 4¾ lbs.

Accumulator.—The two negative electrodes and the one positive electrode that constitute the elements of the battery are especially strong and efficient. The positive consists of a heavy collecting frame in one piece and formed of longitudinal rings superposed at regular intervals. The frame thus formed carries the active material which is allowed to harden on it. By this arrangement not only is the manufacture of the collecting frame much simplified, but a battery of minimum weight and maximum surface is obtained, one that in its formation prevents disintegration. Of the two negative electrodes, each consisting of a double cast lead lattice cylinder, one fits inside of and the other outside of the positive. By this means the entire surface of the positive electrode is in action.

The accumulator is enclosed in a celluloid case, closed at the top with a double cover, and absolutely air-tight. Therefore the lamp can be operated in any position.

The lamp is locked by a magnetic lock and cannot be opened by any unauthorized person. It will burn for from ten to twelve hours with a discharge current of 0.75 amperes, giving a light of about 3 candle power. Orchard & Parker, Stair Building, Toronto, are the Canadian agents.

PAPER MILL PUMPS.

Capacity Equal to the City of Montreal Water Works.

The remarkable part played by pumping machinery in modern pulp and paper mills may be realized from the contract recently awarded by the Powell River Paper Company to the John McDougall Caledonian Iron Works Company, Limited, of Montreal. This contract calls for 11 Worthington centrifugal pumps varying in size from 3 inches to 12 inches at the discharge outlet. Two of these pumps, each having a capacity of 4,200 gallons per minute and driven by electric motors, will carry ground wood stock from the grinders to the screens. Two others, having a capacity of 4,000 gallons per minute each, and direct connected to water wheels, will carry ground wood stock to deckers. The remaining pumps will be used in connection with beaters and digesters and for boiler feed and general purposes.

These 11 pumps will have an aggregate capacity of 37,000,000 gallons daily, which is nearly equal to that of the city of Montreal water department, and will be built in the works of the company on William street. The Powell River Paper Company is backed chiefly by Minneapolis capitalists, and the mill is now being erected on the Powell River, a few miles from Vancouver, B.C.

The Jeffrey Manufacturing Company, office and works, corner Cote and Lagauchetiere streets, Montreal, Que., also having a Toronto office formerly in the Dineen Building, 8 Temperance street, has removed the Toronto office to more commodious quarters at 174 King street east.

Mr. H. W. Scott, mechanical engineer, formerly connected with the home office of this company in Columbus, O., is now in charge of the Montreal office and works.

The Jeffrey Manufacturing Company is an old, established concern, making a specialty of elevating and conveying appartus for handling all kinds of materials in lumber camps, mines, quarries, as well as conveying apparatus for handling materials from the docks, loading to vessels.

New machinery has been installed at the Montreal works for more economical production.

This company also has nearly 100 branch offices situated in the leading commercial centres all over the world.

PERSONAL AND GENERAL.

Mr. H. Mortimer-Lamb has returned from Europe.

Mr. W. S. Lecky has resigned his position as sales manager of Mussens, Limited.

Mr. John Hugh McMillan has been appointed Gold Commissioner for the Portland Canal Mining Division, B.C.

Mr. A. A. Hassan has returned to Brooklyn, N.Y., after a visit to Porcupine. Mr. Hassan will again visit Porcupine during September.

Mr. W. H. Trewartha-James, general manager of the Tyee Copper Company, Victoria, B.C., left that city on August 16th to proceed to the Ketchikan district, Southeast Alaska, on a business trip.

Professor Hardwick, professor of mining at Sheffield University, England, has been visiting mining districts in British Columbia. About the middle of August he was at Victoria, whence he proceeded to Nanaimo to see the coal mines there.

Mr. Sidney Clarke Ells, of Ottawa, son of Dr. R. W. Ells, of the Geological Survey, recently visited Queen Charlotte Islands. Five or six years ago he spent part Ells, of the Geological Survey, recetnly visited Queen Charlotte group, at the time his father was making a geological examination of coal measures there.

Mr. Mason T. Adams, formerly general manager of the Britannia Mining & Smelting Company, with a big copper mine on Howe Sound, near Vancouver, B.C., but now consulting mining engineer with headquarters at Denver, Colorado, recently went up to Portland Canal to investigate the mining situation in that district.

Mr. J. W. Bryant, who for three years has been mining engineer for the Tyee Copper Company. recently left Victoria, B.C., for England. During the first year of his association with the operations of the company he was superintendent of the Tyee mine, at Mt. Sicker, Vancouver Island, and since the practical exhaustion of the big ore body in that mine he has been engaged in examining mining properties for the company, covering an extensive field on the Pacific coast, from Mexico to Alaska, both countries included.

The Westinghouse Electric & Manufacturing Company has recently received an order from the La Blanca & Anexas Mining Company for forty type MS motors to be used in the company's mill at Pachuca, Mexico. The motors ordered range in size from 5 h.p. on the pulp thickeners to 75 h.p. on the tube mills. The order also includes seven 250 k.v.a. O.I.S.C. transformers, and one 12-panel switchboard.

The American Society of Engineering Contractors, of which Mr. D. E. Baxter, of 27 William street, New York City, is president, and Mr. D. J. Hauer, secretary, will hold their annual convention in St. Louis, on September 27th, 28th and 29th in the coliseum. The local committee of arrangements is E. H. A. Badie, chairman; J. L. Westlake, W. C. Swartout and L. C. F. Metzger. Papers will be delivered by J. B. Goldsborough and Ed. Wegmann, both of New York, on "Dam Construction for City Water Supplies," and by Geo. C. Warren, of Boston, on "Work Preliminary to Street Paving and Road Work." A banquet will be held, and several sight-seeing trips will be made to important engineering works in and around St. Louis.

The American Peat Society, through the efforts of President Dr. Eugene Haanel, Director of Mines, Department of Mines, Canada, held a series of meetings from July 25th to July 27th at Ottawa. The Canadian Government has a fuel testing station at Ottawa, which is equipped for the testing of power purposes for peat only. The power plant consists of a double-zone peat gas producer, wet coke scrubber, tar filter and dry scraper, a 4-cycle single-acting Keating gas engine of 60 effective horse power, a 50 k.w. direct-connected Westinghouse direct-current generator, and a resistance stand for absorbing energy generated. The power generated at this station will later be utilized in running the machinery of a metallurgical laboratory. The peat for the operation of the producer will be supplied from the peat bogs owned by the Dominion Government, near Caledonia Springs, about 40 miles distant from Ottawa, and has an area of about 300 acres. The Anrep process for manufacturing air-dried peat is employed, the plant installed having a capacity of about 30 tons per day of air-dried peat.

SPECIAL CORRESPONDENCE

NOVA SCOTIA.

Dominion Coal Company, Limited, Employees' Benefit Society.

The new society is now in full operation, and a committee has been nominated to wait upon the Nova Scotian Government in Halifax and lay before them a statement of the work which it is hoped the society will perform. It is believed that the committee have a very good case to lay before the Government, and have excellent grounds for requesting a continuance of the grant which has been made in the past to the Colliery Relief Societies. On the 1st of July the accumulated assets of the various relief societies which have amalgamated to form the Dominion Coal Company Employees' Benefit Society amounted to, roughly, $47,000. The Dominion Coal Company has made an initial contribution to the society of $21,000, making a total fund of $68,000. It is estimated that the liabilities of the society for payments to widows and orphans already dependent on the funds amount to $24,000, which leaves the new society with an actual surplus of $43,000, with which to begin what everyone hopes will be a long and beneficial life.

