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CIRCULATION.

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CONTENTS.

TAXING MINERAL RIGHTS.

The Toronto Globe vigorously insists that the present Government of Ontario should impose a tax upon mining rights as distinguished from surface rights, alleging, and with reason, that it is inimical to the public good that speculators should be privileged to hold such mining rights without attempting to utilize them, and without paying a cent in taxation. The Globe is right. But the Globe goes too far in blaming the present administration for this state of things. Present conditions were inherited from the late Government which was in power for over thirty years, and which did nothing to remedy the evil complained of. On the other hand, the Whitney Government has made a beginning in endeavouring to eliminate an insidious, because hidden, evil that is seriously injuring the progress of the mining industry of Ontario. By substituting for the old Algoma tax of one cent an acre, a levy of two cents per acre on all mining lands or mining rights in the unorganized territory a certain stimulant, though perhaps not a very energetic one, has been supplied to the exploitation of such properties. That a tax of even two cents an acre is sufficient to cause many owners of undeveloped lands to lay down their burden is apparent from the long list of lands recently published in the Ontario Gazette as having been forfeited for taxes in arrears.

The Government, of course, must go a step further and extend the tax to mining lands and mining rights in organized municipalities. In the mining regions of Eastern Ontario there are many cases where the mineral rights have been severed from the surface rights when the owners have parted with the latter. Nothing is done by the proprietor of the mineral rights to ascertain whether valuable minerals are or are not there; the surface owner has no incentive to prospect for them; the mineral rights are not taxed; and in the course of years the owner dies or moves away. Thus, no matter how promising a deposit may be brought to light, no one can obtain the legal right to work it.

Again, in the Southwestern peninsula the oil and gas rights reserved or claimed by the Canada Company in farmers' lands have been a fruitful source of trouble and controversy. Not being assessable by the municipal or provincial authorities, they cost the company nothing to carry; but when strikes were made in the vicinity the company was at once benefitted by the enterprise of other people. Roads and other improvements are required when discoveries are made on mining rights, as well as when made on mining lands; and the owners of mining rights should be obliged to contribute to the cost as well as to pay the same taxes as

mining lands that include the surface as well. Then when default is made in payment of the latter, the mineral rights would revert to the Crown and a clear title could be obtained.

THE CHIBOUGAMOU REPORT.

The preliminary report of the commission appointed to investigate the Chibougamou (Quebec) region is distinctly disappointing, but cannot be considered finally discouraging.

For some years wild rumours of rich mineral deposits have been circulated, and much pressure was brought to bear upon the Quebec Government to construct 120 miles of railway from Lake St. John to tap the Chibougamou country. This the Government wisely refused to do. Too few facts were known. But the Government did consent to send an independent commission of specialists to examine the land of promise.

The personnel of that commission was carefully selected. With Dr. A. E. Barlow as chairman, and Prof. J. C. Gwillim and Mr. E. R. Faribault as his associates, the Government had every reason to place implicit confidence in the commission's singleness of purpose and in the correctness of its findings. The appointments were made with absolutely no reference to politics or to any other consideration than fitness. Ample appropriations were placed at the commission's disposal.

Throughout the summer's campaign nothing was heard of the work being done. Nor had any information been officially divulged until the tabling of the preliminary report on January 11. This is creditable to all parties concerned.

As regards the reported rich discoveries of gold, copper and asbestos, the commission found little corroborative evidence. No evidence at all was obtainable to confirm the reputed occurrence of ores of silver and cobalt. Iron ore and iron pyrites are spoken of more hopefully. But in general the commission's statement directly refutes the wonder-talk of the prospector. Fuller details in the final report may tend to qualify this disappointing pronouncement. Meanwhile, it is only possible for us to accept the fact that Chibougamou is not what we had hoped.

It must not be forgotten that the members of the Chibougamou commission would be the last persons in the world to damn the region altogether. Their duty was to determine the general geological character of the country, and to discover how true were current tales of spectacular wealth. Their finding must be accepted as it is offered—as an appraisal of the present results of prospecting in one section of Northern Quebec. It must not be misconstrued into a sweeping condemnation of a region that may yet prove entirely worth while.

RISE, SIR MINER!

Is the mining man without honor in this sorry scheme of things? We look for him in vain in our Houses of Parliament. He is not conspicuously visible in that Palace of Sleep, the Senate. Nor does the coveted flower of Knighthood decorate him. And still our wonder grows that this is so!

Not numerous are those of us who are eligible for the Senate. This perhaps, is as it should be, Dr. Osler notwithstanding. Some few of us should aspire to the House of Commons. We are needed there. A full score of us we can name who have claims upon the accolade —claims sounder, larger, and more dignified than those of many a living Knight. We are producers. Humanly speaking, we create wealth. Our work adds to the health, also, of the nation. We blaze the path for the farmer and for the railway. Towns spring into being at our bidding. Indeed and in sooth we are the people!

But, withal, we are not dreamers dreaming greatly. Nay, we are highly practical persons with large desires. Weary are we of being ignored by the Powers, and played with by the politician. The time has come when we yearn for several well-nourished statesmen of our own to whom we shall say "Go." and observe them going.

Nor would we resent a trifling lot of senatorial seats. But this way lies trouble. We can but call for volunteers. Not ours the job of nominating. And if, perchance, a desultory geologist or two accept the honour we shall speak no word of blame.

As for Knighthoods—well, that's another matter. Most of us have rolled that succulent, sibilant, prefix over our tongues conjoined with the names our parents gave us. For our immediate selves we shall not, cannot, speak. Kind friends will remember to do that for us. But it has often struck us that a discreet distribution of royal favours amongst, say, the Council of the Canadian Mining Institute would be soothing and grateful. In fact this thought fires our imagination.

Ottawa papers please copy.

FRENCH COAL DUST EXPERIMENTS.

An abstract of reports of the French coal dust experiments, conducted at Lievin Experimental Station during 1907-10, has just been published by the Colliery Guardian. Some general conclusions embodied in the pamphlet we shall outline herewith.

The practice of watering in front of shot-holes in dusty mine galleries, is commended. When the amount of water is equal to that of the dust, explosions can be checked, if not prevented, before extending seven to eight yards. A further good precaution is to water the gallery for about 10 yards previous to shot-firing.

General watering of the galleries, and, as an alternative, the dissemination of incombustible dust in sufficient quantity to form at least 40 per cent. of the mixed dust, are also urged. Other precautions, such as washing the tubs, lime washing the walls and floor, are suggested.

The difficulties and drawbacks of systematic watering are pointed out, and schistification (the dissemina-

tion of incombustible dust) is dwelt upon as being often advantageous. But stress is laid upon the fact that local watering and schistification are powerless to arrest an explosion that has been well started.

The question of arresting an explosion that has already become serious was, therefore, looked into. It was found that an explosion that had developed over a length of 75 metres could be stopped by establishing an arresting zone 100 metres in length. But a high degree of watering or schistification was required in that zone. Four times more water (by weight) than there is dust was found necessary to establish the zone; and at least 75 per cent. of slate dust when schistification was resorted to. Both methods have their drawbacks.

Far more efficacious were the experiments with two new methods—concentrated schistification and concentrated watering. Briefly, in these methods the flame arrives at the moment when the water or combustible dust has just been overturned. The arresting barriers are thus extinguishers rather than gradual suppressing agents. Whilst these results are tentative, they are extremely encouraging.

Other conclusions reached are that no explosion can be produced by the ordinary initial causes in a dust deposit where the content of volatile matter does not exceed 18 per cent.; though it may be propagated there as the result of a violent initial explosion occurring over a portion of dust deposit richer in volatile matter, or started by firedamp or by explosives. It is also stated that, other conditions being equal, coal dust rich in volatile matter is more dangerous than if the content of the latter were smaller.

The practicability of applying these experimental results to working mines has not been fully demonstrated. But that, we believe, is only a matter of time.

MR. W. H. ALDRIDGE.

The announcement of the retirement of Mr. W. H. Aldridge from the active management of the Consolidated Mining and Smelting Company of Canada came as a surprise to his large circle of friends. Since 1897, Mr. Aldridge has been the controlling spirit in the C. P.R. mining interests in British Columbia. In that year he arranged the purchase of the Trail smelter from F. Augustus Heinze. The history of the enterprise has been a record of expansion. Operated until 1906, under the name of the Canadian Smelting Works, the plant was then taken over by the present company, which had also acquired large mining areas near Rossland.

Mr. Aldridge still retains his place on the board of directors, and will continue to act in an advisory capacity for the Consolidated. His position as general manager is to be filled by Mr. R. H. Stewart, a thoroughly competent and experienced official, who has long been connected with the company. Mr. S. G. Blaylock becomes assistant general manager. Both of these gentlemen have excellent records.

IMMUTABLE MAN.

Human nature in all ages remains startlingly unchanged. Here is a quotation from an old volume, printed first in German and translated into English in 1730. The reference is to mining in the Hartz Forest:—

"This Mountain is hollow'd out underground into such large Caverns, that they in some places are too high to be propp'd; wherefore 'tis very dangerous to workfl in some of the Mines; upon which account the Miners at Goslar are two Mornings in the Week exhorted by a Sermon to live in the Fear of God, to be prepar'd in case of any Accident; but they are such a fool-hardy audacious Crew, that when the Parson preaches a little longer than ordinary, and the City-Gates are open, they run out of the Church, leaving him to preach to him-self."

Our sympathy goes out to that poor preacher. His life-insurance policy was not popular.

THE TUNGSTEN MARKET IN 1910.

Canada is not yet a producer of tungsten ores, although within a few months shipments will be made from the rich deposits at Moose River, Nova Scotia. The condition of the tungsten mining industry in the United States is, therefore, of interest.

Ten years ago the production of concentrated tungsten ores in the United States was only 46 tons, valued at $11,040. Last year's output was 1,824 tons,valued at $832,992. This is probably the largest annual output on record in any country.

Prices during 1910 were fairly high, ranging from $6.50 to $9 per unit, for concentrates carrying at least 60 per cent. tungsten trioxide. California and Colorado are the principal producing States.

The Nova Scotian ores are more easily concentratable than those mentioned above and it is probable that higher prices will be obtained for them.

THE SILVER MARKET DURING 1910.

A happy augury for one of Canada's greatest mining camps is the continued strength of the silver market. After maintaining an average price throughout 1909, of 51.502 cents, the metal more than held its own during 1910, the average price for the past year being 53.486 cents. For the latter half of 1910 the average was 54.318 cents, a decided improvement over the preceding six months. The highest monthly average in 1909 was that for May, 52.905 cents. The highest during 1910 was November's average, 55.635 cents. The corresponding low figures were 50.468 cents for March, 1909, and 51.454 for the same month in 1910.

Arguing from analogy, we may expect a drop in price through one or two winter months. But there are plain indications that the Chinese and Indian demands will be large during 1911, and that, therefore, there will be no significant falling off in prices. Much will depend upon the success of the Chinese Government's

effort to negotiate its loan of £10,000,000 on easy terms and to standardize its currency. Much also will depend upon climatic conditions in India during the autumn of 1911. At present there are few reasons to doubt that the forthcoming year will develop a larger market for silver in the Orient. As Cobalt's output may be increased considerably, this fact is stimulating. One has only to multiply the output of Cobalt by a digit to arrive at a very comfortable sum.

"GOLD MINING IN NOVA SCOTIA."

In The Mining Magazine for December, an article that appeared in the CANADIAN MINING JOURNAL on gold mining in Nova Scotia, is commented upon. The Mining Magazine agrees fully with the conclusions there indicated. It takes exception, however, to the use of the word "venturer" as an equivalent of "adventurer." Our choice of the former word was deliberate. Either is correct. But "adventurer" smacks of high or shady finance. "Venturer" is shorter, crisper, and more apposite. Objection also is made to the use of the word "profits." Our contemporary in this case is right. That word is loosely employed. Unless we were justified in sacrificing literary finish for the sake of emphasis, we should not have employed the phrase.

However, we submit that in discussing a topic so important it would have been better for our acute trans-Atlantic contemporary to have omitted these meticulous refinements. There is such a thing as painting the lily. Moreover, such prods induce an irritating desire to search the columns of our captious sister for like lapses.

EDITORIAL NOTES.

The provisional programme of papers to be read at the thirteenth annual general meeting of the Canadian Mining Institute is most attractive. In the list we notice two papers on mining law, one on the markets for Canadian ores, and one on photography. Many other topics are to be treated. The meetings are to be held at the Chateau Frontenac, Quebec, on March 1st, 2nd, and 3rd.

The ventilation of collieries will be the subject of a series of articles soon to appear in these columns. Along with the work of salvage, this is a topic of immediate moment.

A motor car to run on the winter route between Matheson and Porcupine is the last word in northern transportation.

The payroll of the Nova Scotia Steel and Coal Company totalled $2,825,000 in 1910, as against $2,480,226.91 during the previous year. The average number of employees was 5,276, as compared with 4,450 during 1909. In every department there was a large increase in outputs. Most marked was the enlargement of iron ore and coal production.

REVIEW OF MINING IN COBALT DURING 1910.

(Written for the CANADIAN MINING JOURNAL by its Special Correspondent.)

It was estimated three months ago by an engineer intimately acquainted with the camp, that if no new ore bodies were found there were reserves sufficient to maintain the present output from the Cobalt area for two years. That was at the rate of a million dollars a month, so that at a conservative estimate there were then $24,000,000 unmined, but in sight.

Since Mr. A. A. Cole made his careful estimate the most important discoveries of the year have been uncovered. These comprise not so much new ore bodies as the continuation of pay ore where it was scarcely hoped it would occur.

WHERE AND HOW HAS THE COBALT CAMP MADE PROGRESS IN THE YEAR OF GRACE 1910?

Silver Area Not Widened.

No new discoveries of importance have been made during 1910 outside the known silver-bearing area. In no instance has any of the pioneering prospects in the new territory made good. Some gallant attempts have been made to widen the field; but in every instance they have failed. The real accretions to the wealth of the camp have occurred in the development of hitherto but partly explored territory within the silver circle, and through the tapping of the new veins on the old producing properties. Instances of the first are the Savage and the Cobalt Provincial, of the second, the La Rose and the Temiskaming. It would seem that, while it is as yet too early to be able to state definitely that outside the arbitary lines there is no silver in payable quantity, yet the prospects of properties without the Pale are rapidly diminishing with the progress of time.

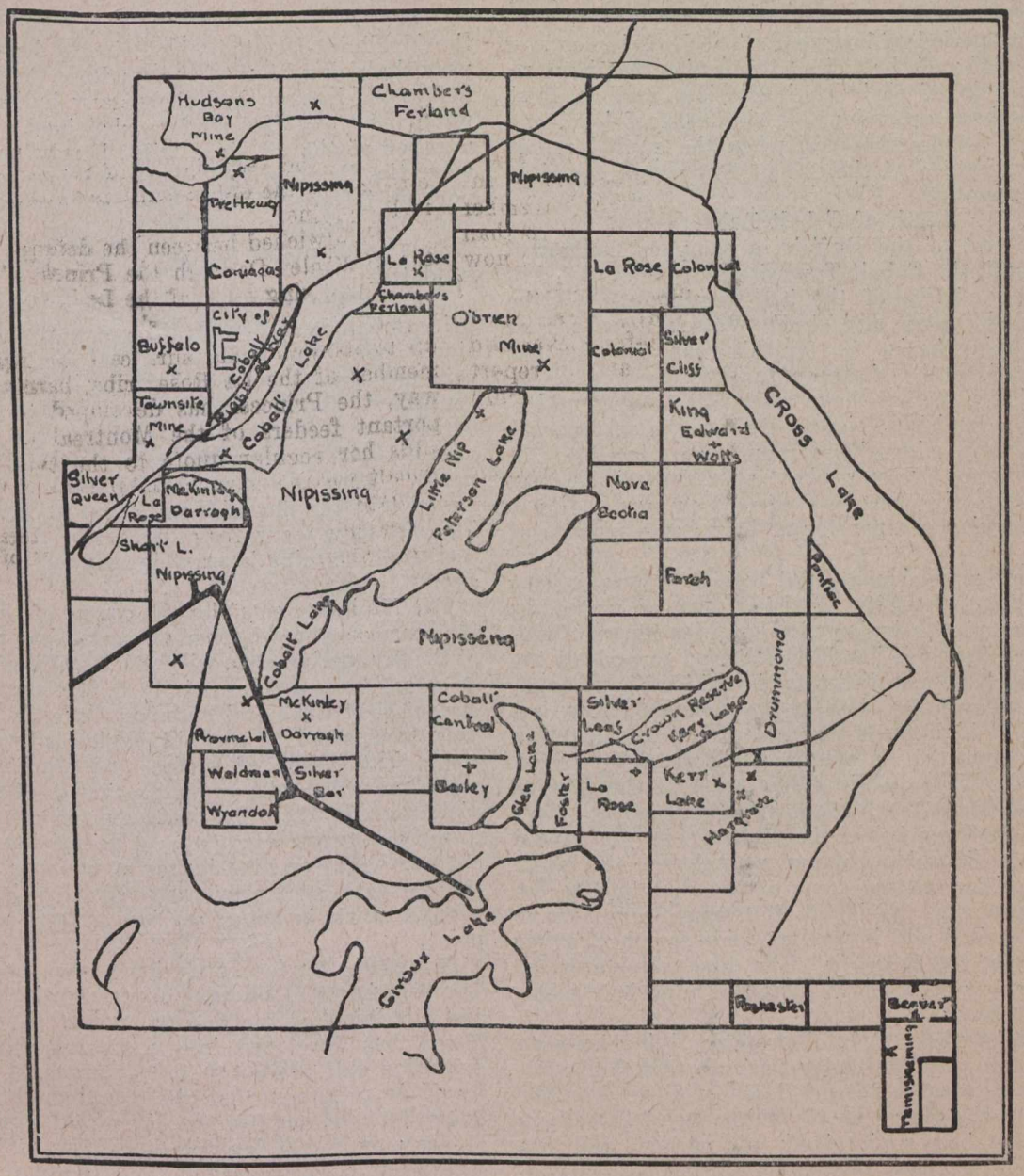
Upon the small map that accompanies this article will be found a number of crosses indicating where new ore bodies or unexpected extensions of producing veins have been found during the year just past. In the extreme northwest corner of the map will be seen the Hudson Bay mines. In the extreme southeastern are the Beaver and the Temiskaming. While the Ophir Cobalt has had small bunches of silver ore and the John Black a strong cobalt vein, neither of these companies has made any material advance this year. The South Coleman district is now the section of the Cobalt camp of speculative value, excepting the Beaver and the Temiskaming, which have shown marked improvements as mines during the year. Several properties have gone to the 400-foot level and are exploring at that depth; but beyond the ore bodies which the Beaver and the Temiskaming share nothing that promises to be of permanent value has been discovered. To the rich have been vouchsafed fat millions more in divi-

dends and ore reserves; from the poor has been taken away even that which they had, namely hope.