A comparison of the benefits which will be given under the new schedule with those given under the constitutions of the old relief societies shows that the provisions which will be made in future for incapacity or death of the bread-winner will be very much more adequate. Under the old schedule a man incapacitated from work either by sickness or accident received $3.50 per week for twenty-six weeks; at the expiration of which period the extent of further relief allowance was decided by the managing committee. Under the new schedule, men similarly incapacitated will receive $6 per week for twenty-six weeks, $3 per week for a further period of twenty-six weeks, and then $2 per week for the two years following; after which, if the disability continues, it is in the power of the officers to make special grants in deserving cases. Under the old schedule, the death claim varied from $60 to $100. Under the new schedule, the amount immediately payable at death to dependents will be $100. It is not intended that this amount should be in any way analogous to a death payment under the ordinary insurance society or under the Compensation Act, but it is intended merely to cover the immediate necessities connected with interment. Adequate provision is made for widows, who, under the new schedule, will

receive $8 per month for five years, compared with $8 per month for one year only under the old schedule. The sum of $3 per month is allowed for each child until it reaches the age of fourteen years; under the old schedule the allowance was $2 per month until the age of thirteen years. In addition to the foregoing benefits, provision is made for special grants to members partially or totally incapacitated by the loss of eyesight or limbs. These special grants are in all cases in addition to the regular weekly indemnity. These much-extended benefits require, of course, a larger income, and the workmen have increased their monthly contribution from 25 cents to 50 cents per man. The company has agreed to contribute equally with its men; that is, it will pay into the funds of the society monthly an amount equivalent to that collected from the workmen. The Nova Scotian Government have contributed in the past to the relief societies three-tenths of a cent per ton raised, which is equal to, approximately, 12 cents per month per man. Therefore, the society will have an income of about $1.12 per month per man. The rules of the society make no distinction between sickness and accident, and the records of the past show that only one-third of the money paid in relief has been disbursed for accidents, while two-thirds has been paid out for relief during sickness. It is calculated that in the case of a normal family, consisting of the mother and four children, they would, in the event of the death of the bread-winner from any cause, receive in relief payments approximately $2,000, extending over a period of ten or twelve years.

The aim of the society is, in case of incapacity for work or death, to provide for those dependent upon weekly earnings a system of relief which shall approximate as nearly as possible to the normal conditions under which a workman receives his income, and to avoid what is one of the worst features of some forms of industrial compensation, namely, the payment of comparatively large sums of money to persons not accustomed to its possession. The relief payable is based on the necessity, being graduated according to the size of the dependent family.

Considerable attention and care has been paid to the framing of the constitution of the new society, so that it may have a long and useful life and properly carry out the very needful purpose for which it is designed, and the committee who are deputed to interview the representatives of the Government have no reason to be ashamed of the society they represent, which should have the hearty co-operation and commendation of all who are sincerely interested in the welfare of those employed in the mining industry.

Glace Bay.—The outputs of the collieries this summer have been consistently high, but for the first half of August the production has been considerably interfered with by the holiday season. The large production of the mines during June and July was partly accounted for by the fact that the returned strikers were in need of money, but now that the pinch has passed away, the men are not working so regularly. Prospects for the winter shipping are, however, by no means good, and the wise man will make all the wages possible before the close of navigation. One of the strongest arguments against strikes is that trade lost through the cessation of production is difficult to regain, and there probably never was a case where men had more to lose and less to gain by striking than those Nova Scotian miners who were brought out on strike on the order of the United Mine Workers of America. As was intended, the strike has worked permanent injury to the coal trade of Nova Scotia.

Recent events have shown that the Canadian workman is awaking to the fact that international unionism and the cessation of work at the edict of some labour leader in the United States is working great harm to the industrial interests of Canada. There is a striking similarity between the Grand Trunk strike and the U. M. W. A. strike at Glace Bay, and in every case where Canadian unionists have allowed themselves to be dominated by strike leaders from the States, it has been the Canadian workman who has lost his work and his savings. There was the trouble in British Columbia in 1903, brought about by the so-called Brotherhood of Railway Employees; the C. P. R. machinists' strike, the abortive U. M. W. strikes in Alberta and British Columbia; the U. M. W. strikes at Inverness and Glace Bay, and the Grand Trunk strike, which is so recent in memory. In every case the tale has been the same. The direction of affairs has been in the hands of strangers from the United States, unacquainted with local conditions; the peculiar intimidatory tactics of labour warfare in the United States have been introduced to the uncongenial laws of Canada, the strike funds have been wasted in riotous living and "rake-offs." Then, when irremediable harm has been wrought to the industry affected, and the savings of the men who have followed their careless leaders have been entirely dissipated; when hitherto law-abiding men and women have undergone the indignities of jail incarceration and the inevitable demoralization of mob-rule and license, these "international officers" negotiate a so-called "settlement" or they advise their deluded followers to return to work. The final upshot is that many of the strikers cannot get back their old employment, as their places have been filled by newcomers, and they have perforce to seek a fresh employment and a new residence, if by good luck they may obtain such. Long before this the gentleman from Columbus, Ohio, Indianapolis, or some city of the United States, has returned to his native air, sleeker in person and fatter in purse, and possibly secretly amused at the gullibility and ingenious enthusiasm of the Canadian workman, for their is no doubt these gentlemen possess a sense of humour.

The P. W. A. Picnic.—All the collieries were idle on the 13th of August, on which date the Provincial Workmen's Association held their annual picnic. By the courtesy of the Coal Company, free transportation was granted to the members of the society and their families from the mines to Sydney, from whence they were conveyed by the Coal Company's steamers to Baddeck, a sail of about one hundred miles up the Bras d'Or Lakes. The picnic party was quite a large one, numbering in all some 4,500 people, and the inhabitants of peaceful Baddeck must have been pleasantly surprised at the orderly behaviour of this immense crowd and their prosperous appearance after all that has been written in Nova Scotian newspapers about the oppressed and desperate condition of the miners in Cape Breton before the United Mine Workers of America came to their rescue. The picnic was a demonstration of the strength of the P. W. A. which was worth while, and we think this large gathering of miners and colliery employees compared favourably in all the outward aspects of intelligence and prosperity with any similar gathering either on this continent or across the water. It says a good deal for the self-control and the law-abiding character of the native organization that, throughout all the long period of contumely and intimidation to which they were subjected through the U. M. W. strike at the direction of the foreign officers of this alien organization, they did not once indulge in reprisals but went about their own business in the manner they thought best, which, after all, is what most Canadian working men desire and intend to do.

QUEBEC.

Considerable interest has been excited by the development of the copper deposit located on Lot XXII, Range II, Weedon, and about five miles northeast from Weedon station. The property was purchased from "Jack" Macdonald, of Sherbrooke, about a year ago, by Mr. John R. Allan, of New York, and work was commenced during the past winter. The plant consists of one two-drill compressor, two rock drills, one steam hoist and boiler and diamond drill. Shaft with mainway has been put down to one hundred and ten feet on an angle of about 45 degrees, following the footwall, and at this depth the vein is drifted on to a distance of about one hundred and sixty feet to the southeast and about two hundred and thirty feet to the northwest. At the bottom of the shaft a crosscut has been driven through the

ore body to a thickness of about forty feet. In the northwest drift and at a distance of about two hundred feet a diamond drill hole has been bored along with the vein to a further depth of two hundred and fifty feet in ore of same quality as found in drifts and shaft. A sample of ore from the northwest drift gave the following assay:

Gold	None.
Silver	1.6 ounces per ton.
Copper	14.76 per cent.
Iron	35.6 per cent.
Zinc	5.99 per cent.
Sulphur	41.23 per cent.

The deposit occurs in the sedimentary rock and the frequent granite extrusions apparently account for the deposition of the ore, and the country rock is more or less mineralized over a large area. About a mile distant occurs a range of eruptive hills and towards these hills and to a distance of several miles are found similar copper showings which promise well for the location of other valuable deposits.

The work at the mine has been carried on with energy and by practical men, who are highly gratified by the results so far obtained.

ONTARIO.

Cobalt.—Dividend figures for the first half of the present year show that three Cobalt companies have already redeemed their capital and that several others have almost reached that point. Nipissing has paid 87 per cent. and the cash on hand is more than sufficient to pay the other 13 per cent. on a capital of $6,000,000. In addition to this the ore reserves are larger than ever before and new ground is constantly being opened up. A large portion of their area is still practically untouched, and the probability is that other rich discoveries will be made. Although the Crown Reserve has been shipping only about two years and a half, it has paid 106 per cent. on a capital of $2,500,000. The cash reserve amounts to practically half a million and new discoveries have lately made a material increase in its ore reserves. The T. & H. B. has paid 16,300 per cent. in dividends, but this is due to the extremely low capitalization of $7,761. In addition the greater part of the dividends were paid with money received from the sale of the Silver Queen property. Other companies, such as the Buffalo, Kerr Lake and McKinley-Darragh, have made large dividend disbursements, and are still in a very strong position. During the last few months many important discoveries have been made, which will largely increase the ore reserves. The majority of these new veins were found underground.

The Dr. Reddick Larder Lake mines have gone into liquidation, and a meeting of the creditors was held in Ottawa on August 5th to settle the affairs of the company. This property was the best known in the Larder Lake district and also had the best showing. A considerable amount of work was done on it, but the results were not satisfactory.

The T. & N. O. Railway has started a passenger service on the Kerr Lake branch and is running two trains daily each way between Cobalt and the end of the line. This service fills a long-felt want, as the facilities for getting out to the mines of this section were formerly very poor. It is understood that the Nipissing Central will also build a spur line to the same section of the camp.

In order to develop the big smaltite vein found on the Fisher-Eplett some time ago a crosscut is being run from the 200 foot level of the Shamrock shaft on the adjoining property. Two promising veins have already been cut in this working, but they carried low silver values. On the Princess property, which also belongs to the La Rose Consolidated, a new vein has been found at the 130 foot level about 160 feet south of the shaft. It shows about five inches of high grade ore and is considered the best vein discovered on the property. This will make three high grade veins that are now being worked.

A new high grade vein has been found on the Townsite property near the Buffalo boundary. It is about two inches wide and in addition the wall rock is well mineralized.

Reports from the Mattagami Iron deposits are encouraging and Professor Baker, who reported on them for the Government, was very favourably impressed. Another exposure of ore has been found and has been traced for about 1,000 feet. It is a high grade of iron and suitable for all commercial purposes. In addition to many syndicates who are interested, the U. S. Steel Corporation and Mackenzie & Mann have engineers in the field.

On the Russel claim in the Gillies Limit a considerable amount of trenching has been done this summer and several promising veins have been discovered, although the silver values are low.

The O'Brien, Nova Scotia and Temiskaming lately made another shipment of bullion to England, consisting of 110 bars weighing approximately 98,000 ounces. The shipments of bullion from Cobalt to date are as follows:

	Ounces.
O'Brien	174,666
Buffalo	68,500
Crown Reserve	15,931
Nova Scotia	46,700
Temiskaming	40,000
Total	345,797

In the United States Circuit Court a memorandum has been filed denying the motion of H. M. Hitchings on behalf of himself and other stockholders in the Cobalt Central against Messrs. Nevins, Maloney, Eldredge, Eakins and the Standard Cobalt Mines, Limited, for an order directing the defendants to withdraw the proceedings instituted by them in Toronto for the liquidation of the Standard Cobalt Mines, pending the result of action now in the Circuit Court for that district.

A report recently submitted to the directors of the Crown Reserve stated that although the mine had produced 8,000,000 ounces of silver, the ore reserves were greater than at any time in its previous history. The new vein found 900 feet up the lake has the best showing on the 200-foot level. A raise has been put up eighty feet and it shows high grade ore all the way.

The big mill on the O'Brien property is credited with making an extraction of 90 per cent. of the silver contents of the ore. The total cost, including tramming and marketing charges, is fourteen cents per ounce. Three different products are obtained, jig concentrates, table concentrates, and the product from the cyanide plant. The first two are shipped to the smelter as high grade ore, while the latter is melted down into fine silver bullion which is shipped direct to England.

The drop in Kerr Lake stock is due to the rumour that the next dividend will be at the rate of forty cents per share instead of the usual fifty cents.

At the Reeves Dobie property in Gowganda the ground has been cleared and the new concentrator building is being erected. The machinery, part of which is already on the road, consists of four Nissen stamps, and six tables. This will be installed as rapidly as possible. During this summer the Millerett has shipped three car loads of ore down the Montreal River. Two more car loads are ready sacked in the ore house, but on account of the heavy transportation charges will not be shipped until next winter. The total tonnage of ore shipped from Gowganda and Elk Lake was 436 tons. A new discovery has been made on the Morrison. The English syndicate did not take up its option on the property, and it is now being worked by the original owners.

Mr. E. P. Earle, president of the Nipissing and a director of the La Rose, states that no new steps have been taken in the proposed Cobalt Merger. He was enthusiastic over the recent developments in the Nipissing, where some exceedingly fine ore has been opened up in the Mayer, No. 64 and No. 122 shafts. In the No. 64 on the 270 foot level the vein will average over a foot of high grade ore.

Porcupine.—Two companies are now in the field to generate electric power for the mines, and it is expected that they will have it ready by June of next year. It is probable that the length of time necessary has been under-estimated and that it will take considerably longer. Mr. E. A. Wallberg, head of the Mines Power Company of Cobalt, will erect one plant, having an estimated capacity of 7,000 horse-power, while Messrs. Bilsky and Symmes have obtained a lease on Sandy Falls in Mountjoy Township, where they expect to generate 4,000 horse-power.

The plan of building the dam at the mouth of Frederickhouse River, in order to raise the water so as to allow the running of gasoline boats, has been abandoned. The Government caused this work to be stopped, and although permission to continue was subsequently given, the restrictions were such that the promoters decided not to go on with it.

Another new section known as Cripple Creek is coming in for a good deal of attention. It is about thirty-five miles southwest of Porcupine and some very good discoveries are reported to have been made.

Work has been started on the seventeen Dobie claims purchased by Mr. Lorne McGibbon and associates. A large number of quartz veins have been discovered and some of these show free gold. Twenty-four men are now working and this number will probably be increased when supplies are cheaper.

The maps and reports of a limited section of this district, which were made under the supervision of Professor Miller, Provincial Geologist, have been completed. Three maps have been issued. One takes in the townships of Whitney, Tisdale, Deloro, Shaw, and part of Mountjoy and Ogden, embracing an area fifteen by twelve miles, while the two others show particular areas in Tisdale, one being a section near Miller Lake and the other the country near the Dome and Foster properties. The report states that the quartz outcrops, which are very numerous, are found in rocks of both Keewatin and Huronian periods and that the age of the rocks does not appear to have any bearing on the character of the veins either as regards form or gold content. One characteristic of the veins is that they are irregular as to width. They will widen out into large masses of quartz, sometimes one hundred feet in width, and then narrow abruptly. The geology of the country has been worked out as rapidly as possible and the maps will doubtless be inaccurate in some of their details. The Department, however, considered it would be better to publish them as soon as possible, when they would be of most service. During the rest of the summer the field work will be extended and new maps will be issued during the winter.

BRITISH COLUMBIA.

Mr. Wm. Fleet Robertson, provincial mineralogist, returned to Victoria on August 11th from an exploratory trip in Chilcoten district. Shortly afterwards he went to Lillooet to obtain information relative to mining operations and the prospects of the industry in that district.

Captain Desborough, of the Explosives Department of the Home Office, London, accompanied by Mr. Joseph G. S. Hudson, of the Mines Branch of the Dominion Department of Mines, Ottawa, has been visiting British Columbia. At Nanaimo, Mr. Hudson stated, according to a local newspaper, that Captain Desborough had come to Canada at the request of the Dominion Government to make an examination of, and advise as to the law in Canada regulating the manufacture, use, and testing of explosives. In this connection, it is understood that a bill is being prepared under the direction of Hon. Wm. Templeman, Minister of Mines, to provide for the regulation of the manufacture, etc., of explosives, in which the Mines Branch is interested, owing to there being many accidents in mines in the Dominion due to premature explosions or other results of the use of explosives. It is further stated that at the conclusion of Captain Desborough's tour the Minister of Mines will arrange for holding a conference of those more particularly interested—manufacturers of explosives, representatives of departments of mines, and others —to submit for their consideration a draft of a bill prepared as above suggested.

Cariboo.—Mr. John B. Hobson, who for many years conducted hydraulic placer-mining operations on a large scale in the Quesnel Forks section of Cariboo district, has been visiting placer-gold mines in the vicinity of Barkerville, Cariboo division. It is stated that he has purchased from a well-known miner a placer mine situated on Chisholm Creek, near Stanley.