The Famous West Ridge.

In the extreme northwest corner of the producing area of small capitalization and huge dividends, the Hudson Bay has obtained a new lease of life and built a mill. Last year Hudson Bay had decided to increase its capital and venture into the open stock market. There was some difficulty experienced in completing the deal and, while Hudson Bay now operates the rich mine on the Buck line, it is but another name for the

The satisfactory development of the hitherto unexplored area near the Hudson Bay mine line has amply justified the erection of the big mill on the property. With characteristic caution, little was spent on development in the northern section until the existence of several veins had been proven from the Hudson Bay's property. Now the No. 3 shaft promises to be the surface manifestation of a second mine. The mill has more than justified expectations. It is daily running its scheduled capacity of a hundred tons, and the heads are high in the mill ore.



T. & H. B. It has remained satisfied to run a big producing mine on an $8,000 capitalization and pay its shareholders 300 per cent. per annum every two months or oftener. There was something like resignation in the attitude of the management with regard to the physical condition of the mine last year, but the main lesson of 1910 has repeated itself here. Where there is one strong high-grade vein there is a similarly strong probability that there will be several more. The Hudson Bay Company has found several bonanzas this year, not comparable with the big vein, but enough to insure 300 per cent. dividends for some time to come.

Like almost every enterprise associated with the mining industry in Northern Ontario, the Trethewey intends to enter the Porcupine field, and with this aim in view the directors have approved of the doubling of the capitalization. The Trethewey still prefers not to go on a quarterly payment basis, but has paid and declared this year 20 per cent. in dividends.

With the debt of the Thorold smelter and the enlargement of the stamp mill wiped off the production of the Coniagas is now more likely to keep pace with its development. In the last two months of the calendar year 1910 a million ounces were produced. The last

quarter of the fiscal year of the Coniagas showed the very considerable advance that had been made in production, and the whole twelve months showed a few ounces short of the two million mark. As Mr. Leonard explained in the annual statement, the smelter and the mill are now able to handle a very much increased tonnage and, as the mine shows a gain of three and one-half million ounces in ore reserves, it can answer readily enough to the augmented drain on its resources.

The property cornering on the Coniagas to the southwest, and on the same famous ridge, produced in the first six months of the fiscal year ending November about 850,000 ounces, or very considerably more than for the same period of last year. The Buffalo has now joined the ranks of the Cobalt properties that have repaid the whole of their capitalization, and as fresh ground has been opened up at the 300-foot level and to the west, the ore reserves, when the annual report comes to be framed at the end of April, will certainly show no diminution.

South of Cobalt Lake.

Directly west of the Buffalo, a company controlled from England, the Cobalt Townsite has, under the skilful guidance of two of the best mining men in the camp, J. Reddington and C. E. Watson, been placed upon a shipping basis. So far this year attention has been confined to the shaft on the Buffalo line where some good ore bodies have been discovered underground and promising veins located on the surface. A contract for a considerable amount of ore has been let to the Northern Customs plant at Cobalt, indicating that even with the discovery of no new ore bodies it will be a regular shipper for at least some months of next year.

Under new management, and resigned to rank as a low-grade mine, the City of Cobalt has been steadily making small profits during the year. Its contract with the Northern Customs has been adhered to and all the ore has been trammed direct to the mill without handpicking. Towards the close of the year a narrow, but rich streak of high-grade was cut at the bottom level, evidently a continuation of one of the recently discovered Townsite leads. Only a few acres of the City of Cobalt adjacent to the Buffalo and the Townsite have as yet been explored below the surface. At the annual meeting a considerable balance was shown and there was a disposition among some of the directors to declare a 3 per cent. dividend, but more conservative counsels prevailed and it was set aside for the further development of the property. The quarterly statement ended December 31st, shows that the mine had a balance of $28,000.

It is to the southern strip of property lying between the Townsite and the McKinley-Darragh that the Right-of-Way mine owes its further lease of life. For the better part of the year a steady shipment of three cars per month has been maintained, one of high and two of low grade. Increased acreage obtained when the capital was raised, has so far proved a profitless investment, but nothing further than the sinking of test pits and trenching on the old Cobalt Merger property has been carried out. The Right-of-Way has each quarter paid 2 per cent., which entails a slightly higher expenditure than six per cent under the original capitalization of $50,000.

If Cobalt Lake be represented as a clumsily drawn leg with the toe to the southeast, it may be said without fear of contradiction that the companies owning properties adjoining the toe have had a very prosperous and lucrative year.

Advance of McKinley

In the space of two and a half years Mr. Robbins has raised the McKinley-Darragh, with a dubious past and a hazy future, from the ranks of the intermittent shippers to the pedestal of a quarterly dividend payer and the producer of a million ounces every six months. Towards the end of 1910, the stock aroused interest in the market for the first time for the year, the 12 per cent. bonus being sufficient justification for a steep rise. At the very height of its productivity Mr. Robbins leaves the oldest mine in Cobalt for the Hollinger in Porcupine.

Sandwiched between the defunct Silver Queen and the McKinley-Darragh the Princess became early last year the rising hope of the La Rose Consolidated, long before the Lawson had shown any indication of living up to its wonderful surface showings. From a weak member of the La Rose tribe, barely paying her own way, the Princess has developed into one of the important feeders of the Montreal company; and now adds her regular quota to the total tonnage leaving Cobalt yards under the joint title of the La Rose Consolidated.

Leaving the west and southwest edge of the Cobalt field, Cobalt Lake bounds the great stretch of the Nipissing. The New Year hope that Sir Henry Pellatt's company was at last coming into its own has not been confirmed. Several excellent ore bodies were discovered near the McKinley-Darragh boundary. But the richness diminished in precise ratio as the drift progressed north. With the most rigid regard to economy it is stated that the financial statement at the annual meeting will show a surplus of $100,000. The physical condition of the mine is scarcely as good as it was a year ago.

The Nipissing occupies the centre of the stage, while the score or more of other properties camp on the edges of the productive area, with the Temiskaming and Beaver as an oasis of productivity in the southeast. To the east of Cart Lake and Peterson Lake the Nipissing has only prospected in the old haphazard, pre-Watsonian way. The season of surface exploration just passed, while rewarded with some discoveries of value, did not yield another 122. The main extension of the field lay in the southwest, where a most unenticing crack opened out into eight or nine inches of bonanza ore. It is in the Keewatin area previously regarded lightly. Underground work is being carried on this winter at this point.

Below, the surface finds have been most gratifying. The ore shoots of 64 have occurred with the exactness and precision of the decimal point. To the east the Meyer has developed into a 250-foot long ore body, definition and grade not to be surpassed in the camp. As it is reckoned that the conglomerate will carry down for another 70 feet, it would appear that the Meyer may be the legitimate successor of the Kendall as the premier producer of the Nipissing. On the east side of Cobalt Lake the cutting of the expected ore body fifty feet below the first level at shaft 122, is probably of more importance than the duplicating of veins at the Kendall. While recognized as a first rate prospect this new ore body was modestly credited with but a few hundred ounces in the last annual report. Length the vein had, but not depth before the discovery in November; but it now definitely enters the list of Nipissing producers. Two interesting departures will mark the career of the Nip in 1911. Despairing of finding all the valuable leads by trenching, Mr. Watson is now going to hydraulic all his acreage, commenc-

ing when the snow leaves Nipissing Hill this spring. The other departure is the treating of their own low grade ore in a mill to be erected on the property as soon as the exhaustive experiments have determined the best methods of extraction. One shaft alone at the present time is keeping a customs mill operating at full capacity so it is apparent that the Nipissing concentrator will mark a period in the treatment of low grade ore in large quantities.

Within the embrace of the Nipissing the string of leases on Peterson Lake belonging to the mining company of that name have not made any marked progress during the year.

The Little Nipissing has continued to find ore and to ship it. Despite some excellent and praiseworthy essays it alone on the lake figures in the shipping list.

On the northern edge of the Nipissing the Chambers-Ferland has fallen far short of expectations. Beyond the regular shipment of low-grade ore this neighbour of the main La Rose has shown a quiescence distinctly disquieting to its stockholders.

Justification of Lawson.

After a period of depression and anxiety the La Rose has now settled down to a production that will infallibly raise the dividend rates, when it is considered that sufficient cash reserves have been accumulated. Last quarter the Lawson and Princess earned the two per cent. dividend alone. The disappointment of the early part of the year was the leanness of the spectacular Lawson vein, a few feet below the surface. Nor today has the Silver Sidewalk proved aught but silver plated. No. 2, in the Keewatin, showed unexpected values, and No. 11, on the Foster boundary, also helped to retrieve the position. Both of these discoveries have been overshadowed by the opening up of a wonderful shoot of ore on No. 8 vein on the 200-foot level. As there was practically no high-grade on the upper level of this lead, the duplication of the surface indications was as gratifying as it was surprising. There is now a drift a hundred feet long on No. 8 vein and fifty feet of it is probably almost as rich, if not as spectacular, as the Silver Sidewalk which made the Lawson famous. In width and values it can only be compared with the Meyer vein of the Nipissing. At the main La Rose, cross-cuts from the main vein at four different points have tapped an ore body parallel and as rich as the great producer. Though the developments on No. 3 far surpassed expectations, this parallel vein is easily the best ore body in the mine now.

La Rose has now ceased to ship low grade; it has cut down tonnage and increased production. The Princess has already been referred to. When La Rose prospects were gloomy, drifts on this little slice of conglomerate at the south end of Cobalt Lake gave the first promise of improvement.

The O'Brien completed its big mill during the year and is now the heaviest bullion producer in the camp. The centre of production has shifted to the southeast, and fine ore has been encountered in the diabase. The favourable developments in this formation on the O'Brien are the more interesting in view of the ill-success that has attended the majority of other properties that have relied upon diabase veins for their reserves. The various workings are all now connected underground and when Mr. Culbert's plans are complete, the whole tonnage will be raised up the one central shaft and sent over a tramway to the mill. The mill is making a good extraction on about 30 ounce ore. In spite of the heavy charges incident on a large amount of dead work and surface improvements, the O'Brien will make a profit of between $400,000 and half a million.

No Luck in Diabase.

Properties mining in the diabase on Cross Lake and to the east of the great square of the Nipissing have not lived up to expectations. After the cessation of operations for over a year the Colonial has operated its mill and has shipped just short of 200 tons of concentrates this year. It is reported that, as the shaft has been sunk, better values have been obtained, but ounces per ton run low and profits are tenuous. The property is being mined and worked conservatively and given a fair trial. The two producers on Cross Lake are now hunting for new ore bodies. With but a few months' ore reserves for their small mill in sight, the King Edward has accomplished some fine pioneer work in sinking a shaft 500 feet from the top of the cliff above its plant, and has cut one of the veins. It is not too promising. Mr. Glen Anderson will cross-cut to the No. 5, which showed good ore in the winze below the tunnel level. He expects to win fresh ore here, if it is to be discovered at all.

The Silver Cliff, bought by rich Pittsburg capitalists, and equipped expensively, will also have to open up more ore if it is to run the mill on its own ore for many months in the new year.

Expensive litigation and the nonfulfilment of the promise of surface veins underground has been balanced on the Nova Scotia by the excellent record of Mr. Kirby with his big cyanide mill. Once the dispute with the Peterson Lake in relation to the Nova Scotia lease has been settled, as it should soon with the more friendly board of directors, it is anticipated that more ore will be available for the mill. The Nova Scotia has shipped nothing but bullion this year.

The area between the Nova Scotia and the Kerr Lake district has been barren of results.

Prospects at Giroux Lake.

The discoveries on properties in the immediate vicinity of Kerr Lake will swell the ore reserves for the camp. With the single exception of the Silver Leaf, which still deserves the title of the most luckless forty acres in Cobalt, all the properties have done well. While the Drummond has not been successful in delving for new ore bodies on Kerr Lake, the Hargrave has found a new lead for it in the southwest corner of the property.

The Crown Reserve, with a record of 150 per cent. paid on capitalization in less than three years, has still considerable high grade ore in sight, and is developing a large tonnage of low-grade ore in preparation for the time when the mill is completed. It has opened new territory in the north with reassuring results, and the rich section near the Carson has furnished many delightful surprises in narrow, but rich, veins on the upper levels. The Victoria was the premier discovery of the year.

Possibly less is known of the Kerr Lake Mining Company than of any other in camp. It was feared that depleted ore reserves would induce a lowering of the dividend rate in the last quarter of the year, but the pessimists were not justified. In the last few months fine new ore bodies have been cut under Kerr Lake where previously no work had been done, and also near the Hargrave boundary, driving from the old Jacobs shaft. There is little doubt now that the Hargrave has the continuation of the Kerr Lake No. 3 right in its own territory. The vein is well defined, but is fickle in values. The ore bodies found so far are short. Close to the boundary line of the Drummond

the No. 1 vein has yielded practically all the shipments made this year. While this vein has produced some beautiful ore, it only occurs in lenses and no very considerable portion of it is in the Hargrave territory.

To the west of Kerr Lake the Diabase Mountain group have not had a profitable year. Sunk in the abyss of litigation and debt during nearly all 1910, the Cobalt Central in 1911 may have the opportunity of proving a profit-making mine again, as it is reported that all liabilities will be paid off by the new control, and that minerlike methods will be adopted.

The Bailey Cobalt has installed a good plant and opened up new ore bodies. Under skilful management it presents one of the possibilities of the coming year. The Foster has not shown any tendency to "come back."

Gillies Limit Unproductive.

The two Gillies Limit properties with any ore in sight each produced one car of ore from the Waldman vein, but their researches below the fault plane have not been encouraging. Alone of the purchasers from the Ontario Government in all their Gillies Limit sales the Provincial bears the earmarks of a producer. After developing a hundred-foot ore body near the Savage line and mining a high grade car, Mr. Reddington felt justified in erecting camps and preparing to open up his territory on a considerable scale. Adjoining it the Savage now forms a very valuable reserve to the McKinley-Darragh-Savage group. It is now producing steadily at the rate of thirty or forty thousand ounces per month, with excellent possibilities of increasing that rate in the coming year very materially.

South of the Hargrave and north of the Temiskaming and Beaver, there have been no new developments during the year, though there has been very considerable activity. The Rochester stands in a little better position than it occupied at the beginning of 1909, but the very promising indications of permanency shown during the year have not been maintained.

The Beaver has shown the most marked gain among South Coleman properties. The management has evinced disposition to pay less heed to the market and more to the mining of silver. One ore shoot of about 80 feet in length has been practically stoped out between the 200 and the 250-foot levels, but the same vein has been cut and opened up at two places on the 300-foot. Two other veins, discovering nothing but cobalt on the surface, have made beautiful high grade below. It is now reported that a mill will be built, results at the end of the year may prove that with the present ore bodies the step was not entirely a wise one.

The South Coleman Producers.

On the Temiskaming the good profits from the mill and the persistence of high-grade ore on the lower levels have permitted the directorate to resume regular quarterly dividends and pay a bonus. On the 500-foot level a few bunches only of high-grade ore have appeared, but it is thought that one of the principal veins has faulted and will be picked up on a lower level. There is much high-grade on the 400-foot level yet, and the low-grade reserves have only been stoped out as the mining of the richer ore progressed.

The year 1910 was disastrous to companies of purely speculative value, but has witnessed the building up of the district as a centre of industry and production to a degree not imagined twelve months ago by the most sanguine.

THE MINES BRANCH DURING 1910

Written for the CANADIAN MINING JOURNAL.

The following is a brief account of the field work and other investigations carried on by the Mines Branch of the Federal Department of Mines, during the past year:

The investigation of the handling, storage and use of explosives, instituted in 1909, was continued. Capt. A. P. H. Desborough, one of His Majesty's inspectors of explosives, was invited to visit Canada to consult with the Government with regard to proposed regulations to govern the manufacture and storage of explosives, and with respect to the establishment of an explosives testing station. Captain Desborough, accompanied by Mr. Joseph G. S. Hudson, visited nearly all of the Canadian explosive factories and distribution depots, where high explosives are stored, in order to study the existing conditions in this country. Captain Desborough's report and recommendations will appear in the summary report of the Mines Branch.

The number of casualties which have occurred in using high explosives and the great loss of life and property resulting from explosions in magazines, in which high explosives are stored, have recently emphasized the pressing necessity for a thorough investigation of the matter to be followed by legislation regulating the manufacture, handling, storage and use of high explosives.

The gathering of information for a special bulletin on the copper resources of Canada was continued by Dr. Alfred W. G. Wilson. During the past season he visited numerous localities in Ontario and the Maritime Provinces.

The commercial processes for using pyrites as a source of sulphur, are also under investigation by Dr. Wilson. Pyrite burning is of special importance at the present time with respect, both, to the sulphite pulp industry and in the preparation of mineral fertilizers. Sulphur is now imported for use in these industries, while the bulk of the pyrites ore mines in Canada is exported. The introduction of a satisfactory process for recovering the sulphur content of these ores for such purposes as above mentioned would open a home market for our undeveloped pyrite resources and for pyritic ores of low copper content.

Magnetometric surveys were carried on in Ontario, New Brunswick and Nova Scotia during 1910.

Mr. Einar Lindeman extended the surveys already made at Bathurst, N.B., and at Bessemer, Ontario, and also made topographical surveys of these localities.

Mr. Howells Frechette made a magnetometric and topographic survey of a part of the Torbrook iron range, Nova Scotia.

Mr. L. Heber Cole, recently appointed to the department, spent the latter part of the summer in the Cobalt and Porcupine districts obtaining information regarding the mining operations there.

During the past summer Dr. T. L. Walker, of Toronto, continued the work he has been doing for the Mines Branch in investigating the molybdenite resources of Canada. He examined numerous properties

in Ontario, British Columbia, Quebec and New Brunswick.

The ore testing plant for experimental investigation into methods of concentrating magnetic iron ores is now in operation under the supervision of Mr. George C. Mackenzie. The equipment consists of one complete unit of the Grondal concentrating apparatus, including one Blake crusher, one Harding ball mill and two Grondal separators arranged in tandem. Experiments are being made on various Canadian magnetites in lots of from 5 to 50 tons. The problem of economical concentration is of great importance on account of the very large number of deposits of magnetite in Canada, too low in iron content for the direct use of the iron masters. The ever increasing demand for iron ore and the limited amount of high grade ore in sight emphasizes the importance of converting these low grade magnetites into stock suitable for iron making.

The problems of developing a commercial process or processes for the production of zinc and zinc products from the complex Canadian zinc ores have been under investigation by Dr. Haanel, Mr. W. R. Ingalls, of New York, and Dr. Alfred Stansfield, of McGill University, Montreal.

Mr. F. W. Harbord, of London, England, has been engaged to investigate electro-thermic processes invented recently in Europe for the production of spelter and zinc oxide.

Mr. Hugh de Schmid visited most of the mica properties of Ontario and Quebec, gathering data for a on mica.

Dr. Wm. A. Parks, of Toronto University, has been collecting data for a special report on the building and ornamental stones of Ontario. This will be the first of a series of monographs on Canadian building stone, to be issued by the Mines Branch.

The installation of a peat gas producer, gas engine, dynamo and other apparatus was completed during the summer at the Fuel Testing Plant in Ottawa. Several tests have already been made by Mr. B. F. Haanel, on peat from the Victoria Roads peat bog and the Government bog at Alfred, Ont. At present a second gas producer is being installed in order to extend the scope of this plant to the testing of lignite and bituminous coal.

The Government peat plant on the bog at Alfred, Ont., was in operation under the supervision of Mr. Aleph Anrep, Jr., for about two and a half months, during which time 1,600 tons of peat were produced. More than 600 tons were sold at Alfred and Ottawa for domestic use, the remaining quantity being required for the operation of the fuel testing plant. The bog at Alfred was visited by the members of the American Peat Society in July, a special excursion being made from Ottawa, where the society was then in annual session.

In addition to the work at Alfred, Mr. Anrep made a thorough examination of the Holland peat bog at Bradford, Ontario, a bog 16 miles long and up to two miles in width.

Statistics of mineral production during the calendar year 1909 were collected by the Division of Mineral Resources and Statistics under the direction of Mr. John McLeish and a preliminary report thereon was issued on March 1st. Mr. C. T. Cartwright spent some time visiting clay manufacturers and quarry operators in Ontario collecting statistics of production, etc. A complete and revised report on the mineral production in Canada during the calendar year 1909 has been prepared and special bulletins on the production of iron and steel, coal and coke, and on cement, lime, clays, stone, and other structural materials have been separately issued. This division is now engaged in the collection of statistics of mineral production during the calendar year 1910, and the active and prompt co-operation of all mining operators, brickmakers, quarry owners, etc., is urgently desired to ensure an early compilation and publication of results.

The usual routine work has been carried on in the Chemical Division under Mr. F. G. Wait.

The following reports were issued during the year 1910:—

47. Iron ore deposits of Vancouver and Texada Islands. By Einer Lindeman, M.E.

55. Report on the bituminous or oil shales of New Brunswick and Nova Scotia; also on the oil shale industry of Scotland. By Dr. R. W. Ells.

58. Annual report of Division of Mineral Resources and Statistics on the mineral production of Canada during the calendar years 1907 and 1908. By John McLeish, B.A.

59. Report on the chemical analyses made in the Mines Branch Laboratories, during the years 1906, 1907 and 1908. (Appendix—Commercial Methods and Apparatus for the Analyses of Oil Shales, by H. A. Leverin, Ch.E.) By F. G. Wait, M.A.

62. Preliminary report on the mineral production of Canada during the calendar year 1909. By John McLeish, B.A.

63. Summary report, 1909.

67. Bulletin No. 2, iron ore deposits of the Bristol mines, Pontiac County, Que. By Einer Lindeman, M.E., and magnetic concentration of ores, by George C. Mackenzie, B.Sc.

68. Bulletin No. 3, recent advances in the construction of electric furnaces for the production of pig iron, steel and zinc. By Eugene Haanel, Ph.D.

71. Bulletin No. 4, investigation of the peat bogs and peat industry of Canada, 1909-10. By Aleph Anrep, Jr.

79. Production of iron and steel in Canada during the calendar year 1909. By John McLeish, B.A.

80. Production of coal and coke in Canada during the calendar year 1909. By John McLeish, B.A.

85. Production of cement, clay products, stone and other structural materials, in Canada during the calendar year 1909. By John McLeish, B.A.

The following reports are at present in press:—

69. Chrysotile-Asbestos: Its Occurrence, Exploitation, Milling and Uses. (Second edition, enlarged.) By Fritz Cirkel, M.E.

82. Magnetic concentration experiments. Bulletin No. 5. By George C. Mackenzie, B.Sc.

84. Gypsum deposits of the Maritime Provinces of Canada—including the Magdaline Islands. By W. F. Jennison, M.E.

Nova Scotia's coal output was larger during 1910 than in 1909.

Crude No. 1 Canadian feldspar fetches a high price in the United States. It sells for $5 per long ton at Trenton, N.J. The ground brings $10.50 per short ton. No. 2 Canadian crude, on "standard," brings from $5 to $5.25 per long ton; the same grade, when ground, sells for from $9 to $9.50 per short ton. The various grades of United States feldspar range from $2.50 to $4.50 for crude, and from $5.50 to $9 for ground. The Canadian feldspar, as shipped to the United States, contains 71 per cent. of potash feldspar (orthoclase).

THE MARITIME OILFIELDS, NEW BRUNSWICK

[EDITOR'S NOTE.—We have made frequent reference in these columns to the new gas and oil fields near Moncton, New Brunswick. In our editorial review, January 1st, there occurs a misprint. The discoveries are referred to as being near Bathurst. This, of course, was one of those inadvertences that it appears impossible to avoid once in a while. They grieve the editor, who, in turn, tries to grieve the printer.

The following facts concerning the wells are of much interest:

The work of the Maritime Oilfields Company, in the Stony Creek field, Albert County, New Brunswick, has brought excellent results. The field exploited is small, being only a mile wide from north to south, and two miles long from east to west. The oil wells shot have a total daily capacity of 50 barrels. The total flow of gas from all the wells is estimated at about 40,000,000 cubic feet per day.

This announcement will come as a surprise to most of our readers. The exploitation of this field was undertaken by Dr. J. A. L. Henderson, of London, England. From the first, the task of opening up this extremely productive field was beset with difficulties. But nothing has daunted the enthusiasm of Dr. Henderson. He is blessed with a level head, and clear business perception. And he and his company have been rewarded beyond their most sanguine expectations.

Contracts have been entered into with the city of Moncton to supply power for the lighting of the city, for fuel gas, and for the proposed new tramway. The laying of pipes will be commenced early in the spring. The distance to Moncton is only ten miles.

Moncton, a city of about 15,000 population, is a growing manufacturing centre. The large shops of the Intercolonial Railway are situated there. Other considerable industrial plants also have Moncton for their home. The country surrounding is rich agriculturally. The bringing in of a plentiful supply of cheap fuel will, without doubt, give a tremendous impetus to the city and to the surrounding district.

Only a minimum quantity of oil is being pumped—enough merely to prevent flooding of the gas sands. A few notes on each well are here appended:

No. 1 well was started about two years ago. It was abandoned at 1,220 feet.

No 2 well, 11 miles from Moncton, was abandoned in October, 1909, at 2,400 feet.

No. 3, at Stony Creek, 10 miles south of Moncton, was the first producer, yielding 300,000 cubic feet of gas per day, and two barrels of oil.

Well No. 4 was drilled on the Westmoreland side, but no productive sands were found to a depth of 1,675 feet. All further operations have been confined to Albert County.

Well No. 5 at Stony Creek, was the first big gas producer, its capacity being now placed at 2,000,000 cubic feet per day with a pressure of 105 pounds per square inch. It also yields two barrels oil daily. (This is the well from which the company gets its gas for power and after using for over a year, the production is greater than when first shut in.

Well No. 6. north of No. 5, proved to be a "crooked" hole and was abandoned at 1,320 feet.

Well No. 7, drilled to a depth of 1,990 feet, has an oil capacity of 8 barrels per day and 125,000 feet of natural gas.

Well No. 8, at a depth of 1,680 feet, has a natural gas capacity of 1,600,000 feet per day and shows good indications of oil, but owing to the strong flow of gas, the pressure being 200 lbs. to the square inch, it is impossible to torpedo the sands.

Well No. 9 is a small gas producer, and shows a yield of 5 barrels of oil per day. Salt water interfered with drilling at a depth of 2,060 feet.

Well No. 10 has a natural gas capacity of about 380,000 feet per day and yields about 4 barrels of oil per day.

Well No. 11 was abandoned at 1,250 feet, owing to the breaking of the drilling cable which could not be recovered.

Well No. 12 has a gas capacity of 3,695,000 cubic feet daily and a pressure of 610 lbs. per square inch with a good show of oil, not torpedoed.

Well No. 13, gas capacity 786,000 feet, pressure 200 lbs. Good showing of oil. Capped at 1,595 feet.

Well No. 14 is the king of the gas producers, the test showing 10,000,000 feet daily, with a pressure of 475 lbs. At a depth of 1,480 feet the flow of gas was so strong that it was impossible to continue drilling and the well was capped.

In wells Nos. 15 and 16 there was the same experience, the gas pressure being too great between 1,400 and 1,500 feet to admit of drilling.

The capacity of these wells is as follows: (15) 6,500,000 feet, pressure 285 pounds; (16) 9,500,000 feet, pressure 350 pounds.

Work is now proceeding on wells 17 and 18. In No. 17 drilling was commenced in October and the hole is now 1,950 feet deep with a good showing of oil and a strong flow of gas. No. 18 is down 2,175 feet, operations being commenced November 14th. It is understood the company will continue operations all winter.

SUMMARY OF WORK DONE AT NIPISSING AND LA ROSE FOR 1910

(Written for the CANADIAN MINING JOURNAL by R. B. WATSON.)

The year 1910 has been a prosperous one for Nipissing and La Rose as well as for the Cobalt district in general.

The camp's tonnage and ounces of silver shipped will both show an increase over 1909.

The tonnage shipped does not reflect accurately the prosperity of the camp, as the mills are now treating a considerable part of the low grade ore which formerly went to the smelters; much progress has been made in this direction during the year and the time is approaching when very little except high grade ore and concentrate will be shipped to outside reduction works. Bullion is being produced by several cyanide plants, with

or without amalgamation, and the next step to look forward to is the production of bullion from the high grade ores.

This is the history of most mining camps but the complex nature of the Cobalt ores has retarded this logical development.

There has been a further slump in the price of cobalt oxide which resulted in a prompt change of schedule by the principal Canadian smelters cutting off all payments for cobalt. The mines are now receiving no revenue from the cobalt contents of the ores except on the small tonnage shipped to Europe.

Working conditions have improved since the arrival of power in the late spring.

There are now two power companies supplying compressed air and two supplying electric power.

The latter service has been quite satisfactory; and while the air power has been subject to more frequent irregularities, due to the starting up of a new plant, these initial difficulties will doubtless soon be overcome and the result is a service of great convenience.

The air supplied by the hydraulic plant is somewhat deficient in oxygen, so that a candle does not burn freely in a face where there is no natural ventilation. No bad effects, however, have been felt by the men working in this air as far as noted. Acetylene lamps are used in place of candles; they give a better and cheaper light and will probably replace candles throughout the mine, even where they are not necessary.

The shipments of the Nipissing Company for the year will be about 6,600 dry tons, containing 5,500,000 ounces of silver. During the month of December alone the shipments will amount to about 850,000 ounces. This is the largest number of ounces ever shipped in one month by the company and the year's results show a substantial increase over 1909.

The principal veins which have yielded this product are the four veins in the Town of Cobalt, namely No. 64, No. 73, No. 80, and No. 100, together with No. 63 (Kendall), No. 26, No. 122, and No. 54 on the east side of the lake.

The deepest working on the property is on Vein 64, where a considerable amount of development has been done on the 270-foot level and above. Several good ore shoots have been found and a winze is now being sunk to the 350-foot level.

This vein is the strongest fissure yet opened up on the property; it has been drifted on for some 800 feet and appears to be as strong in the Keewatin as in the overlying conglomerate—although the ore so far found has been in the latter formation. It will be explored in depth in hopes that the Keewatin here will give as favourable results as have been obtained in this formation at several places in the southern part of the district. The Keewatin is being looked upon with less suspicion than heretofore.

The best new ore body of the year is on the 160-foot level of vein 73, where there is high grade ore for a length of 250 feet, with an average width of six inches. There is also another parallel stringer of good ore 150 feet long and two inches wide. Very little stoping has been done on this level; nor has it been necessary to draw from the big ore shoot on the first level.

Veins 80 and 100 have produced a large tonnage from the stopes above the 70-foot level; both veins have been located on the 190-foot level.

On the Kendall vein (No. 63) a new level has been driven at a depth of 225 feet, where stopes will be started in both the main vein and the cross vein. A new vein which promises well has recently been found in a cross-cut on the 145-foot level.

No stoping has been done on vein 122, which is now being developed on the second level.