Slocan.—The management of the Lucky Jim mine, near Bear Lake, is energetically preparing for a resumption of ore-shipping. Fifty men are employed putting in order the old wagon road from Three Forks to Bear Lake, a distance of three and a half miles, so that materials for reconstruction of buildings, ore-bins, tramways, etc., can be hauled to the mine. Men are also working at the mine getting things in readiness for production so soon as it shall be practicable to haul ore to the railway at Three Forks for shipment thence to the United States. At the Rambler-Cariboo mine, too, there is activity, supplies having been taken in by pack-horses. The wagon road from Three Forks will also serve this mine until railway transportation shall again be available. The lessees of the Whitewater group of mines and the representatives of the English companies owning these properties met recently in Vancouver, but there will necessarily be delay in determining what shall be done towards providing for resuming production, owing to the fact that some of those chiefly interested reside in England, while the lessees are in British Columbia.

Work at mines about Sandon and Cody is being continued without interruption. The largest producer in this part of the district in 1909 has been the Consolidated Mining & Smelting Company's Richmond-Eureka mine, which has shipped to Trail about 2,600 tons of silver-lead ore. The Standard, on Four-Mile Creek, Slocan Lake, has made an output of about 900 tons of sorted silver-lead ore, while the Van Roi has sent to the Wakefield mill for concentration a comparatively large quantity of silver-lead-zinc ore. Both the Ellis Silver Mining Company's Eastmont mine, on Ten-Mile Creek, and the Mollie Hughes, near New Denver, have been small shippers this year.

Rossland.—Although the big power plant over the Le Roi main working shaft is not now being used, miners are taking out ore from near the old Le Roi shaft, and there is a good prospect of their being similarly employed for several weeks longer. Air for operating machine drills, etc., is being obtained from the Le Roi No. 2 Company's compressor. The ore is sent to the Consolidated Mining & Smelting Company's smeltery at Trail.

Besides having a big shoot of ore containing good value in gold in its War Eagle mine, the Consolidated Company is mining and shipping ores from both the Idaho and Iron Mask of the Centre Star group. Le Roi No. 2 is regularly maintaining production from its Josie mine, sending the first-class ore to Trail for smelting, and putting a smaller quantity of second-class ore through its concentrating mill.

Nelson.—The mines in Nelson mining division sending ore to the smeltery are the Queen Victoria, near Nelson; Yankee Girl, at Ymir; Emerald, at Salmo, and several others which are producers on a smaller scale. The Granite-Poorman, near Nelson, and the Queen and Nugget, in Sheep Creek camp, are operating stamp mills on gold-quartz ore. Late reports from Sheep Creek give accounts of increasingly favourable developments on several properties, notably on the Nugget and Mother Lode. The last-mentioned mine is being worked by Mr. John McMartin, formerly of Cobalt, whose engineer is credited with the statement that on the fifth level, which has been driven about 700 feet, the vein has been encountered at a depth of 480 feet from the surface. This development is stated to be regarded as satisfactory and quite up to expectations, the ore maintaining both its width and average good quality.

Boundary.—A disastrous fire occurred at the Granby Company's No. 3 tunnel on August 12th. Practically all the sur-

face works of this unit—there are four shipping units at these mines, three being on the Knob Hill Ironsides and one on the Gold Drop side of the mountain—were destroyed. Unfortunately, the destruction of shipping facilities at No. 3 will temporarily reduce the output so that it will be necessary to reduce the number of blast furnaces to be kept in continuous operation at the company's smeltery, from six to four. Production had been at the rate of about 3,000 tons per diem, and this gave a sufficient supply for six furnaces. It is hoped, though, this decrease in the ore supply will prove temporary and not affect operations for long. No. 2 tunnel and the Gold Drop unit are both connected with the Canadian Pacific Railway only, while the output from No. 3 was shipped over the Great Northern Railway. Both railways are connected with the shipping bunkers at Victoria shaft, so it will still be practicable to ship some ore by the Great Northern. The loss of property from this fire included new machine and blacksmith shops erected last winter, crusher house and plant, and two residences, one of which was that of the mine superintendent, Mr. O. B. Smith, Jr. A rough estimate of the loss places that of the mining company at about $100,000, part of which will, however, have to be borne by insurance companies.

District newspapers state that work is to be done with the diamond drill at the British Columbia Copper Company's Wellington group mine, from which ore has been shipped of late. Production was commenced about the beginning of June, and since then some 5,000 tons of oxidized ore has been shipped to the company's smeltery at Greenwood. The chief valuable constituent of this ore is gold, which has been stated to average $6 to $7 per ton. Development work done prior to the recent completion of construction of a spur from the Eholt-Phoenix Railway has made available a considerable quantity of ore; further prospecing, with the diamond drill, is expected to prove the occurrence of other ore bodies not yet reached.

Similkameen.—The ore body in the upper workings of the Hedley Gold Mining Company's Nickle Plate mine is approximately 20 feet in width and of an average value of $12 per ton in gold. In the lower adit, two ore bodies are being opened by north and south drifts. To provide for the conveyance of ore from this lower adit a branch electric tramway is being constructed from the main tramway between the old workings and the 40-stamp mill at Hedley. The new tramway will afford better facilities for conveyance of ore, the grade being easier than on the main tramway above the point of junction of the two lines. It is probable that ore from the old workings will also be taken out over the new line, after the necessary connections shall have been made between old and new workings. On the Bulldog claim of the Nickle Plate group an ore shoot 25 to 35 feet in width is being opened. Additional equipment is being installed at the stamp mill and cyanide plant, including tube mill, Deister concentrating tables, a circular filter press, and other appliances to assist in making a closer saving of gold.

Coast.—At the Great Granite Development Syndicate's Lucky Jim mine, on Valdes Island, a power plant, lately put in, is now being operated. This consists of an 80 horse power h.r.t. steam boiler, half of a Canadian Rand 15-drill air compressor, two 3¼-inch machine drills, 7x10 double cylinder Lidgerwood hoist, and all accessories. The plant is housed in a 40 x 60-foot frame building covered with corrugated galvanized iron and having room for a second boiler of like size, and the other half of the compressor when these additions shall be needed. A 40-foot gallows frame, with a 9-ton ore-bin or skip pocket, has been erected over the shaft, which is 115 feet in depth. At 105 feet drifts are being run both ways from the shaft in an ore body 8 feet in width so far as opened. The mine is situated about three miles from tidewater, communication being a short distance by tramway to a logging road and thence by the road to the sea. Shipment of ore to the Tyee Copper Company's smeltery at Ladysmith, Vancouver Island, will shortly be in progress.

News from Portland Canal is generally to the effect that on several properties development work is being done, and with promising results. The great harm done the new district by the sending out of such grossly-exaggerated statements as were freely published a few weeks ago, has been recognized, and now even newspapers that were among the chief sinners in the direction of disseminating the absurd stories to which publicity was given are now protesting the folly of such a damaging course. The Portland Canal Mining Company expects to soon commence concentrating ore at its mill, the first unit of which is nearly completed. Good accounts also come of the prospects of the Red Cliff mine, which is stated to have a large surface showing of copper-gold ore, to cut which at depth work is now being done. The excitement over Portland Canal has driven most of the prospectors from the Skeena country, but there are such promising indications in various parts of that big district that its mineral resources will not long be neglected.

GENERAL MINING NEWS.

NOVA SCOTIA.

Halifax.—The Libby gold mine at Brookfield is to be pumped out and operated. Two or three prominent Canadians have formed a syndicate to tackle the mine. Mr. Percy Brown, formerly assistant manager of the Boston-Richardson, is the moving spirit.

Bass River.—A group of Oxford investors has taken hold of the abandoned silica (infusorial earth) deposit and plant here. Much energy is being displayed and there is ground for the belief that the venture will be successful.

QUEBEC.

Montreal.—The appearance of Superintendent Denis' Annual Report of Mining Operations has aroused much interest. In noting the falling off of mica and asbestos the general opinion is that this is only a temporary phase and that both industries will pick up rapidly. Asbestos, of course, is in a far different position from mica. But the same cause, namely, overproduction, has affected both minerals.