Two new shafts have been sunk in the Keewatin; one near the O'Brien line; the other in the southwest corner of the property next to the Gillies Limit. These will explore several veins showing rich ore on the surface.

A small jigging plant is being installed for the treatment of the large tonnage of screenings heretofore shipped to the smelters; the tailing from this will go to the Nipissing Reduction Company's concentrator to be treated with the low grade ore from vein 63.

It is hoped that a complete method of treatment for the large amount of low grade ores now on the dumps and in the mines, will be worked out at the small experimental plant now under construction.

La Rose shipments for the year will approximate 5,040 dry tons, containing 3,400,000 ounces of silver.

A large amount of development and exploration has been done with very satisfactory results. This work has been confined to La Rose, Lawson, and Princess properties, with some surface and underground prospecting on the Fisher-Eplett group in the south end of the district.

At La Rose proper a new vein was discovered lying west of the main vein and on which an ore shoot some 250 feet long has been blocked out.

Several of the cross-veins have been producing well; the best of these is No. 3, now being developed on the 235-foot level. This vein passed from the conglomerate into Keewatin at about 100 feet and represents one of the few instances where the rich ore continued into the lower formation.

The Princess mine has yielded steadily and is turning out to be a valuable bit of territory. A number of new veins have been found and the lot will be systematically prospected for others.

The Lawson mine made a bad beginning but is now redeeming itself, after a period of steady exploration. A very interesting development has taken place recently in No. 8 vein—a wide calcite filled fissure which runs for many hundred feet across the property. The outcrop yielded only a few bags of ore and on the 88-foot level there was practically nothing. The shaft was then sunk 100 feet deeper into the Keewatin, where a beautiful ore shoot of 5,000 ounce ore, eight to ten inches wide, was found. This ore body has yielded $160,000 worth of ore during the last two months in taking out sufficient ground for the stope timbers. The finding of high grade cobalt ore at depth in the Keewatin, under a calcite outcrop, suggests large possibilities not only for this ground but for other veins in the district.

Shipments from La Rose properties have shown a falling off in tonnage due to the fact that practically nothing is now sent to the smelters except first-class ore and concentrate. Jigging plants have been installed which extract the heavy mineral from the screenings produced by the bumping tables, and the jig tailing then goes to the concentrator.

The Northern Customs Concentrator is treating 100 tons per day of La Rose second class ore and is enlarging its mill to take care of the excess which is now going to the dumps.

Cobalt shipped about one hundred thousand ounces of bullion during 1910.

OUR BRITISH LETTER.

The General Election and the Markets—A Modderfontein Surprise and Some Developments—Electrical Hoisting on the Rand—Rhodesia's Rise—A Country with a Big Mining Future—Welsh Miners' Strike—Conditions in Welsh Collieries—Gold Mining in Russia.

(Exclusive correspondence of the CANADIAN MINING JOURNAL.)

With a general election in progress markets, mining or otherwise, have shown no special activity. The connection between politics and the markets is close—perhaps closer than it need be. The Liberal Government will return to power with practically the same majority that it had in the old Parliament, and as the Liberal Government is not particularly favoured by the investing and monied classes markets have tended towards depreciation following close upon the lead of Consols. In the new House of Commons, however, finance and its mining subsections will be again well represented.

The South African market has of late had one or two adverse circumstances to contend with, chiefly relating to Rhodesian companies, which have affected the market as a whole. The unexpectedly good Modderfontein dividend announced on December 13th was therefore an agreeable surprise. Estimates had been current that only $1.50 per share would be distributed, or the same as for the June half of the year, but the actual announcement is $2 per share, or 10 per cent., making 17 1-2 per cent. for the year to December 31st next, as compared with 12 1-2 per cent. for the corresponding period previously.

Modderfontein shares, on this announcement, improved appreciably, to nearly $60, which is about $5 above the lowest of the year, though fully $11.25 below the highest. The company owns a very large claim area, and a considerable reduction effected in the working costs has made it possible to utilize a large quantity of ore which previously had been discarded as worthless. For instance, in 1906 the chairman roughly estimated that about 25 per cent. of the area contained non-payable ore deposit, which made the total contents equivalent to 18,400,000 milled tons. More recent estimates placed the figure at over 23,000,000 tons, and an unofficial but expert estimate further raised this figure.

On January 1st last it was estimated that by using one million tons per year the mine would have a life of about 21 years. The reduction in the working costs and consequent increase in the profits—that is, treating the same quality of ore—is indicated by the fact that for the year to May 31st, 1906, the profit per ton of ore treated was $1.66, whereas for the year ended 1909 the figure had risen to $3.36. The issued capital is $7,000,000, in shares of $20 each, which, on the basis of the latest dividend yield a purchaser about 5 7-8 per cent. As in mining investments it is reckoned that the return should be at least 5 per cent., plus the amount necessary to write off the investment during the estimated life of the mine, it would seem that the shares are fully valued, except on the inference that the dividend will be further raised.

There are several interesting features in connection with the electrical hoisting equipment of the Rand Collieries, which are now being actively developed as a gold mine, though floated originally as a coal mine. At the Rand Collieries there are two shafts, but work is more advanced at No. 1. For this shaft there are two hoists, one capable of lifting six tons and the other three tons of rock. The drums are of the cylindro-conical type, which are directly coupled to direct current separately excited motors, being supplied with current from variable voltage generators. Special provision is made in the electrical equipment to ensure safe working. In order to obtain the best results there are continuous current machines fitted with auxiliary poles and compensating winding on the main poles.

The power will be supplied from the Victoria Falls at 10,000 volts to a transformer-house, where it is converted into 6,000 volts, to which pressure the induction motors driving the control generators and the pump motors, etc., are connected. The direct current generator from the 6-ton hoist is capable of giving any pressure from zero to 800 volts, positive or negative. The control generator from the 3-ton hoist is wound for a maximum pressure of 400 volts only. The company's engineers are confident that hoisting costs by these hoists, to be installed at the two vertical shafts, will not exceed six cents per ton, as compared with from 25 cents to 30 cents per ton on most deep level mines where steam power is used. It is also confidently believed that milling costs, with a reduction plant of the very latest design to be subsequently erected, will be very considerably below the present level on the Rand by reason of the much higher duty per unit, vastly improved facilities for working, and the lower running and maintenance costs consequent upon the electrical drive.

In the matter of Rhodesian mining there is a gradual increase in public confidence to be noted on the whole, and Rhodesia, once the Cinderella amongst mining companies, is gradually forcing its way towards a consistently increasing output of gold. The Chartered Company, which rules Rhodesia, is slowly learning the lesson of its errors of past control. Already Rhodesia's gold production amounts to about $12,500,000 annually and the colony remains for the time being as it began, a mining country. Geologically speaking, the high veld, as the great stretch of rolling plains and tree-clad ridges are termed, is made up of old metamorphic rocks into which have been intruded great masses of granite. The granites themselves, though affording splendid building stone for future generations, are of little economic importance. In the schist belts, however, and especially along or near their contact with the granites, gold reefs are frequently met with, as well as deposits of other minerals. No particular district seems to be specially favoured; first one and then another may become the centre of attraction to the prospector for the time being. There are, moreover, no long lines of reef, and it cannot be demonstrated that any two important producing mines are situate on the same lode. Whether this want of concentration is an advantage or a disadvantage is open to argument.

Historically considered, Rhodesia's mining is based upon various discoveries with regard to ancient workings and the story of the colony has not been marked by any of the great "finds" of large nuggets or rich outcrops that have marked the early days of great auriferous areas. It is clear that an ancient race carried on extensive gold mining in Rhodesia, old workings and implements being found over large stretches of the country. Rhodesia's reefs were formerly not believed to "go down," but recent returns have dissipated this old idea, some workings now reaching a depth of 1,700 feet. The industry has now got into a good swing and within the next few years a series of new

discoveries is confidently anticipated, especially of ore bodies untouched by the ancients, now that an era of genuine prospecting has set in.

The Welsh coal miners' strike, which has affected more than 30,000 men and has at times been marked by rioting of a kind practically hitherto unknown in this country's labour struggles, is quieting down. The Board of Trade is lending its help with a view to securing a settlement and at last those insurgent miners who were refusing to obey the orders of their own union and the Welsh Miners' Federation, are exhibiting a more conciliatory attitude. Numbers have returned to work by arrangement with their union. The trouble in South Wales is of long standing and is not the straight-out question of wages and hours of labour that most labour disputes are.

About half the men employed in a mine are at work in actually winning coal, being called hewers or colliers; and the rest are employed in haulage, maintenance, and supervision, or about the surface. The colliers are nearly always paid by the piece, the rest by the day. The present dispute concerns the colliers alone directly, the other classes of workers having struck in sympathy.

Each hewer is assigned a certain length of the face of coal—his "stall," as it is called—which he has to work, either with the help of a boy, whom he pays, or in partnership with another man, the two dividing the earnings. The hewer fills his tram, chalks his number on it, and at the surface it is weighed and tipped over a screen into the railway truck. The small coal falls through the screen, is separately weighed, and discharged into another truck. The weight of large coal hewn is thus ascertained, the miner not being paid for small coal in most of the collieries of South Wales.

The percentage of small coal depends partly upon the skill of the workman, and partly upon the condition of the coal, whether it is soft or hard, or has been crushed by earth movement; and it is evident that the piece-rate per ton of large coal won must be adjusted to make fair allowance for the proportion of small coal which a good workman must inevitably produce. When bands of stone occur in the coal, or loose under the roof, the extra work they give is paid for by an additional tonnage rate agreed upon between the fireman (who acts as foreman, besides testing for gas) and the collier. Various other kinds of work, such as setting props to support the roof and packing waste stone into walls, are paid by the piece. As far as possible permanent rates are agreed upon for all these tasks for each seam of coal, but when the conditions are very variable, there is often difficulty in deciding what rate to apply, and the rates in the official price list not infrequently prove too low. Then the question of an extra allowance arises.

Since the men maintain a check-weigher to verify the owner's weighings, no dispute can arise as to the payment for coal hewn; but it is otherwise in regard to extra payments, in regard to which there seems to be no proper system of record and verification. Bargains between the fireman and a collier are sometimes forgotten, or occasionally, perhaps, wilfully suppressed by the former when he finds he has made total allowances beyond the sum permitted him by the manager. But there are other grave abuses connected with these extra payments and with the allocation of men to particular stalls, such as favouritism, propitiating of committee-men with higher allowances, and bullying the weaker or needy men into accepting lower rates.

A most objectionable feature of the present system is the dispute which occurs on fortnightly pay days, a knot of men remaining behind to demand allowances which they believe are due. After many attempts they may get an interview with the manager, or they may have to rely on the men's committee of the pit, who take up numbers of cases every fortnight. In many cases the allowances are ultimately granted, sometimes after several weeks; but so far as I can ascertain the granting of them is very arbitrary, and depends a good deal on importunity. The earnings of Welsh adult miners vary from 50 cents to four dollars per day and it can be understood that disputes are quite likely to occur even with good feeling on both sides.

The importance of the gold mining industry in Russia is one that is well recognized. A correspondent informs me that at a recent meeting of mining engineers, Herr S. A. Gumnitsky gave an address on the position of the dredging industry in Russia, or, rather, ten years of the dredging industry in the Yenissei district. It appears that the winning of gold by dredging has been in operation in the district for just ten years, and in this respect stands out prominently as compared with other gold districts. The lecturer said that the dredges had been in use long enough for a judgment to be passed on the comparative merits of the various types used, and, of course, of their comparative demerits, if any. The question has become a serious one in view of the fact that the gold industry in the Yenissei district is passing through a very serious crisis. One of the causes of this, he said, was the dearness of labour, particularly during the past few years, and then there has been the appreciation in the value of provisions of all kinds, and, finally, the weakening of the richness of the gold content in the sands, and so on.

He went into detail on the respective merits of the various types of dredges in use on the fields, including the New Zealand, American, Neviansky, and Putiloff types. Those used in the district do not differ, he said, essentially from the type of the Neviansky, and criticizing certain defects in the construction of some of them, he thought these were properly referable to the nature of the ground they had to work, and that the fault in no way lay with the makers, for these had in every case scrupulously followed the instructions of the users.

Idleness and necessity have forced the Urals mining workmen to return to their original occupation—the search of gold in their own grounds. They wash gold in the Neviansky factory and find it also in the well-known Nizhne Tagil area, and they have even discovered in their back-yards and orchards deposits of rich iron-stone and in great abundance. In a word, there is no work in the closed Urals factories, so the workmen are after gold and metals where they did not think it worth their while before. Gold is still to be found in many places. "I know in the Northern Urals," says my correspondent, "in one vilage, that of Ivdel, on the bank of the River Ivdel, where not only is gold found in the orchards of the inhabitants, but the very church, although far from the river, is built on auriferous ground, and I have seen, when there, every time that a grave was dug in that northern latitude, without fail, they struck a rich bed of sand where even nuggets were found. An effort to exploit the gold for the benefit of the church fell through."

Coal Mining in Nicola Valley and Smilkameen Districts, B.C

Now that these southern British Columbia districts are accessible by railways, the development of some of their resources is being proceeded with. Prominent among the activities that are taking place is coal mining, which in Nicola Valley is becoming important, while in the Similkameen it is still largely in the prospect stage. However, much development is being energetically undertaken, and in two or three instances surface equipments are being provided, so that shipment of coal from these new properties may be made before the current year shall close.

Nicola Valley.

Nicola Valley Coal & Coke Company, Limited.—This company owns and operates the Middlesboro colliery, in Nicola mining division. During last year work was done in mines Nos. 1, 3, 4 and 5, and a production of about 158,000 short tons of coal was made. In No. 1 the development work in progress in 1909 was continued, and a second slope was opened. In No. 3 the seam, which is small in this mine, was developed; a rock tunnel connects the mine with No. 2. No. 4 mine has been developed to an output capacity of about 200 tons of coal a day. In No. 5 the workings were further extended. A new fan, with a capacity of 150,000 cubic feet, is being put in, and preparations are being made to considerably enlarge the surface by installing next spring a modern equipment of much greater capacity than that now in use.

Transportation.—The construction of the Kettle Valley Railway, now in hand, will add to existing transportation facilities, which are afforded by the C.P.R. Company's line from the mines to Spence's Bridge. When the new railway shall be completed to the Boundary district a large and easily accessible market will be opened to the coal mines of Nicola Valley. The Kettle Valley line runs for four miles within the bounds of this coal company's property. Mr. Charles Graham, formerly with the Western Fuel Company, Nanaimo, was lately appointed superintendent for this company.

There are several other coal properties in this district on which development work has been done, and some of them are stated to give promise of proving producers.

Similkameen.

Princeton Collieries, Limited.—This company controls about 12,300 acres of coal lands near Princeton. Plans for a modern 500-ton tipple are being prepared, and it is stated that development work will shortly be begun on an 8-foot seam which outcrops near the Tulameen River. Railway transportation will be available, and it is intended to energetically develop this property.

Princeton Coal & Land Company.—This is an offshoot of the old Vermilion Forks Mining and Development Company, which has held land, mining, and townsite interests for years. In December, 1909, production was commenced, and the output was 150 tons. Since then railway communication has been established with the Boundary and Spokane. Last year's production was between 11,000 and 12,000 short tons. The main incline on the dip of the seam is down 450 feet and numerous cross-cuts and levels have been driven. A 50 h.p. steam boiler and hoist operate single rope haulage. Other improvements made recently include the erection of several mine buildings.

Osoyoos Coal Company.—The occurrence of an 18-foot seam of coal of excellent quality on this company's property is reported, but it has not yet been extensively developed. Men were employed during recent months opening this coal, and the prospects are stated to be good for permanent and profitable development.

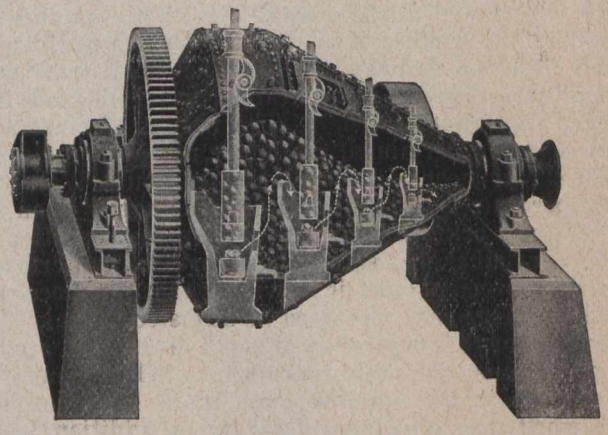
Columbia Coal & Coke Company.—This company holds 10 square miles of coal lands, extending from Granite Creek six miles to the Tulameen (Otter Flat). Last summer 35 to 50 men were employed exposing the various seams, of which it is claimed there are six that are workable. The designing and installation of plant to eventually have a coal-handling capacity of 2,000 tons a day, has been contracted for by a Chicago firm of engineers.

Gravity Stamps Obsolete

By H. W. HARDINGE.

In the rhythmic dropping of the stamps to the old mill man, there is as much harmony as in musical tone to the musician. A discord is produced in the ear of the former when the feed of the battery allows metal to strike on metal. The disquieting note is as detectable above the din to his practiced ear as a false note in an orchestra to the leader.

It is, perhaps, for this reason that the mill man loves his noisy pets and is loath to accept innovations; but they are as sure to come as other advances in metal-



lurgy. It is only a few years since cyanide largely replaced amalgamation in gold milling and the tube mill took the place of grinding pans. We must give way to advancement, and the more experienced metallurgist, who is willing to recognize new features in ways and methods, will keep up with his younger competitor who is not hampered with too much obsolete knowledge. Better be ignorant than learned in methods out of date.

Only within a very short time the South African engineer has broken away from the use of fine screens on his batteries and is now using screens of larger openings than was before thought practicable. He is also modifying weight, height of drop, and drops per minute, to meet the requirement of dealing with the problem of economy necessitated by the lower grades of ores encountered. Less than a year ago the writer in conversation with one of the most successful mine managers and metallurgists in the Cobalt district, suggested that he change his 20-mesh battery screens to 10-mesh; but an objection was made that such a screen would be too coarse. He, however, was alive to possibilities, and we ascertained within the past few days that he has "gone us one better," for his batteries are

now equipped with slotted screens of four times the aperture area of our suggested 10-mesh. The result is that he has doubled his stamp capacity, and his "oversize" is easily taken care of by his pebble mill without any additional increase in power consumption over the same method when the stamps were endeavouring to crush sand by pounding it upon a previously prepared bed of sand on his stamp die. If, then, the stamp is a better coarse than fine grinder or reducer, would it not be well to discard it altogether and employ a machine especially adapted to fine crushing?

A representative of one of the largest manufacturers of mining machinery in the world, writing upon this same subject, and referring to different methods of crushing, appears to give preference to Chile mills and ball mills, even of the older type; and in this connection says, as is true, "there is no work for the gravity stamp which cannot be done better by either of the other coarse crushers."

The writer, in his metallurgical practice, recognized this fact several years ago and in his effort to remedy the defect, through an application of a combination of machines, invented a new type of ball mill embodying the features of automatically adjusting the power to work, i.e., utilizing a large ball to crush the larger pieces in the largest diameter of the mill, and successively smaller balls in the zone of the lesser diameter and lesser weights of balls as well as gradually reducing peripheral speeds, thus relatively taking the place of gradually reduced weights of stamps with lighter and fewer drops per minute. This idea we have endeavoured to illustrate graphically in the accompanying cut of a mill automatically adjusting power to desired work.

The small mill shown has a capacity equal to 15 to 20 stamps and the total cost of mill complete hardly amounts to the cost of foundations for the stamps. It is operated without screens and is as effective as simple. As a further illustration of the unnecessary work put upon the stamp, let us suggest a consideration of this work. For instance, a 2-inch cube of ore beneath the stamp shoe signifies the kind of work that such a machine should do. It will effectively reduce this piece of ore in a single drop so that its resulting particles will average less than a diameter of 1-4 inch, or a reduction of over 500:1. Then the logical sequence of size of the next reducing medium should be in the same ratio to the particle undergoing further division. This would reduce the weight of the stamp in the same proportion, necessitating a "stamp" weight of about 2 pounds. This effect is easily obtained by employing a small 2 1-2 inch or 3 inch ball, and instead of a single stamp we have hundreds of this size of "stamps" for further reduction, acting upon a multiplicity of relative sized particles, a plausible and mechanical result to be attained. Thus, we use a sledge hammer upon a spike and tack hammers upon a tack.

In another short article, we may have something to say in reference to amalgamating gold ores in pebble and ball mills, which idea, at first thought, will not be viewed without considerable questioning by the older millman on account of "flouring" of the quicksilver. It, however, in spite of opinions to the contrary, is being successfully done in the conical pebble mill.

Nova Scotia Steel and Coal Company

The Record of a Prosperous Year.

The year 1910 was one of record outputs and general expansion with the Nova Scotia Steel and Coal Company. Every department of the company's varied works set a new record for production, while the additions and improvements that were made in nearly all the departments will make possible even better production in the future.

At the Wabana iron mines, perhaps greater improvements were made than at any of the other properties. The submarine slopes were further advanced 1,500 feet and are now nearly 7,000 feet from highwater mark. Boreholes sunk to the lower bed from the slopes on the upper seam showed a very marked increase in the richness and thickness of this underlying one. A large amount of equipment was put in here during the year. A Fraser and Chalmers first-motion duplex steam hoisting engine, said to be the most powerful of its kind in British North America, was installed; a new deckhead and a belthouse, with many labour-saving devices were erected; and the hoisting slopes were laid with 80-pound standard section steel rails.

An electrical power plant consisting of Belliss and Morcom triple expansion condensing engines operating Brown Boveri generators was installed adjoining the shipping pier. This plant will supply power for all the operations at the piers and by a transmission line across the island will furnish the electrical power required at the mines. A coal discharging tower was constructed adjoining the electrical plant, work begun on a new ore pocket and sixteen houses were constructed.

R. E. Harris, Pres. N.S.S. & C. Co.

At Sydney Mines the blast furnace and three of the open-hearth furnaces were remodelled and relined during the early summer and the improvements effected then have greatly increased their production. For the past six months their outputs have exceeded those of any other furnace of similar capacity. The usual renewals and replacements were made at the collieries and 76 houses were constructed for employees.

Important additions were made at the New Glasgow works. The new buildings with a combined length of over a quarter of a mile, were erected. One will house the spike, bolt and nut, rivet and polished shafting departments, while the other will replace the shipping building. The combined 16-inch and 9-inch mill installed some fifteen years ago, having become inadequate to the work required, was replaced by separate

18-inch and 9-inch mills. To supply the additional power required an electric power generating set of 2,000 h.p. driven by turbines to be operated by the exhaust steam from the present cogging mill and bar mill engines is now being built in Great Britain, and will shortly be installed, the foundations for which and building to house same being now completed and ready for the erection of this plant.

The progress of the company during the past year is best shown by the following table of outputs, number of employees, etc., in 1909 and 1910:

	1910.	1909.
Iron ore mined	537,000	460,387
Coal mined	845,000	813,453
Limestone and dolomite quarried	75,000	74,407
Coke made	90,000	87,816
Pig iron made	66,000	57,676
Steel ingots cast	75,000	64,240
Steel billets cogged	59,000	52,931
Bars and plate rolled	49,000	45,090
Axles forged	34,000	27,703
Shipments of finished steel and forgings	60,200	58,515
Pay roll	$2,825,000.00	$2,480,226.91
Average number employees	5,276	4,450
Average at collieries	2,656	2,285
Average at I. & S. Dept.	860	685
Average at New Glasgow.	900	770
Average at Wabana	860	710
Steamers employed	18 to 20	15 to 20
Tonnage freighted	1,000,000	925,000

The Canada Iron Corporation, Limited

Progress during 1910.

At the request of the CANADIAN MINING JOURNAL, the following brief review of progress has been forwarded by the Canada Iron Corporation, Limited:

The iron ore mine in the County of Gloucester, N.B., was opened and machinery installed for the production of 1,000 tons of crushed ore per day. The surface of the mine was stripped and operations commenced.

A standard gauge railway was built to the junction of the Intercolonial at Black's Cut, and this was equipped with 50-ton steel ore cars and motive power to handle trains carrying 1,000 tons of ore each.

To provide shipping facilities, a dock was completed at Newcastle, N.B., with a storage capacity of 10,000 tons and machinery with a loading capacity of 3,000 tons per hour. This work was all done during the summer and completed in time to get out a first shipment of about 7,000 tons of ore before the close of navigation. This shipment went to the United States.

The mines owned by the corporation in Nova Scotia were also developed during the year, and mining and crushing machinery installed to take care of these at capacity of 800 tons per day.

Shipping docks for this ore were built at Port Wade, N.S., and equipped with loading facilities to handle 2,000 tons per hour. This work was also carried on during the year and completed in time to ship 20,000 tons of ore before the close of navigation, part of which ore was shipped to the United States and part to England and Scotland.

In the furnace department, the corporation completed the construction of a new blast furnace at Midland, Ont., having a capacity of 250 tons per day. This has been placed in successful operation.

In the foundries department, an entirely new and up-to-date plant was constructed at Three Rivers, Que., for the manufacturing of water pipe, this plant having a capacity of 75 tons of pipe per day and 25 tons of castings. This was successfully operated during the latter half of the year.

At Fort William, extensive additions and improvements were made to the plant, which had the effect of increasing the output of water pipe, castings, and car wheels. Here, also, the plant was successfully operated during the whole year.

The foundry plants at St. Thomas and Hamilton, Ont., and at Londonderry, N.S., were also in operation during the full period.

IN AND ABOUT STEWART, B.C.

(Written for the CANADIAN MINING JOURNAL, by W. W. RUSH.)

To those who have been interested in Portland Canal since the early days and have persistently urged its claims to recognition as an important mineral district, the activity of the past season has been particularly gratifying, although it has not equalled the expectations of the most sanguine. The camp now enjoys regular communication with Vancouver by several steamship lines. The mile long tide flat that has hitherto interposed a formidable barrier between Stewart and the outside world has been conquered and two wharves now reach out their long arms to greet the traveller and abate the exorbitant expense of handling ore and supplies that thus far has been a serious obstacle to the camp's development. A telegraph line is building toward Stewart. Prospecting has been more energetic than ever before and several important discoveries have been made, notably the "L. L. H." group on Bitter Creek, and the "Portland" on Salmon River. The transportation problem has been greatly simplified. Many miles have been added to the system of roads and trails, and bridges have been built on the main lines of transportation. The Portland Canal Short Line is well begun. Upwards of ten miles have been graded and rails are being laid. The road work and buildings are all of a substantial character. The familiar "toot" of the locomotive lends a cosmopolitan air to Stewart, and suggests manifold possibilities for the future.

The project of carrying the railway through to Edmonton, thus making Stewart the terminus of a transcontinental line, has been canvassed and appears both feasible and logical. As the most northerly port of British Columbia, Stewart is the natural outlet of a vast interior country stretching away to the Yukon, that in the course of years is certain to be exploited. Land

cruisers have been active all season along the line of the proposed route, and thousands of acres of agricultural land have been taken up in the Upper Naas Valley beyond the head of Bear River.

The money contributed to the various stock companies of the district during the excitement of last winter has been spent perhaps more economically than is usual in such circumstances. At any rate, in looking over the properties of the district one finds little trace of the extravagant or useless or premature equipments that in many camps stand as monuments to the incapacity of managers and the credulity of the investing public. With scarce an exception the new mining companies of the district have confined their operations to actual surface and underground development, and the necessary preliminary work of trails and camps. Office expenses are usually an insignificant item. Considering the amount of "dead work" necessary before actual mining could begin, the scarcity of labour, and the high operating costs incident to boom conditions, very fair progress has been made, and it is the writer's belief that in most instances the purchasers of mining stocks are having a fair run for their money.

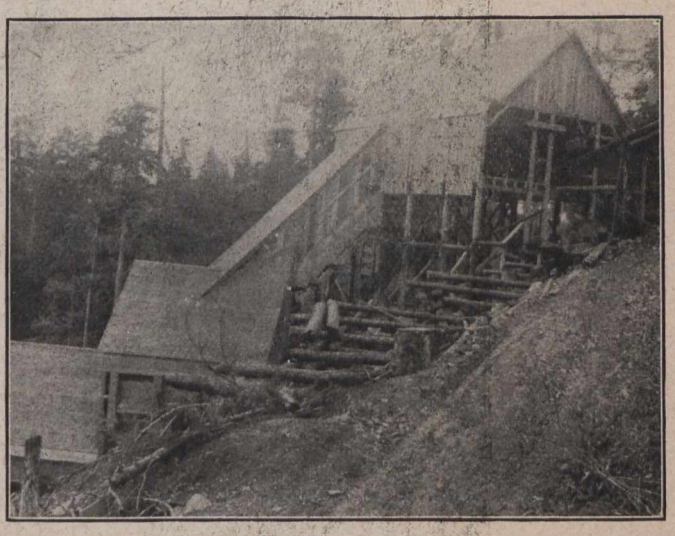
Glacier Creek Trail

The pioneer operators of the district, the Portland Canal Mining Co., now under the management of W. J. Elmendorf, has been adding to its ore reserves throughout the year and now has in operation a complete and efficient concentrating plant of 50 tons daily capacity. Concentrates are being sacked for shipment. The Stewart Mining & Development Co. has confined its opera-

tions to underground work. At the Red Cliff some surface prospecting has been done, but the most important work has been the driving of a working tunnel 300 feet below the upper workings. Like many other important copper deposits, the Red Cliff ore bodies are irregular and have no semblance to veins. There is nothing disclosed by the workings above the tunnel to prove the pitch of the ore body or to indicate that its vertical extent is greater than its lateral extent. Therefore, if the lower tunnel has entered an ore body, as current rumor reports, it may signify that the ore continues in a chimney from the surface workings, or it may mean that an entirely distinct ore body has been struck. In view of the extensive mineralization of the vicinity, one could reasonably expect to find ore on other levels above and below the first workings.

Looking West from Lordygordy Camp

These older companies are still favourites on the stock exchange, and by the general public are looked upon as the most important properties of the district; but it is probable that some of the properties now in the initial stages of development will eventually dispute their preeminence and perhaps outrank them as ore producers. Some of the highest grade silver-lead ore in the district is being mined on the "Columbia" and "Evening Sun," situated on the Middle Fork of Glacier Creek. The Lordygordy Mine, Ltd., operating these claims, recently made a trial shipment of four tons that sampled $220 per ton, chiefly in silver. The Rush-Portland Mining Co., operating an adjoining property, has a trial shipment of similar grade sacked awaiting the completion of a horse trail for shipment. The "Excelsior" group lying to the southward of the Lordygordy, has a splendid showing of the same class of ore. The ore on these claims occurs in well-defined veins crossing the formation and dipping vertically or nearly so. Siderite is a characteristic gangue mineral. Negotiations are in progress for consolidating all the properties of this section.



Portland Canal Mill

On the South Fork side of the ridge the Pacific Exploration Co. is driving a series of crosscut tunnels on the Jumbo, situated 1½ miles southeast of the upper camp of the Portland Canal Mining Co. in the same vein zone. The lowest tunnel attains a vertical depth of 750 feet below the surface workings. Manager H. E. Knobel reports that 5 feet of ore has been crosscut in the first tunnel and drifting is in progress. The hanging wall

has not been reached, the vein being at least 50 feet in width at this point. The ore is similar to that found on other properties of the same vein zone. On the "Mountain Boy," on American Creek, the same company is developing a series of east-west veins, or shear zones, carrying argentiferous lead, copper and zinc sulphides in a gangue of quartz, calcite and barite. The veins are from 10 to 25 feet wide, not sharply defined and rather limited in linear extent. There is a large amount of ore in sight, chiefly of concentrating grade.

Another new property that has the ear marks of a mine is the "L. L. H." on Bitter Creek. The mineral-bearing matrix on this group is described as a porphyry dike and the mineral an auriferous arsenopyrite. The "Old Chum," a contiguous property, has primary gold values in a well-defined quartz vein, with some copper. Available details regarding these two properties are meagre, but competent mining men are known to have reported favourably on them, and the owners have declined a substantial offer from Henry Hoffman.

Red Cliff Camp

Bear River Valley

On Salmon River interest has centred in the section occupied by the "Big Missouri," "Martha Ellen," "Portland" and other claims of less note. In this vicinity the major part of the development work and

prospecting of the season has been done. H. B. Williams bears a very favourable report of the latter two properties, which he has examined in the interest of clients. On the "Portland No. 1" and "Portland No. 2," under

option to Clothier & Ritchie, a well-defined vein from 10 to 18 feet wide has been traced 1,800 feet along a contact between slate and granite. The strike is southeast, and the dip southwest about 70 degrees. The gangue is quartz and the mineralization consists of lead, zinc, copper and iron sulphides, carrying fair gold and silver values, elevation 2,200 feet. On the "Martha Ellen," one of the Salmon Glacier Mining Company's holdings, similar ore is found across widths of 5 to 30 feet, but the vein is not so well defined as the "Portland," elevation 3,500 feet.