Further developments in copper are expected. Mr. Denis alludes in his report to the possibility of working several copper deposits successfully on a large scale, and he draws a very instructive parallel between the known Quebec deposits and certain copper mines of the United States.

ONTARIO.

Ottawa.—The Dominion Government has undertaken an investigation, under the auspices of the Mines Department, for the purpose of framing a law for the regulation of the manufacture and use of explosives, with a view to securing the greatest degree of protection possible to those who have occasion to handle them. Attention has been directed to this subject by the heavy list of accidents and loss of life which have occurred in places where explosives are used, an instance of this being cited in the fact that 114 men lost their lives on construction work on the National Transcontinental Railway alone during the past three years from this cause.

Capt. Desborough, inspector of explosives at the naval arsenal, Woolwich, has been engaged to conduct the investigation, and is now on the west coast for the purpose of consulting the British Columbia government.

Capt. Desborough has visited all the explosive factories in the

Dominion with the exception of two, and is confident that the death rate can be greatly diminished by a larger use of black powder, which he believes to be as efficient as the higher explosives in the ordinary work, particularly in railway construction and in such work where the operators are confined to limited space in which to seek safety. This has been found to be the case in Nova Scotia, where the fatalities have been reduced to a very small per cent., only three men having been killed or injured there during the past year.

The great object of the government, Capt. Desborough says, is to regulate by act the manufacture of powder in Canada the same as in England, where the regulations in this respect are the best in the world. The government also has in view a federal mining act, as well as a federal explosives act, whereby the authorities will be able to investigate all accidents in mines. A movement of this kind, he states, is also on foot in the United States, the mining inspectors having petitioned that government to take all mining matters under control, which action, they consider, would tend more to the safety of the employees in the mining industry.

At the conclusion of the tour by Capt. Desborough, the Minister of Mines at Ottawa, will call a conference of the manufacturers of explosives in Canada and the mining departments of the province, at which a draft of an explosives bill will be submitted.

Capt. Desborough states that he has received every courtesy from the managers of the various works visited, and believes he will have their hearty co-operation in the movement started for the better protection of the men required to use dangerous explosives in their work.

BRITISH COLUMBIA.

Nelson, B.C., Aug. 13.—The most disastrous fire that ever visited Phoenix, broke out to-day in No. 3 oil-house of the Granby Consolidated Mining & Smelting Company. No. 3 crusher building was also soon in flames, and sparks set fire to houses in the lower streets of the town, including the Methodist and Presbyterian churches, public school, Pioneer printing office, several residences and the new machine shops of Granby, all of which are reported to have been destroyed.

For a long time, it was feared that the whole town would be in flames, and a train crew with a passenger train was delayed in readiness to carry people out of the city.

Panic prevailed and many houses were emptied of furniture. After a strenuous fight the firemen gained the victory and the fire is now said to be under control.

Vancouver.—Among the visitors to Bowen Island on August 14th were Captain Desborough, chief of the explosive testing station at Woolwich arsenal, and Mr. J. G. S. Hudson, of the Department of Mines, Ottawa. They did not go up on a pleasure trip, but to inspect the powder magazine there, having only just returned from Vancouver Island where they inspected the powder and dynamite plants.

The proposed Canadian legislation will be based on the English Explosives Act, which has been found highly instrumental in decreasing the danger from the use of explosives in the British Isles. Last year in Great Britain fifteen thousand tons of explosives were manufactured for mining purposes, and there were only three accidents, none of them with fatal results.

Captain Desborough and Mr. Hudson left last night for the Crow's Nest Pass where they will examine some of the collieries, particularly one in which there was an explosion from "dust" a few years ago.

Victoria, B.C.—Capt. Desborough, inspector of explosives at the government arsenal at Woolwich, was here early in August. He came to Canada in connection with the legislation dealing with explosives which Hon. Wm. Templeman intends to introduce in parliament next session. It will be based upon legislation in force in Great Britain and European countries, which has proved very effective.

Phoenix, B.C., Aug. 18.—Mike Bauer and D. Hainan were running a machine at Snowshoe mine, when without warning, a large quantity of rock caved in, carrying men and machinery down the slopes below. Both bodies were recovered in a frightfully mangled condition. Both were experienced miners. Bauer has a brother in Milwaukee; Hainan, a Finlander, leaves a wife.

YUKON.

Dawson, Aug. 16.—The Yukon Territory has shipped to the outer world $150,000,000 in virgin gold. The greater part of this has been produced within fifty miles of Dawson, and perhaps 90 per cent. within one hundred miles.

While some of the other camps of the North are falling off in output, the Klondike camp is increasing its yield. This is due to the fact that the Klondike placers on the creeks are not so deep that they cannot be dredged, and those on the benches can be worked by hydraulic. On many of the rivers the gold also can be recovered by dredging.

Klondike's output is actually increasing, whereas some of the other camps are experiencing a falling off in yield. The output of this camp last year was $4,000,000 and this year it is expected to reach $5,000,000. Possibly the pace will be maintained for years. The extensive operations of the Yukon gold are to be rivaled by those of a giant new company now entering the field headed by A. N. C. Treadgold. Two or three other big companies are in the field with dredge companies, and two or three others are investigating this season with prospects of coming.

The hundred and fifty millions mentioned as produced to date has come chiefly from Bonanza, Eldorado, Hunker, Dominion, Sulphur, Gold Run, Quartz and other such well-known creeks and tributaries within fifty miles of Dawson. In striking this total about $16,000,000 is allowed for at the conclusion of the statistical total to cover the random creeks of the Forty-Mile, Eagle, Woodchopper and Circle, and such streams which in early days were opened by men toiling in this region. Aside from this general summary the handsome sum of one hundred and twenty-five millions has been produced within the borders of the Yukon Territory proper—that is, the British Yukon—and the greater part has been turned out within the last ten years.

The official figures of the returns secured for the British Yukon are based chiefly on the royalty returns, which were collected in early days by crude methods, and dependent largely on the affidavits of claim owners as to their yield. Even then the gold was estimated at the low valuation of $15 an ounce, which probably was a dollar per ounce under the real average value.

MINING NEWS OF THE WORLD.

GREAT BRITAIN.

London.—In 1909 there were 1,659 coal-cutting machines in use in Great Britain, as against 1,493 in 1907, the quantity of coal obtained by the aid of machines being 13,590,359 tons, or 8,142 tons per machine. This represents one ton in twenty of the total coal output, as compared with one in fifty in 1902. In 922 machines compressed air was employed as the driving power, the remaining 737 machines being driven by electricity. These figures indicate that Mr. W. H. Pickering's (The Yorkshire mines inspector) statement that the use of coal-cutting machines in British mines will beat hand work at the coal faces will be borne out. Another government expert has expressed the opinion that coal-cutting machinery under the Act limiting the working hours of collieries in British mines to eight

hours a day will prove a powerful factor in the maintenance of coal output. The probability is that there will be a much larger number of coal cutters at work in British collieries within the next few years.

SPAIN.

San Sebastian, Aug. 17.—Serious troubles are expected in Bilbao Tuesday, since the strikers have refused to accept the half-hour a day reduction granted by the employers. The latter have informed the government that they will begin work in the mines immediately, as other miners not belonging to unions have agreed to accept their proposition.

This announcement disclosed the fact that the employers are holding strike breakers in reserve. The employment of such men, the strikers say, will cause them to resort to violence in spite of the army or police.

Premier Canalejas still hopes for settlement. The strikers are prepared to storm the building of the Provincial Deputation, which is, according to them, the stronghold of enemies of the people.

SERVIA.

A Belgrade despatch to the "Kolnische Zeitung" reports the formation as an English company of the Danube Mining Concession, Limited, which is said to be a mining bank constituted with the co-operation of the Commercial Bank of Scotland. The company has acquired land on the right bank of the Danube in Servia to the extent of nearly 500,000 acres, has established a branch in Vienna and also proposes to found a branch bank at Buda Pesth. Mr. John Allan and Mr. W. Carlyle, formerly general manager of the Rio Tinto Company, will, it is stated, assume control in September.