The boom period has had its obvious advantages to the camp. Conservative interests would not have accomplished in a decade the amount of prospecting and dead work that has been done during the past season. The more conservative basis now attained also has its advantages, particularly in offering more favourable conditions to bona fide mining men, many of whom have doubtless held aloof hitherto on account of the high prices demanded for prospects and high operating costs. This problem of costs is as always a vital one. The excessive costs that characterized the beginning of the season have been abated considerably, but further progress in this direction is to be desired. The condition is to be met by the co-operation of the mine operators of the district and by consolidation of neighbouring properties into companies strong enough to conduct operations on an economical scale. With the natural advantages of the district in timber, water power, and proximity to tide water, costs of operating should be reduced to a very reasonable standard.

THE CONIAGAS MINES, LIMITED

(Abstract of Directors' Report.)

During the past year your mine has operated continuously, excepting holidays, with an average force of 133 men.

The capacity of the concentrating mill has been doubled by the addition of thirty stamps making a total of sixty stamps of 1,250 pounds each, crushing 160 to 170 tons of ore per day. The entire plant is now operated by electric power, purchased from the producing companies, as is also the compressed air for the mine. These extensions and improvements have resulted in a material saving in the cost of mining and concentrating per ton.

After extended tests in cyaniding of your ores, your Directors are satisfied that the method of concentration by water, followed in your mill, is more economical for your ore both in cost of treatment and in results, and that the tailings from your mill do not carry sufficient value to warrant further treatment at present.

The following was the quarterly output of the mine for the fiscal year:

	Concentrates.	Mine Ore.
1st Quarter	77,093.06 ozs.	155,660.47 ozs.
2nd Quarter	137,065.64 ozs.	184,680.74 ozs.
3rd Quarter	262,396.67 ozs.	184,284.72 ozs.
4th Quarter	473,345.98 ozs.	455,003.72 ozs.
Totals	949,901.35 ozs.	979,629.65 ozs.

Total concentrates and mined ore, 1,929,531.00 ozs.

From the financial statements, it will be seen that your company, after having paid out $240,000 in dividends during the past year, has a cash balance to its credit of $242,900.23, to which may be added ore in transit and at smelter, to a value estimated at $374,087.58.

During the year, the 225-foot level has been developed by winze sunk on Vein 6 D from the 150-foot level, and an upraise to connect up to Shaft No. 2.

The development on this 225-foot level is shown on accompanying plans. The character and value of the veins show no change.

No. 2 Vein has been followed on the 150-foot level and on the 225-foot level eastward, nearly to the boundary, carrying its usual size and value.

No. 6E Vein on the 225-foot level is about 2 1-2 inches in width of good ore (about 4,000 ounces) at the face, and the drift following it is extending the workings well towards the southeast unexplored portion of your area.

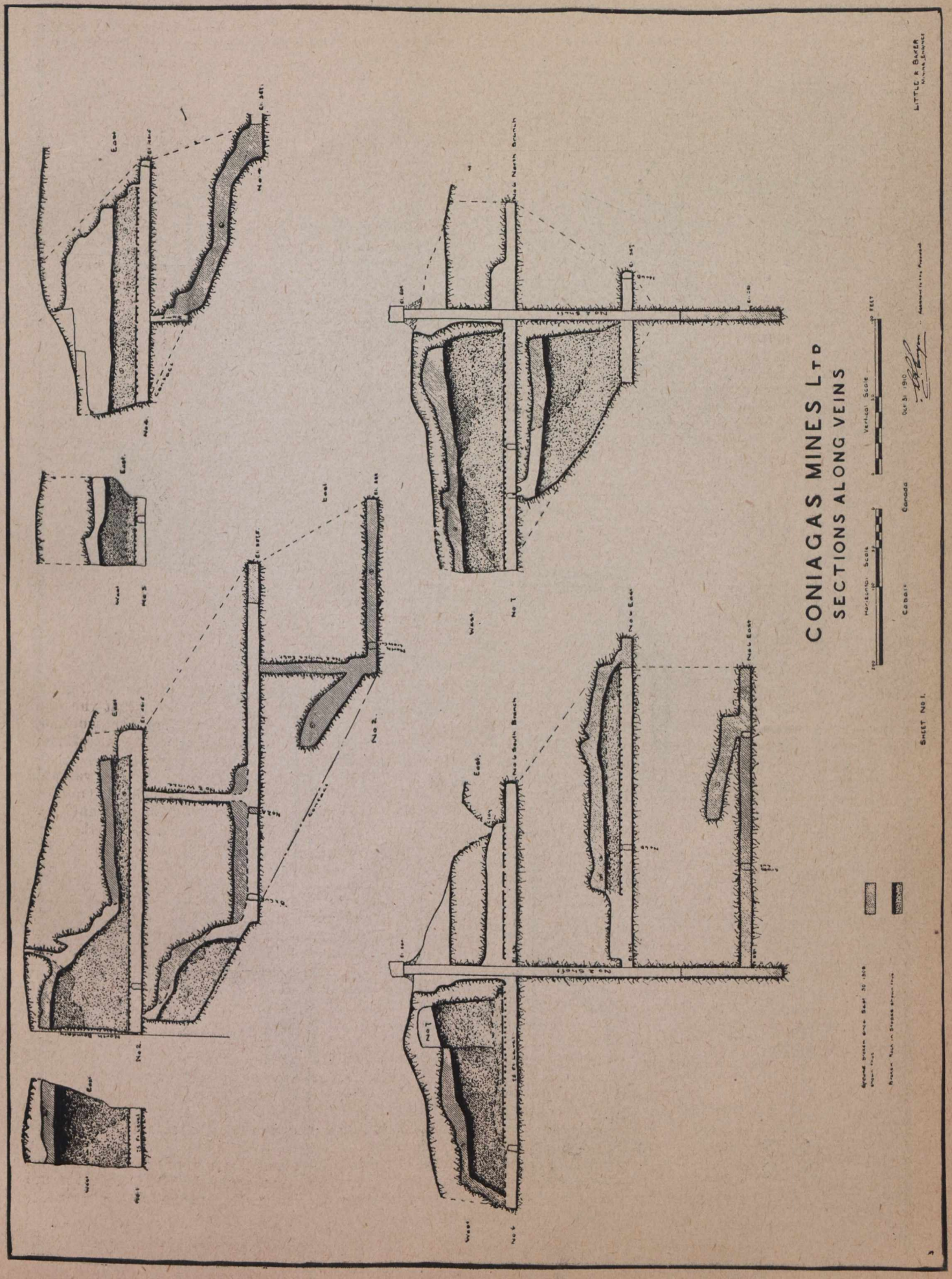
To the south of Veins Nos. 9 and 10, two valuable outcrops of good ore have been uncovered (marked Nos. 15 and 16 on Key of Veins) with an east and west strike, giving great promise of the value of this portion of your property, which will probably be reached during the coming year in the underground workings.

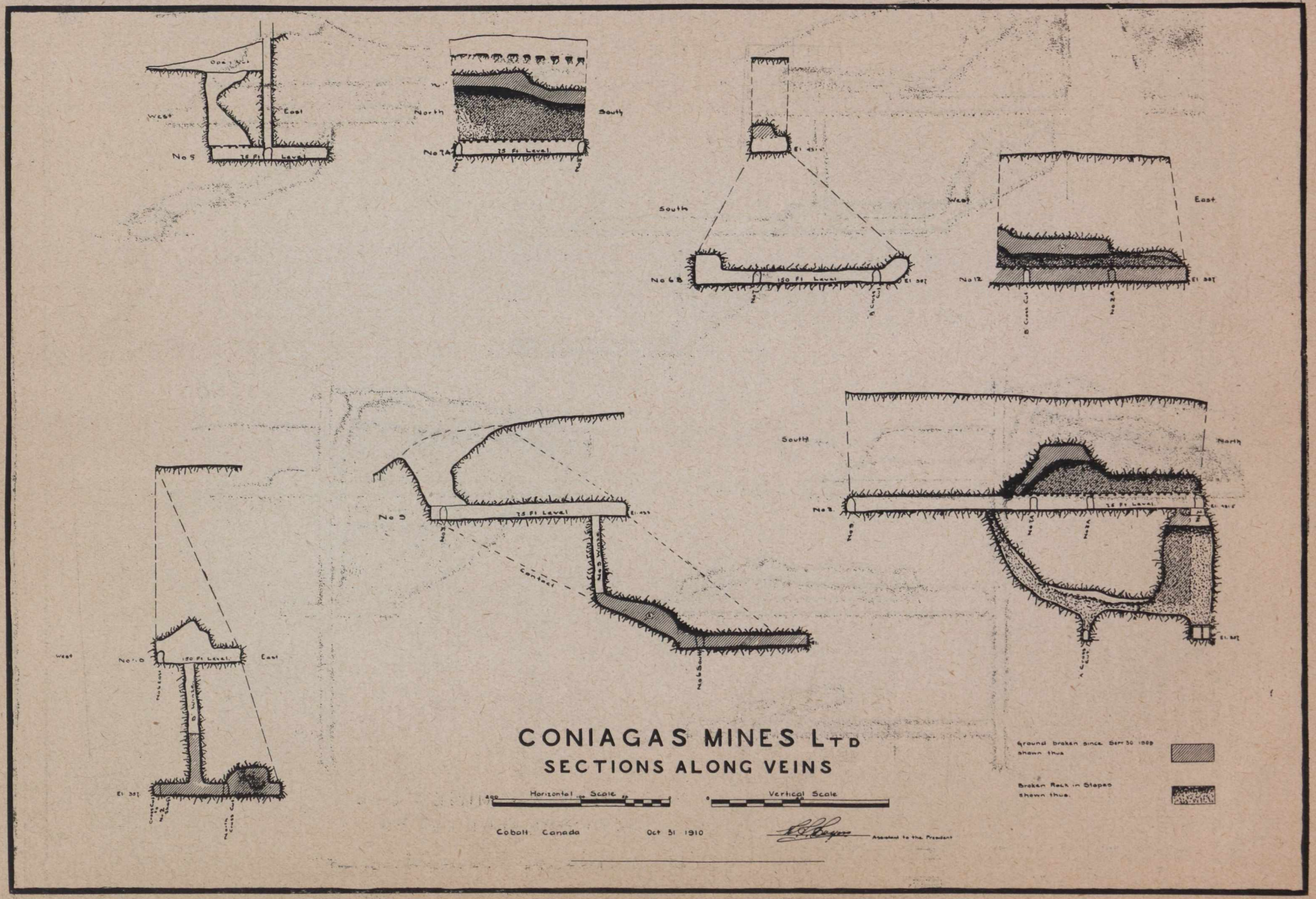
The progress of development and stoping during the year on the various veins is clearly shown on accompanying plans, from which it will be seen that the development has more than kept pace with the stoping, and shows an increase of over 2,500,000 ounces in the quantity of ore estimated as in sight, based on careful surveys and measurements made by Little & Baker, mining engineers, and certified by Mr. R. P. Rogers, C.E., assistant to the president.

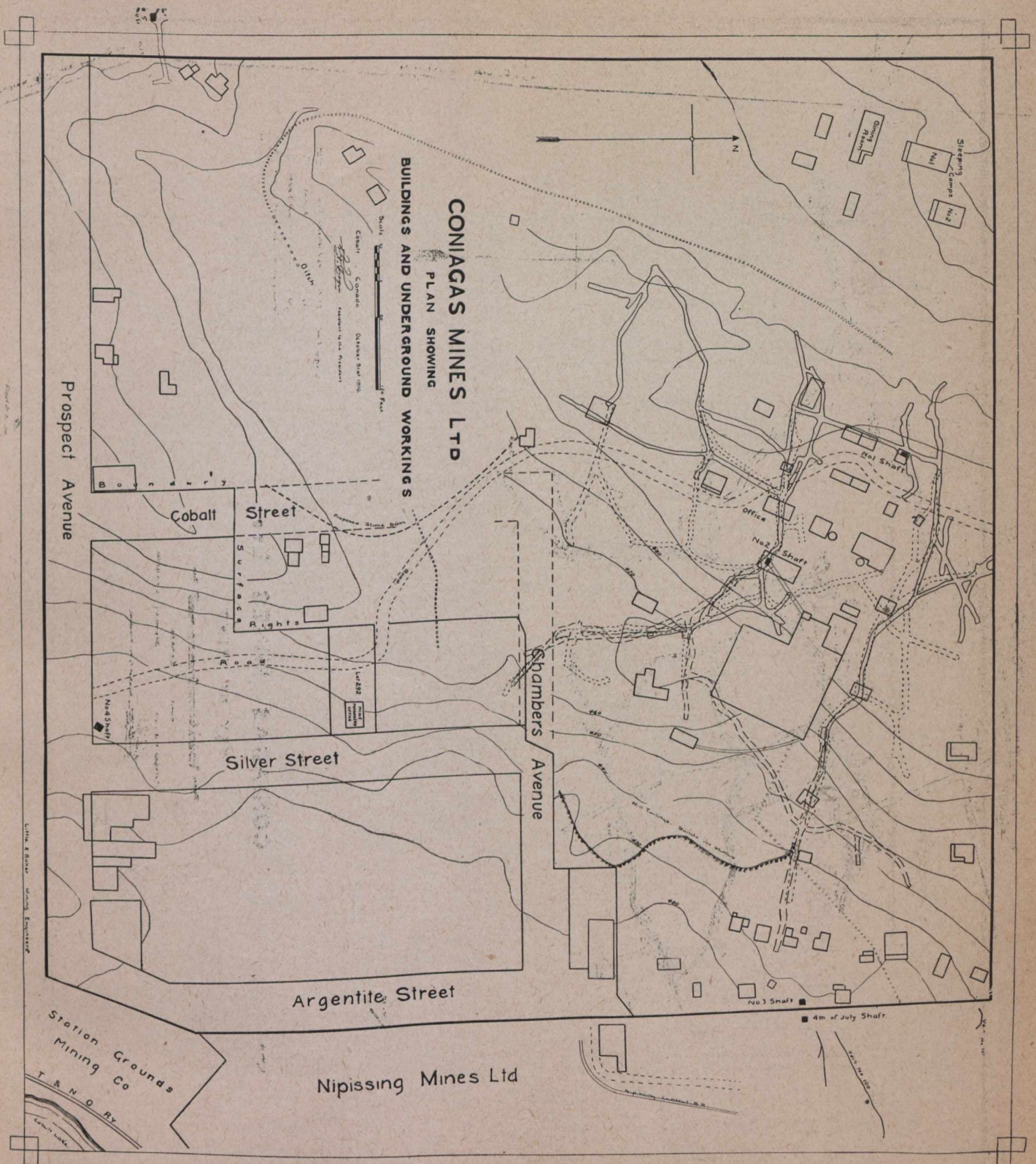
Ore reserves in sight on October 31st, 1910, are estimated at 15,368,400 ounces of silver, contained in 127,167 tons of high grade ore and milling rock, as against 12,500,000 ounces estimated in sight on October 31st, 1909, contained in 106,000 tons of ore and milling rock.

These estimates are shown in more detail in the following table:

The average price received for silver for the past year was 53.55 cents, as compared with 50.18 cents for our last fiscal year, and with 52.3 cents for the previous year.


CONIAGAS MINES LTD
SECTIONS ALONG VEINS
Vertical Scale
Horizontal Scale
Cobalt
Canada
Oct 31 1910
SHEET No 1.
LITTLE & BAKER
No 1
No 2.
No 3
No 4
No 5
No 6
No 7
No 8 North Branch
No 8 South Branch
No 9 East
No 9 East
East
West


West
East
No 5
75 Ft Level
North
South
No 7A
75 Ft Level
South
No 6B
150 Ft Level
West
East
No 12
No 10
150 Ft Level
No 9
75 Ft Level
Contact
South
North
No 3
75 Ft Level
CONIAGAS MINES LTD
SECTIONS ALONG VEINS
Horizontal Scale
Vertical Scale
Ground broken since Sept 30 1909 shown thus
Broken Rock in Stopes shown thus.
Cobalt Canada
Oct 31 1910
Assistant to the President



The relations between the management and employees have been, as usual, most satisfactory, and the general health has been excellent.

As in previous years, so last Christmas, your Directors presented each employee with a cheque for 4 per cent. of his wages during the year, amounting to $3,071.13.

During the year, John Redington resigned the position of superintendent, to take up consulting practice after over four years of faithful and satisfactory service in the employ of your company.

His duties as mine captain have been taken over by Arthur Martin, who has been in your company's service nearly five years.