RUSSIA.

The latest decree issued by the Russian Minister of Commerce will be of great importance to speculation in petroleum, which has immensely increased since the announcement of the naphtha deposits in the Kuban district. It is stated in the decree that until further notice—which is said to mean until confirmation by the Ministerial Council—concessions for the acquisition of land by foreigners in the Caucasus are only to be granted in case they are ready to undertake borings there at their own risk, but the purchase by foreigners of lands already known as petroliferous shall not be permitted as being opposed to Russian interests. It is assumed in St. Petersburg that the decree aims at putting a speedy termination to the unsound promoting period in the Caucasus. The government obviously wishes that foreign interests which have completely turned away from the Baku naphtha region should again devote themselves to it; and, therefore, the entrance of foreigners into the Maikop district is rendered difficult. According to a declaration made by the Minister of Commerce, it appears desirable that foreign interests should be active in the granting of loans, which are to be made to Russian firms for boring purposes, and this could be accomplished by the taking up of obligations or shares. Nevertheless, the correspondent remarks that foreigners would do well to exercise great caution in the matter, as the naphtha content of the lands of most newly-formed companies has not been determined at all with certainty, and it is very doubtful whether the results will only approximately correspond with the expectations.

AUSTRALIA.

The aid afforded by the Victorian Government to mining prospecting operations within its territory might be followed with advantage elsewhere. The discovery of a new mining field is of such value to any young country that money expended with that object cannot be considered really wasted even if it prove only moderately successful. A little over two years ago a Mines Development Act was passed in Victoria, which provided £100,000 for grants to assist mining. Of that sum all the money set aside for gold mining—£75,000—has been allotted. Under the terms of the Act the remaining £25,000 could only be expended in developing mining for other minerals than gold. Of that £25,000 only £1,100 has been allotted, but the balance cannot be utilized for assisting gold mines. The position therefore may be easily summed up. All the money voted for developing gold mining has been exhausted, and, according to a statement made by the Minister for Mines, there is little likelihood of another Mines Development Bill—providing for further grants for mining—being introduced during the coming season. Mr. McBride, Minister for Mines, however, has decided to recommend to the Cabinet that £5,000 be given to assist co-operative mining parties. An examination of the records of transactions between the government and mining companies discloses that a remarkably small proportion of the money advanced has been repaid. Since the inception of the Mines Development Act in 1897, about £380,000 has been advanced, and of that sum the State has received back approximately only £35,000. Of course, it is not expected that all the money advanced for mining will be repaid. A great deal of it is necessarily expended in testing ground which proves unpayable. Mr. McBride states that numerous applications by companies and parties for assistance continue to reach the department. His recent visit to some of the mining districts has confirmed his belief that in the vast majority of cases the advances have been judiciously made, and he admits that if the money were available a great deal more could be expended with advantage to the industry.

Sydney.—The gold yield of New South Wales for July was 26,772 ounces, valued at £85,341. For the first seven months of the year the yield has been 126,901 ounces, valued at £445,979.

INDIA.

The gold production of the mines of the Kolar Goldfield (Mysore) and one outside mine (the Hutti Nizam's), for July was 47,006 ounces, an increase of 252 ounces compared with the return of the previous month.

CHINA.

The Pekin Syndicate announces that the output and sales of coal for last month were as follows: Output, 23,000 tons; sales, 17,500 tons; boiler consumption, 2,500 tons.

SOUTH AFRICA.

Pretoria.—The report of the Mines Commission, which was appointed in 1907, is issued. It shows that the death rate among underground workers is 60 per cent. higher than among those working above ground, ignoring those dying elsewhere. The average term of employment underground is seven to nine years, and the average age at death 35, as compared with 50 on the Bendigo mines. The report advocates rigorous measures in regard to health, housing and ventilation. No objection is made to the natives being supplied with a moderate and regulated quantity of beer.

GOLD COAST.

The report of the government of the Gold Coast on the gold mining industry of the colony for 1909 is a rather belated document, but from its official character has, of course, a certain interest. The amount of gold produced during 1909 showed a decrease of 50,763 ounces, as compared with the amount produced during the previous year. This decrease, the report reminds us, was nearly totally due to the fact that mines which were producing in 1908 ceased to produce during the year with a view to increasing their ore reserves so as to enable larger tonnages to be treated. On the quartz and conglomerate mines in Ashanti and the Gold Coast Colony 404,853 tons were treated and produced 210,391 ounces, being an extraction of 10.402 dwts. per ton of 2,000 pounds.

UNITED STATES.

Spokane, Wash., Aug. 16.—When Judge Dietrich, in the federal court at Moscow, Idaho, ruled that mining companies operating in the Coeur d'Alene district have the right to dump tailings into streams, a decision of prime importance became a matter of record in northern Idaho. Unless reversed by the court of appeals, the decision removes one of the most vexing situations which the mining companies have had to face. These cases have been pending six years. The suit upon which the decision was rendered was instituted by Elmer Doty, a rancher on the Coeur d'Alene River. There were 65 cases, but all of them involved the same principle, the damages claimed amounting to $1,223,000. Mr. Doty alleged that by dumping the tailings in the river the mining companies caused the river to rise and overflow the lands along the river.

Joplin.—The Joplin district, including contiguous parts of Missouri, Kansas, Arkansas and Oklahoma, produced 147,310 short tons of zinc in 1894. From this figure the output increased to 286,538 in 1907, dropping with lower prices to 258,628 in 1908. In the meantime, and particularly since 1904, production elsewhere in the United States grew rapidly, though it was small as compared with Joplin. This outside production is especially small if the higher content of the Missouri ore be taken into account. It was early determined that a tariff on zinc ore would be laid; and on August 1st, 1909, the new duties took effect. They are arranged on a sliding scale, the tax varying with the percentage of metal in the ore; up to and including 10 per cent. the ore is free; from 15 to 20 per cent. the tax is ¼ cent; from 20 to 25 per cent., ½ cent; over 25 per cent., 1 cent per pound of metal contained in the ore. Since no ore under 25 per cent. can be imported economically, the practical effect is to levy the maximum tax. This, on the ores actually imported, which assay about 36 per cent. zinc, amounts to $7.20 a ton. On this basis, making due allowance for freight rate and difference in grade, Mexican ore is as cheap at the Kansas furnaces equipped to smelt it, as is the near-by Joplin ore. If the amount paid as duty be deducted from the price paid the Mexican miner, which is largely done, the foreign ore may be treated at higher profit than the domestic. That this is true is shown by the fact that foreign ore has continued to be imported, though in somewhat reduced amount. In the seven months of 1909, before the new law went into effect, importations averaged 10,338 tons per month. In the first seven months following, they averaged 7,627. For January and February they were equivalent to a little more than 28 per cent. of the Joplin production.

New York.—Utah's report for the second quarter ended June 30th, of its calendar and fiscal year, shows what the company can do on an average selling price for copper at 12½ cents a pound. It shows the net profits for the quarter of $1,548,979, equal to 10.05 per cent. on the 1,540,000 shares outstanding. After dividends of $1,155,243, the surplus balance for the quarter of $393,735 is equivalent to 2.55 per cent. on the total par value of the company's stock. At this rate earnings for the year would show 40.2 per cent., or 10.2 per cent. in excess of dividend requirements.

Combining the reports for the first two quarters of the year, gives a half-year's showing as follows:

Net profits from mining and milling operations, $2,042,981; additional income, $21,525; income from Nevada Consolidated dividend, $712,856; total, $2,777,362. Dividends, $2,310,486; net surplus for six months, $466,876.

For some unexplained reason the Nevada Consolidated dividend was not included in the first quarter's report, but is taken into consideration in the above table.