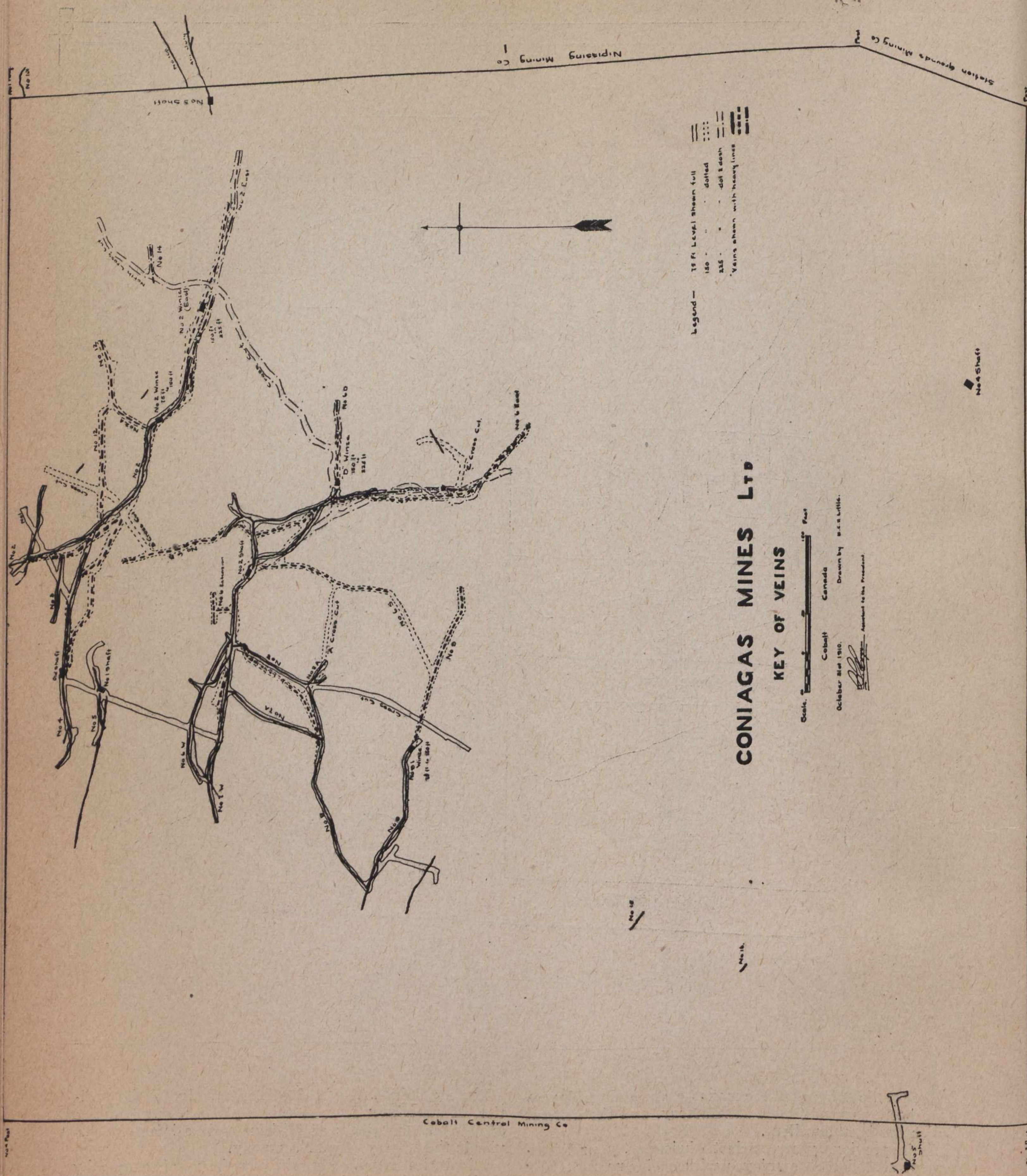

CONIAGAS MINES LTD
KEY OF VEINS
Cobalt Canada
Nipissing Mining Co
Cobalt Central Mining Co
City of Cobalt Mining Co
Legend — 75 Ft Level shown full
150 " " dotted
225 " " dot & dash
Veins shown with heavy lines

TABLE OF SHIPMENTS FROM THE MINE.

	Nov. 1, 1908, to Oct. 31, 1909.		Nov. 1, 1909, to Oct. 31, 1910.	
	tons.	ounces.	tons.	ounces.
Mine Ore	350	807,253	330.1	979,630
Concentrates	426	599,975	645.5	949,901
	776	1,407,228	975.6	1,929.531

Total tons to date, 5,323.1.
Total ounces to date, 6,792,854.

ORE RESERVES ESTIMATED IN SIGHT OCTOBER 31ST, 1910.

	Est. weight in tons.	Est. Silver contents,, ozs. ag.
Vein Matter, No. 1 Ore	4,027	11,638,000
Wall Rock, Milling Ore	89,590	2,711,900
Broken Rock in Mine (Milling Rock)	19,530	597,900
Broken Ore, on Surface Dump	14,020	420,600
	127,167	15,368,400

The Coniagas Mines, Limited.

Work done to date, and work done during the year ending October 31st, 1910:

	Total to Oct. 31, 1910	Total to Oct. 31, 1909	Work done during 1909-10
Shaft Sinking	539	473	66
Drifting	6,649	5,010	1,639
Cross-cutting	2,032	1,017	1,015
Winzes	232	174	58
Raises	233	110	123

ORE MILLED, TO OCTOBER 31ST, 1910.

Total to Oct. 31, 1910.	Total to Oct. 31, 1909.	Crushed during 1909-1910.
66,768	33,229	33,539

SURFACE DUMP.

Remaining Oct. 31. 1910.	Remaining Oct. 31. 1909.	Removed during 1909-1910.
14,020	14,796*	776

ORE AND ROCK HOISTED.

	To Oct. 31, 1910.	To Oct. 31, 1909.	To Oct. 31, 1909-10.
Milling Ore	66,768	33,229	33,539
Waste Rock	11,686	3,680	8,006
	78,454	36,909	41,545

Your Directors desire your approval of a by-law, No. 19, to permit a Director to act as superintendent or as assistant to the president.

The Coniagas Reduction Company, Limited.

The Coniagas Mines, Limited, owns the issued capital stock of the Coniagas Reduction Company, Limited, except six shares, issued to the Directors to qualify.

It is incorporated with Dominion Government charter.

Capital $250,000
Par value of shares 100

DIRECTORS:

R. W. Leonard, President, St. Catharines, Ont.
Dr. M. L. Hersey, Vice-President, Montreal, Que.
Alex, Longwell, Toronto, Ont.
F. J. Bishop, Brantford, Ont.
Welland D. Woodruff, St. Catharines, Ont.
R. L. Peek, Thorold, Ont.

The extensions and improvements to the plant, mentioned in Report for 1909, were completed during the year, and the plant is now doing excellent work.

Since your company started this plant, the price of white arsenic (of which cobalt ore, treated at its works, contains approximately 25 per cent.) has fallen from 7 cents to below 3 cents, and the price for cobalt (of which the ores, purchased at its works, carry from 2 to 12 per cent.), has fallen from $2.50 per pound for the oxide to almost a nominal price. Owing to these conditions, and the keen competition in the purchase of ore apart from the important advantage of handling the production of your own mine, the profits in this business are not what we anticipated. Under present tariff conditions, it is much more profitable to refine these raw products of the Cobalt mines in the United States.

During the fiscal year, the Coniagas Reduction Company treated 1,788.9 tons of ore, and shipped 2,726,-609.71 troy ounces of fine silver.

Year Ended October 31st, 1909.

WORKING ACCOUNT.

To Head Office and Administration	$14,480.26
" Mines Office and Supervision	11,445.22
" Camp Expense	15,637.93
" Lands and Roads	983.63
" Mining	115,249.65
" Fuel, Oil and Waste	25,095.85
" Milling	40,561.08
" Sale of Ore	8,606.92
" Legal Expenses	2,986.49
" Fire Insurance	3,270.62
" Transportation and Travelling	1,133.60
" Employees' Bonus	3,071.13
" Taxes and Royalties	14,002.31
" Loss and Gain	753,888.98
	$1,010,413.67
By Ore Revenue	$989,070.08
" Camp Revenue	16,882.26
" Rent	2,830.50
" Interest	1,554.49
" Cash Discounts	76.34
	$1,010,413.67

R. FOWLIE,
Auditor.

LOSS AND GAIN.

To Dividend No. 13	$120,000.00
" Dividend No. 14	120,000.00
" Directors' Fund	1,500.00
Balance	952,402.90
	$1,193,902.90
By Balance, October 31st, 1909	$440,013.92
Working Account	753,888.98
	$1,193,902.90

R. FOWLIE,
Auditor.
J. J. MACKAN,
Secretary.

The company has issued to the Coniagas Mines, Limited the 1,494 shares referred to in the last annual report of that company, and has reduced its floating debt by the amount of $64,000.00.

The Redington Rock Drill Company, Limited.

The Coniagas Mines, Limited, owns the controlling interest in the Redington Rock Drill Company, incorporated under a Dominion charter, with a capital of $100,000, in 1,000 shares of $100 each.

Your company is manufacturing these drills in its own shops at Cobalt, and fifteen of them are now working in your mine and giving excellent satisfaction in

every way.

A small force is constantly engaged in manufacturing these drills, and there is a good demand for them.

One drill has been under test for some months in competition with other types in an independent mine, and to date results have been very satisfactory.

R. W. LEONARD,
President and General Manager.

Mining in Coast Districts of British Columbia

The following notes give some information relative to mining in the Coast district of British Columbia last year:

Howe Sound.

Britannia Mining & Smelting Company.—This company continued exploratory work on its big copper property, near Howe Sound, during the greater part of last year. There was little new in connection with operations, though some ore of a different character to that usually found on one or other of the company's group was opened on its Bluff claim, and for several months the mill was run on this ore in an experimental way. A small tonnage of ore of the best grade was mined, and this, together with other ore mined in the course of development, and concentrate from the mill, was shipped to smelters. Altogether the year's output was a little more than 26,000 tons, and of this about 10,500 tons was smelted at the Tyee Copper Company's works at Ladysmith.

Vancouver Island.

Except coal mining, which was more active than ever before, there was no mining on a commercial basis on Vancouver Island in 1910. Some prospecting was done in the Alberni Canal district, also on the west coast of the island around Uchucklesat, and some fairly good showings of mineral were opened. A Victoria syndicate continued prospecting on some cinnabar claims near Sechart.

Tyee Copper Company.—The smelting operations of this company during 1910 resulted in regular increases in the tonnage of custom ore received and smelted. About 47,000 tons of ore and concentrates was received from all sources, British Columbia mines contributing 20,000 tons of that quantity. The marketable metallic contents of the ore smelted were: Copper, 4,500,000 pounds; gold, 5,300 ounces, and silver, 47,000 ounces. The plant at the company's smeltery was added to and further improved, making it thoroughly up-to-date in every respect. The prospects for the ensuing year are considered encouraging.

In view of the recent development of lead ore properties in the Coast district, the question of erecting a lead blast furnace is being considered; it has been decided that as soon as there shall be a sufficient tonnage of ore obtainable to warrant the expenditure, this addition to the company's smelting facilities will be made.

The company lately closed negotiations for a transfer of the leases of the Cornell group of gold-copper mines on Texada Island; it is expected that extensive development work will be done at this property in the near future.

Included in the Tyee Copper Company's activities last year was coal prospecting, in connection with which much exploratory work was done in the coal areas of the Gulf Islands—Galiano, Mayne, Saturna, etc. A diamond drill was kept in operation for several months, and in one instance a hole was bored to a depth of 1,000 feet.

Iron Ore on Vancouver Island.—Some time ago the Dominion Department of Mines published a report, by Mr. Einar Lindeman, on the iron ore deposits of Vancouver Island and vicinity, in which the more important occurrences of this mineral were described. Since then the discovery has been made, near upper Campbell Lake, of what has been described as giving promise of proving an immense deposit of magnetite ore of high-grade and purity. The discoverers are stated to have leased from the Esquimalt & Nanaimo Railway Company 1,290 acres on which this ore occurs. The iron is deposited along the contact of diorite and granite. It is stated that at one point, the soil having been stripped from the sidehill, there is shown a depth of iron deposit ranging to 70 feet. Analyses of the ore have given as high as 75 per cent. iron, but the average is about 65 per cent. It is claimed that the iron is exceptionally pure, an average sample analyzing: Sulphur, 0.04 per cent.; titanium, 0.08 per cent.; phosphorus, 0.0087 per cent. There is abundant water power obtainable from Campbell River Rapids, in the vicinity.

Coal Mining.—The total production of coal from Vancouver Island coal mines in 1910 was 1,616,000 long tons. No coke was made at Union last year. The largest producer of coal was the Canadian Collieries (Dunsmuir), Limited, with an output of about 926,000 tons. Next came the Western Fuel Company, which produced 512,000 tons. The Pacific Coast Coal Mines, Limited, made an output of 168,000 tons. The remainder of the production came from two or three small mines.

The market distribution of the Western Fuel Company's output was as follows: To British Columbia, 55 per cent.; to California, 28 per cent., and to other foreign parts, 17 per cent.

Early in 1910 the Pacific Coast Coal Mines, Limited, completed its railway from its South Wellington mine, to its shipping port, Boat Harbour, prior to which it was dependent on the E. & N. Railway for one mile of haul over its track. The Pacific Coast Company now owns seven and one-half miles of track, thirty 40-ton freight cars, and two locomotives. The company's highest output for a single day was 1,003 tons.

Texada Island.

Mining was fairly active during the greater part of last year on Texada Island; the largest producer was the Marble Bay mine, with the Northern Texada Mines, Limited, next. The latter company worked the Cornell and Copper Queen, under lease. A Seattle syndicate worked the Little Billy. The Northern Texada Company's mine and the Little Billy together shipped to the Tyee Copper Company's smeltery about 7,400 tons of ore of a gross value of $102,000. The Marble Bay's shipments totalled 10,380 tons. A new hoist and an electric light plant were put in, and three buildings—blacksmith, carpenter and machine shop—were erected; also new ore bunkers were completed.

Mining in Other Parts.

Among other parts of the Coast district at which mining was done last year were: Lasqueti, Valdes, Princess Royal, and Queen Charlotte Islands. There was little production made, though.

Mine Valuation and Experimental Metallurgical Demonstration

By R. B. LAMB.*

As mining and its associated art—metallurgy—have progressed under the influence of mechanical invention they have demanded the services of the technical engineer, and he has evolved a plan and advised exactitude.

The scientific training of the mining geologist, the mining engineer, and the metallurgical chemist has been directed towards mine valuation and probable metallurgical results; thereby enabling the valuing engineer to predict, with reasonable certainty, probable profits from the particular enterprise under investigation.

Owners do not yet fully appreciate the importance of the preliminary work of the scientific investigator, and are loth to spend money on an inquiry which to many appears unnecessary and wasteful.

Those who have engaged in the industry of mining for years and who have made it their life business, do not need to be persuaded that money spent intelligently on examination of ore bodies and investigation of mineral areas, is the most profitable expenditure made by the operator in the end—they know it.

The opinion of a farmer on a mine is about as valuable as that held by a Cardinal. The only opinion on a mine worth serious consideration, all others to the contrary notwithstanding, is that of the trained man who has devoted his time to the industry of mining. Primarily the man who has done this is the mining engineer. It matters not whether such a man be a graduate of a technical school or not. The one essential is that he has the experience and training that mark proficiency.

The work of mine valuation should be conducted with care and patience, without undue haste. It should never be the desire to have this work done cheaply—merely for the sake of a report. Work of such important nature takes time and requires checking if it is to mean anything. How often has a mining engineer been been required to report on insufficient data; how frequently has he been called upon to give conclusions on data collected by another; how many times has he rushed and harassed for his report; how often has he been requested to make a preliminary report pending his complete report—all on the plea of haste. This does an injustice to the engineer, to the mine, to the owners, to everybody.

Such reports are usually misleading. They do not represent the true facts, and they are a source of hard feeling and bitter regret.

The opinion of one engineer is usually not enough on any condition that presents mineral possibilities. It requires just as important investigation to turn a mine down as it does to recommend its purchase. Moreover, examinations on developing properties at long intervals are not sufficient; frequent examinations and investigations regularly made are necessary and should be undertaken if the highest results and best economic methods are to be obtained. Those interested in the ownership of properties are entitled to the benefit of such investigations and a moral obligation rests on the management to supply such information as the examinations disclose.

Mining is a quasi-public industry, and as such, the public is justified in demanding some measure of reliable publicity, such as can only be supplied by the engineer after due examination. Mining failures can be fully accounted for by followed advice tendered by the incompetent and the lay-man. The mining engineer—either the specialist or the general practitioner—has not steered the industry on the rocks. Despite so-called miners, experts, and others, whose business is to mine with paper models, the qualified engineer has turned the nose of the mining ship to the open sea and keeps it there. This has been largely attained by the intelligent work of the mine valuer.