The foregoing six months' surplus of $466,876 is at the rate of $933,752, or 6.6 per cent. for the year on the stock outstanding. Production for the second quarter totalled 25,124,052 pounds, or at the rate of 100,496,208 pounds for the year, which probably represents the maximum rate of production which the Utah will attain for some time, or at least until the price of copper improves. Following is the record production by months (in pounds):

January	4,745,066
February	5,913,465
March	7,853,288
April	7,902,643
May	8,862,913
June	8,358,496
Total	43,635,871

Production was retarded in the first quarter by bad weather, and the output from the Boston Consolidated plant, which was taken over about February 1st, did not begin to show fully until the second quarter arrived. In 1909 the Utah Copper Company produced 51,749,000 pounds of copper at an average cost of 7.787 cents a pound. During the first quarter of 1910 the net cost per pound was 8.43 cents and 7.53 cents in the second quarter, making an average for the half year of 7.88 cents. This is exceeded among the porphyry mines by only the 6.34-cent record by the Nevada Consolidated for the quarter ended June 30th last. During May, the Utah cost per pound was 7.17 cents and the cost at the Magna plant was 7.06 cents, not taking into consideration in either instance outside earnings.

MEXICO.

Commencing with the present fiscal year, which began July 1st, mining concerns in the producing stage in the State of Jalisco will be taxed 1 per cent. on the value of ore or mill products sold the smelters and ore and metal buyers. This tax is something new in Jalisco, although a number of other Mexican states collect a similar tax. It constitutes the third direct tax on values of mining products, computed on their market value. The two others are the federal impost at the smelter and the federal stamp tax on the "factura," or bill of sale to the buyer. The combined direct taxes based on each bill of sale are about 3 per cent. of the total.

The metals mentioned as taxable under the new Jalisco law, which was passed by the state legislature in May and put into effect by a decree of Governor Ahumada, are gold, silver, copper and lead. Monthly the state treasurer will advise local collectors the market prices of these metals for the following month, which will be calculated from the average prices in foreign market during the first 20 days of each month.

COMPANY NOTES.

TEMISKAMING'S QUARTERLY STATEMENT.

Following is a statement issued by the Temiskaming directors for the second quarter of the current year. The great improvement in the company's finances since the annual meeting no doubt accounts for the strength of Temiskaming stock in the mining market.

During the first six months of our fiscal year we have produced and shipped 851,725 ounces of silver as against 670,930 for the whole of last year. Of this amount 635,889 were produced by hand picking, and 215,906 were recovered at the mill from 9,177 tons of ore during 92 working days.

The mill feed consisted in the main part of the discard from the hand sorting tables, and ore from the development faces. The remainder, or about one-third of the whole, was made from the dump reserves.

The milling reserves as blocked out in the mine, as shown in

our last annual report, remain untouched, while the dump reserve has been reduced by but 860 tons.

The main shaft has been carried to a depth of 520 feet. Crosscutting to No. 2 vein has now commenced from the 500-foot station, and there is still some 50 feet to drive before we encounter it.

The formation to this depth remains the same, so we look with confidence to equally good results here as obtained on the 400-foot level.

At the latter depth considerable development work has already been done in opening up veins Nos. 1, 2 and 4, with results that are most gratifying. No. 4 is most spectacular, varying up to 26 inches of bonanza ore. No. 2 varies from 6 to 10 inches wide from three to four hundred-ounce ore, and No. 1, which we have just encountered on this level, is some 6 inches wide and equally high grade.

The high-grade reserves have more than trebled during this period, and our condition is such that we can easily maintain our present heavy output for a considerable length of time.

We think the stockholders are to be congratulated on the fact that whereas on February 1st we were in debt to the extent of some $97,000; this has now been liquidated, and after paying all indebtedness, we show a balance of $179,496.45.

The statement summarized is as follows:—

Assets.

Capital assets	$2,628,579.60
Cash assets	266,684.84
Treasury stock	829.00
	$2,896,093.44

Liabilities.

Cash liabilities	$ 87,188.39
Capital stock	2,500,000.00
Balance brought down and profits for 6 months	308,905.05
	$2,896,093.44

A statement issued by the Temiskaming directors states that the mine during the first six months of its fiscal year has produced and shipped 851,725 ounces of silver, as against 65,670,930 ounces for the whole of last year.

The Intercolonial Coal Company has declared a dividend for the half year of 3 per cent. In the second half of the year the company pays 4 per cent., or a total of 7 per cent.

A meeting in London on August 18th of the shareholders of the Le Roi Mining Company unanimously agreed on liquidation. A. J. McMillan was appointed liquidator. The property will probably continue to be operated.

McKinley-Darragh-Savage Company has declared the regular quarterly dividend of 3 per cent., and an extra dividend of 2 per cent. payable October 1st. Books close from September 10th to October 1st, inclusive.

STATISTICS AND RETURNS

CROW'S NEST OUTPUT.

The output of the Crow's Nest Pass Coal Company's collieries for the last three months follows:

	May.	June.	July.	Total.
1910	92,900	116,450	104,000	313,350
1909	54,000	83,400	72,000	209,400
Increase	38,900	33,050	32,000	103,950

COBALT ORE SHIPMENTS.

The shipments in tons from Cobalt for the first seven months of the year 1910, by months, are as follows:

January	2,025.06
February	2,248.99
March	2,594.78
April	2,814.08
May	2,243.17
June	2,917.00
July	3,014.92
Total	17,858.00

Bullion Shipments.

	Ounces.	Value.
O'Brien	136,666	$78,775
Buffalo	68,500	34,250
Crown Reserve	15,931	8,623
Nova Scotia	26,700	14,685
	247,797	$136,333

COBALT ORE AND BULLION SHIPMENTS.

Week Ending August 12th.

The shipments of bullion in 1910, in ounces and approximate values follow:

	Ounces.	Value.
O'Brien	178,246	$97,128
Buffalo	78,337	40,735
Nova Scotia	49,211	25,352
Temiskaming	43,438	19,000
Crown Reserve	15,931	8,623
Cobalt Gem	10,800	5,800
	353,963	$195,638

Cobalt shipments for the week ending August 12th and for the year to date in tons are as follows

	Week ending August 12.	Year. 1910.
La Rose	129.29	3,918.71
Nipissing	214.08	3,566.76
Kerr Lake	89.97	3,233.36
Crown Reserve	74.00	2,103.80
McKinley-Darragh	78.60	1,127.87
Buffalo	28.56	679.17
Temiskaming	32.01	654.28
Chambers-Ferland	32.00	547.98
Right of Way	.....	524.72
Coniagas	.....	499.70
Drummond	.....	330.76
O'Brien	.....	306.91
Trethewey	.....	335.95
City of Cobalt	.....	206.87
Little Nipissing	.....	213.92
Hudson Bay	31.49	172.67
Cobalt Central	.....	219.68
Cobalt Lake	.....	117.30
King Edward	.....	111.12
Hargraves	.....	140.63
Townsite	.....	83.68

Colonial	.....	83.10
Silver Cliff	.....	106.28
Beaver	.....	57.53
Provincial	.....	32.05
Waldman	.....	31.99
Rochester	.....	30.37
Casey Cobalt	.....	17.90
Wyandoh	.....	24.15
Total, in tons	740.02	19,370.94

The shipments from the Gowganda camp to date read:—

	Tons.
Millerett	304
Reeves-Dobie	62
Boyd-Gordon	30
Miller Lake, O'Brien	14
Gates	2
Lucky Godfrey	20
Welch	1.25
Burke Remey	2
Total	435.25

COBALT ORE SHIPMENTS.

Following are the shipments from the Cobalt camp for the week ending August 12th, and those from January 1st, 1910, to date:

	August 19. Ore in lbs.	Since Jan. 1. Ore in lbs.
Beaver	.....	180,617
Buffalo	63,370	1,424,958
City of Cobalt	.....	422,735
Chambers-Ferland	60,500	1,149,100
Cobalt Central	.....	293,286
Cobalt Lake	.....	260,900
Cobalt Townsite	55,980	236,840
Colonial	.....	148,900
Coniagas	120,570	1,119,616
Crown Reserve	84,000	4,364,020
Drummond	.....	664,200
Hargraves	.....	281,170
Hudson Bay	.....	360,825
Kerr Lake	300,100	6,464,640
King Edward	.....	221,296
La Rose	203,000	8,023,021
McKinley-Darragh	52,300	2,303,929
Nipissing	255,760	7,476,707
O'Brien	64,060	822,143
Peterson Lake	.....	432,420
Provincial	.....	65,000
Right of Way	.....	1,080,217
Rochester	.....	60,750
Silver Cliff	.....	212,770
Standard Cobalt	.....	147,992
Temiskaming	.....	1,308,080
Trethewey	42,970	725,380
Waldman	.....	63,992
Wyandoh	.....	48,300

Ore shipments for the week ending August 19th were 1,302,610 pounds, or 651 tons.

Total shipments from January 1st to August 19th were 40,363,807 pounds, or 20,181 tons.

BRITISH COLUMBIA ORE SHIPMENTS.

Week Ending August 13th.

The following are the returns for the ore production and movement for past week:

Rossland Shipments.

	Week.	Year.
Centre Star	2,980	120,267
Le Roi No. 2	687	20,374
Le Roil No. 2, milled	300	9,600
Le Roi	291	10,090
Velvet	32	359
I. X. L.	7	146
Other mines	...	38
Total	4,297	160,874

Slocan-Kootenay Shipments.

	Week.	Year.
St. Eugene, milled	2,775	88,800
Van Roi, milled	800	25,600
Queen, milled	420	13,440
Granite-Poorman, milled	250	8,000
Nugget, milled	110	3,520
Richmond-Eureka	154	2,747
Emerald	77	1,234
Yankee Girl	99	3,432
Sullivan	732	9,119
Queen Victoria	92	2,577
Turk	3	3
Panama	18	18
Emerald Hill	7	7
Other mines	...	34,202
Total	5,537	192,699

Consolidated Company's Receipts.

Trail, B.C.

	Week.	Year.
St. Eugene, concentrates	223	10,515
Le Roi No. 2, part concentrates.	687	20,374
Queen, concentrates	42	425
Centre Star	2,980	120,267
Le Roi	291	10,090
Snowshoe	2,287	101,173
Richmond-Eureka	154	2,747
Yankee Girl	99	3,432
Emerald	77	1,234
Velvet	32	359
Sullivan	732	9,119
I. X. L.	7	146
Nickle Plate	34	458
Queen Victoria	92	2,577
Turk	3	3
Panama	18	18
Emerald Hill	7	7
Other mines	...	16,037
Total	7,765	298,981

Owing to the disturbed condition of affairs at Phoenix, following the fire of Friday, this week's returns of the Boundary shipments were not issued. On the basis, however, of the figures for the last four weeks, the following estimates for the time being may be accepted:

Boundary shipments	30,825	1,074,146
B. C. Copper Co.'s receipts, Greenwood	8,068	218,084
Granby Co.'s receipts, Grand Forks	20,597	733,941

On the basis of the above calculation, the total shipments for the week should approximate 40,650 tons, and for the year to date, 1,427,700 tons. The total receipts for the week, on the same basis, should be 36,330 tons, and for the year to date, 1,251,000 tons.

TORONTO MARKETS.

Aug. 24th.—(Quotations from Canada Metal Co., Toronto.)
Spelter, 5½ cents per lb.
Lead, 3.65 cents per lb.
Antimony, 8 to 8½ cents per lb.
Tin, 36 cents per lb.
Copper, casting, 13.10 cents per lb.
Electrolytic, 13.10 cents per lb.
Ingot brass, 9 to 12½ cents per lb.

Aug. 24th.—Pig Iron. (Quotations from Drummond McCall Co., Toronto.)
Summerlee No. 1, $22.50 (f.o.b. Toronto).
Summerlee No. 2, $22.00 (f.o.b. Toronto).
Midland No. 1, off the market.
Hamilton No. 1, $20.50 (f.o.b. Hamilton).
Hamilton No. 2, $20.00 (f.o.b. Hamilton).
Clark's, $20.00 (f.o.b. Toronto).
Cleveland, $20.50 (f.o.b. Toronto).
Coal, anthracite, $5.50 to $6.75 per ton.
Coal, bituminous, $3.50 to $ 4.50 for 1¼-inch lump.

Coke.

Aug. 22nd.—Connellsville Coke (f.o.b. ovens).
Furnace Coke, prompt, $1.65 to $1.70 per ton.
Foundry Coke, prompt, $2.10 to $2.25 per ton.

Aug. 22nd.—Tin (Straits), 34.25 cents.
Copper, Prime Lake, 12.75 to 12.87½ cents.
Electrolytic copper, 12.50 to 12.60 cents.
Copper wire, 14.00 cents.
Lead, 4.47½ cents.
Spelter, 5.45 cents.
Sheet zinc (f.o.b. smelter), 7.50 cents.
Antimony, Cookson's, 8.15 cents.
Aluminium, 22.000 to 22.50 cents.
Nickel, 40.00 to 47.00 cents.
Platinum, ordinary, $34.00 per ounce.
Platinum, hard, $36.00 per ounce.
Bismuth, $1.85 per lb.
Quicksilver, $46.00 per 75-lb. flask.

SILVER PRICES.

	New York cents.	London pence.
August 9	52⅞	24 7/16
" 10	52⅞	24 7/16
" 11	53	24½
" 12	53⅛	24 9/16
" 13	53¼	24⅝
" 15	53¼	24⅝
" 16	53⅛	24 9/16
" 17	53	24½
" 18	53	24½
" 19	53	24 7/16
" 20	52½	24⅜
" 22	52½	24⅜

SHARE MARKET.

(Courtesy of Warren, Gzowski & Co.)

Miscellaneous—August 23rd, 1910.

	Bid.	Ask.
Amalgamated Asbestos	..	..
Dominion Coal Company	..	..
Dominion Steel Company	62⅜	62½
Nova Scotia Steel	84	85
Granby	35	36
Consolidated Smelting	..	..
Crow's Nest Pass	..	..
Dominion Steel Coal Corporation	62¼	63

New York Curb—August 23rd, 1910.

Boston Copper	14¼	14¾
British Columbia Copper	4¾	5
Butte Coalition	18½	19½
Canadian Mines	6¼	6½
Chino Copper	14⅝	14¾
Davis-Daly Cop.	1½	1¾
Ely Consolidated	.28	.33
Gila Copper	No market.	
Giroux Mining	6⅝	7 1/16
Goldfields Consolidated	8 3/16	8¼
Greene-Canadian	7⅜	7⅝
Harcuvar Copper	No market.	
Inspiration Copper	8⅛	8⅝
Miami	19⅜	19¾
New Baltic	3	7
Nevada Cons. Cop.	20¼	20½
Ohio Copper	2	2 1/16
Rawhide Coalition	.11½	.12½
Ray Central	2¼	2⅜
Ray Consolidated	18⅛	18½
Union Mines	1 1/16	1⅛
Yukon Gold	3⅞	3 15/16

Cobalt Stocks—August 23rd, 1910.

Amalgamated	.03	.05
Bailey	.07⅜	.07¾
Beaver Consolidated	.21¼	.21½
Big Six	.01	.03½
Buffalo	1.75	2.20
Chambers-Ferland	.16½	.17¼
City of Cobalt	.22¾	.23½
Cobalt Central	.09	.10
Cobalt Lake	.13⅞	.14
Coniagas	4.00	5.00
Crown Reserve	2.85	2.90
Foster	.12¾	.13¼
Gifford	.07	.08
Great Northern	.07	.07⅛
Green Meehan	.01⅝	.02
Hargraves	.23	.24
Hudson Bay	98.00	100.00
John Black	.01	.04½
Kerr Lake	6.50	6.60
La Rose	3.94	4.00
Little Nipissing	.16¾	16⅞
McKinley	100.00	100.50
Nancy Helen	.4½	.05½
Nipissing	10.60	11.00
Nova Scotia	.29	.30
Ophir	.25	.33
Otisse	.02⅞	.03
Peterson Lake	.20	.20¾
Right of Way	.25	.26
Rochester	.16¼	.16½
Silver Leaf	.06½	.07
Silver Bar	.05	.07
Silver Queen	.07	.11
Temiskaming	.72¼	.72½
Trethewey	130.50	131.50
Watts	.02	.10
Wettlaufer	.56	.60