Mine valuation has reached a high state of thoroughness in many countries. If we accept the best work carried on in many parts of Mexico, in South Africa, and notably in some of the Western States, such as Arizona, Montana, Colorado and Utah, as a guide—few disappointments will result.

The valuation of gold deposits presents most difficulty and requires the greatest care. The small weight of metal per given quantity of gangue matter and its irregular distribution in the ore-body are the principal factors rendering valuation of gold mines difficult.

Metallurgical inquiry is now the division of the industry enjoying a large share of the interest of the profession and occupying the spare moments of the investor. While the process-quack has enjoyed, and, to some extent continues to enjoy, the confidence of the mine owner, his occupation is passing with the metallurgists' ascendency. It was a slow and painful path over which the early metallurgical engineer plodded before partnership with his mining brother.

However, we now see the consulting engineer advising and demanding the employment of competent metallurgists to assist him and direct treatment problems. What is wanted, however, is more metallurgy. The miner should insist on time for metallurgical investigations as well as for mine examinations. He needs to demonstrate metallurgically—by laboratory and other methods—what can be accomplished with the treatment of the deposit under observation; how well it can be done, and at what probable cost. Metallurgical examinations are usually slower than mine examinations, and require scientific training, practical experience, and experimental demonstration applied to them before opinions of value can be expressed.

Mexico, South Africa, and Australia undoubtedly present the best instances of the progressive metallurgical spirit in gold and silver. They have continuously advanced practice by adopting new ideas—mechanical and chemical—which are themselves closely interwoven. During the past few years the United States has adapted and absorbed the progressive ideas evolved, and bids fair to outdo her rivals in the immediate future. Smelting successes have heretofore held back wet metallurgy north of the Rio Grande.

As the world progresses new demands are made. The coming demand from the prospective mining investor to the seller will be—more time for metallurgical demonstration.

*Mining Engineer, Traders Bank Building, Toronto, Ont.

CORRESPONDENCE.

December 29th, 1910.

The Editor, CANADIAN MINING JOURNAL, Toronto.

Sir,—In your issue of December 15th, you publish a friendly footnote in which you state that my report on the gold mines of Nova Scotia, made in 1905 for the government of that province, "was withheld from pub-

lication for the reason that it contained severe strictures upon certain operating companies."

Permit me to say that this statement is not correct. The fact that such an idea should be in the mind of one so well informed on Canadian affairs as yourself, is only another proof of the blunder made by the government in their failure to publish the report promptly. That delay was excused by reference to the San Francisco earthquake, to the incompleteness of the report, to the expectation of a supplementary report, and, in short, to a variety of reasons, all of which were imaginative, and intended simply to help the government out of an awkward position. I appreciated the humour of that position, but said nothing for three years, when, finally, a garbled version of my report was presented in a speech by the Prime Minister in Parliament; whereupon I wrote to you by way of protest. Since then I have seen references to the subject in the Proceedings of the Mining Society of Nova Scotia, in the course of which further inaccurate explanations and criticisms were offered, all with a view to discounting the opinion expressed by me in the interest of the Province of Nova Scotia, by whom I was paid to express such an opinion.

No more need be said, but I would ask you to use your influence to insist upon the publication of the report, and so end an absurd controversy. Those who read that report will need no further explanation from me.

Yours faithfully,

T. A. RICKARD.

Editor, CANADIAN MINING JOURNAL, Toronto, Ontario:

Sir,—You have several times requested me to write for the Journal, but as I could think of no subject of interest with which I am especially familiar, I have not done so.

In your issue of December 1st, in an editorial, entitled "Good Books," you say:—

"Bridge, auction bridge, poker, and other such devices of Satan, are as wasteful of time and energy in mining camps as elsewhere. Excessive card-playing is a misdirection of time, energy and money. It also softens the moral fibre."

As this is a subject wherein most men engaged in the mining business are interested, and since I have observed, during my long experience in a mining camp, the evils of poker playing, which I loath, it occurs to me that I might write my experiences, and give a few examples of what I have seen of the horrible evils of gambling, which, like the tentacles of an octopus, overcome the unfortunate victim and drag his soul to the depths of perdition. Even as the great Dr. Talmage inspected the gambling hells and dives of Leadville that he might warn Youth and Inexperience, which would naturally prefer his word to personal observation, so can I depict many scenes of ruin caused by the awful and degrading practice of gambling.

I could picture the horror and agony of soul when the uphappy one discovers that a straight flush beats four aces. I could describe the desperation of the unfortunate victim who has attempted to bluff when he held two deuces, and was called. I could describe the physical wrecks who have ruined their health by all night sessions of poker and stud.

With a pen, guided by sympathy and pity for human frailty, I could write volumes describing the human wrecks and derelicts I have seen.

If you care for any of this, I will contract for as many columns as you wish, for as long a time as you desire, at a stipulated price per word; guaranteeing that this price will not exceed that paid the mighty hunter, Roosevelt, for articles, the subjects of which are certainly not of as general interest as those upon which I propose to write.

Hoping to hear from you promptly as to the amount and price at which you are willing to contract. I am,

Youre truly,

FRANK C. LORING,

Home Life Building.

Toronto, Ont., Dec. 8, 1910.

BOOK REVIEWS

ELECTRIC CIRCUIT PROBLEMS—IN MINES AND FACTORIES, BY ELLIS H. CRAPPER, B. Eng., M.I.E.E., 169 PAGES. PRICE $1.00. PUBLISHED BY THE COLLIERY GUARDIAN CO, LIMITED, 30 and 31 FURNIVAL STREET, HOLBORN, LONDON, E.C. 1910.

To provide the mining engineer with an explanation of the principles, laws, and the methods of testing of the electric circuits of collieries, is the aim of this small book. A considerable amount of space has been given to the use and testing of cables. The book is written expressly to guide the colliery engineer. Such questions as insulation and circuit testing are amply discussed. The explanations are simple and easily understandable. The text is well illustrated with diagrams and half-tone engravings.

COMPRESSED AIR—THEORY AND COMPUTATIONS, BY ELMO G. HARRIS, C.E., 123 PAGES, PRICE, $1.50 NET. McGRAW-HILL BOOK COMPANY, 239 WEST 39TH STREET, NEW YORK, 1910.

This is a purely mathematical and theoretical treatise. The matter is original. It embraces brief expositions of formulae for work, effect of clearance, effect of heating air as it enters cylinders, work in compounding, and so on. Other general headings are: Measurement of Air, Friction in Air Pipes, Hydraulic and Centrifugal Air Compressors, Special Applications of Compressed Air, The Air-Lift Pump. Examples and exercises are appended, as also is a series of mathematical tables and friction diagrams.

Mr. Harris' book will be of use only to the technically trained. To such it will prove suggestive and helpful.

ELEMENTARY CRYSTALLOGRAPHY, BEING PART ONE OF GENERAL MINERALOGY, BY W. S. BAYLEY, PH.D., ASSOCIATE PROFESSOR OF MINERALOGY, UNIVERSITY OF ILLINOIS, 241 PAGES, COPIOUSLY ILLUSTRATED. PRICE —— NET. PUBLISHED BY McGRAW-HILL BOOK COMPANY, 239 WEST 39TH STREET, NEW YORK, 6 BOUVERIE STREET, LONDON, E.C. 1910.

Originally intended as an introduction to a textbook on mineralogy, the material that makes up "Elementary Crystallography" is now offered as an independent volume. The author has presented the subject in a manner that appeals to readers who have only a slight knowledge of mathematics, physics, and chemistry. The elements of crystallography, not the complete science, are outlined.

The Naumann System of parameter symbols is used instead of the more complicated Miller System of indices. This choice is wise. While the Miller system is essential to later study, the Naumann system is unquestionably the better suited to the beginner.

It is hardly necessary to add that the book is well printed and strongly bound. The names of the publishers imply this.

Those of us who struggled in our earlier days through Dana, will appreciate at its full value Dr. Bayley's conscientious effort to grade the road to a knowledge of crystallography.

INDUSTRIAL SECTION

A Western Installation

The Alberta Irrigation & Railway Company in 1908 carried out some large extensions to the plant at their No. 6 colliery, Lethbridge. Included in these was the installation of a twin Leonard Corliss engine to drive the ventilating fan.

During the past fifty years the world has made continued and unprecedented progress and the steam engine has not only kept pace with this advance but has also been one of the largest factors in stimulating it.

The distinguishing feature of the Leonard Corliss engine is its peculiar wrist plate motion and valve gear. By its use is secured such control and distribution of steam to the piston as has never been accomplished so successfully or so simply by any other means. This is best appreciated by those engineers who after trying

other schemes made it a study and learned what can be accomplished and gained by its use. With the wrist plate motion the valves are opened quickly, giving boiler pressure at closest cut off, and are kept in motion up to the point of extreme travel, permitting the cut off to be exactly determined and disengagements affected positively. Both the steam and exhaust valves are given a peculiar dwell movement where most needed.

The reversal of the valves is brought about without shock, the movement being easy from a state of rest to a rapid motion without straining the connections.

The Corliss valve has outlived the criticism of bevers in flat siding surfaces who claimed that a boring bar and small engine to operate it were often required to true up Corliss valve seats. Corliss engines can be seen almost anywhere that have been in use for ten or twenty years without having valve seats rebored, and they are right and tight to-day. The Leonard Corliss valves are double parted, practically balanced and designed to take up their own wear. They can be quickly removed for examination and a separate and independent valve controls each part, so placed that a short passage leads, with the least amount of waste room, to the piston. The exhaust valves from their position drain the water from the cylinder and the steam valves are so constructed that they act as relief valves.

The general construction of these engines is shown in the accompanying cut, which also shows the massive pulley which drives the fan. The dash pots are located above the floor line, giving easy access. The plungers have no screws or nuts to work loose and cause trouble and every care is taken to ensure their prompt action. Thus the valves are closed instantly at the proper moment to produce the most economical results.

The governor is of the high speed variety having several revolutions to every one of the engine and thus giving very effective regulation. The speed is readily adjusted and the one governor is connected to the valve gear on both frames. The crosshead moves between bored guides, preserving both vertical and cross alignment. The shoes are adjusted by long solid wedges operated by compensating screws which can be locked in any position. The crosshead, if necessary, can be readily removed.

Some idea of the weight of the engine frames can be obtained from the cut and it will also readily be seen that the metal is so distributed as to give ample strength without undue weight.

The above mentioned engine is built by E. Leonard & Sons, the well-known engineering firm of London, Ont., and drives a large mine ventilating fan built by the American Blower Company, of Detroit. This fan is housed in separate room from the engine and the air is conducted in a concrete conduit from fan to mine. This conduit is entirely separate from the working shaft of the mine. The whole installation is one of much interest and will doubtless open the eyes of a good many as to the vast scale in which coal mining operations are carried on in the Crow's Nest district and vicinity.

Belliss and Morcom

Messrs. Belliss & Morcom, engineers, of Birmingham, who have within the last few years introduced a steam turbine of their own design, report very successful progress with it in every respect. Within the last few weeks they have secured an important order from the Birmingham Corporation electricity supply department for eight 1,000 k.w. Belliss exhaust steam turbines, running at 1,500 r.p.m., to work in conjunction with a similar number of Belliss 1,500 k.w. reciprocating engines in the Summer Lane Station, Birmingham. These exhaust turbines will run in parallel with the alternating current reciprocating sets in the station, making the total capacity of each set 2,500 k.w., and bringing the ultimate total capacity of the station, comprising Belliss engines and turbines exclusively, to over 30,000 k.w. Repeat orders have also been received for Belliss high pressure steam turbines. The first Belliss high pressure turbine built to a customer's order was for

the Aston Manor Corporation, and gave such satisfaction that a repeat order was placed.

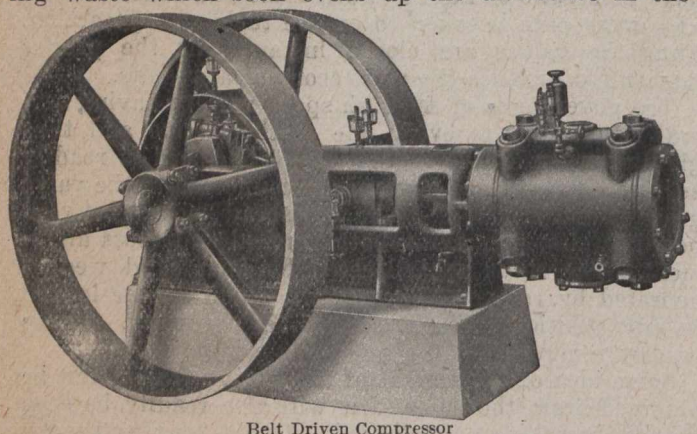
Quite recently the city of Johannesburg in South Africa, placed a repeat order for a Belliss live steam turbine of 3,000 k.w. capacity.

Messrs. Laurie & Lamb, Board of Trade Building, Montreal, are Canadian agents for this firm.

Small Air Compressors for Heavy Duty

The accompanying illustrations show the new single steam and power driven Sullivan air compressors, classes WA-4 and WG-4, which have recently been placed upon the market.

These compressors have been designed especially for the severe service imposed on machinery of this class by mining work. Air power service demands, above all else, continuous and reliable performance. Troubles with the compressor mean idle tools and idle men, causing waste which soon evens up the difference in the



Belt Driven Compressor

purchase price between a good air compressor and a poor one. The air compressors we describe are of small to moderate capacity and are built for various pressures running from 10 to 100 pounds per square inch.

The manufacturers have realized that compressors of this size inevitably receive less careful attention than larger and more costly machines, while the work demanded of them is no less continuous and wearing.

An examination of these machines will further show that the makers have had two objects in view: to produce an air compressor as simple and as durable as possible, and one in which the elements constituting efficiency should be embodied to the greatest possible extent.

These compressors consist of a heavy frame, supporting the bearings and crank shaft at one end and the steam and air cylinders at the other. The machines are of the centre crank type, and a heavy steel guard surrounds the crank and prevents oil from being thrown upon the floor.

In the steam-driven machines, the plain steam slide valve is controlled by an eccentric on the shaft, with which it is connected by a simple but satisfactory arrangement of valve rods. The air cylinder is placed outside the steam cylinder, and is connected to it by a heavy distance piece. The air cylinder is supported on a sub-base which runs the entire length of the compressor, and maintains proper alignment of all the parts.

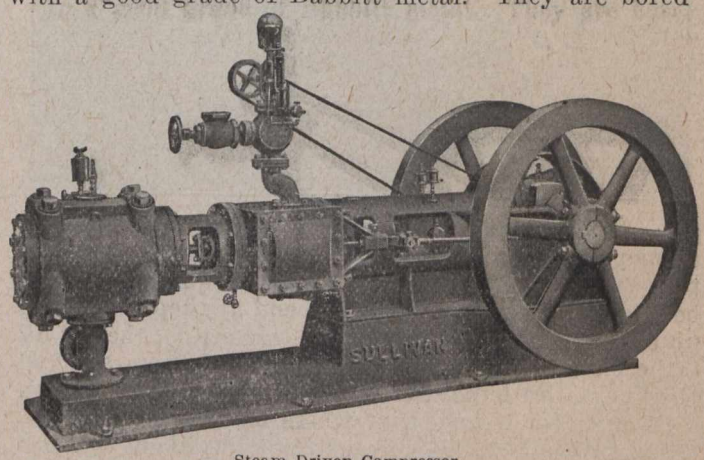
In the belt-driven machines, the air cylinder is attached directly to the rear end of the frame, and all the working parts, such as the crank shaft, cross head, connecting rods and main bearings are of dimensions and contain an amount and quality of material which provide a factor of safety very much higher than is considered necessary in standard compressors of much larger size. The result is that these machines may be depended upon for continuous service year in and year out, and that the danger of breakage from causes within the compressor is reduced to its lowest terms. All parts liable to wear are arranged so that wear may be taken up fully and with the least possible trouble, so that even after these machines have been in service for years, all their working parts remain accurately aligned and in condition to operate with practically their original efficiency.

Particular attention is directed to the design of the cylinder, the inlet valves being at the bottom and the cylinder heads are also jacketed over their whole surface.

This feature keeps the heat generated by compression within safe limits. The air valve mechanism consists of radial automatic poppet valves for both inlet and discharge.

These valves are placed close to the ends of the cylinder, the inlet valves being at the bottom and the discharge valves at the top of the cylinder. The valves act in a true radial direction to the axis of the cylinder, and reduce to a minimum the losses in efficiency made necessary by clearance.

The ports or pockets leading to the valves are very short and direct, so that practically no air is trapped after compression instead of being expelled from the cylinder. The valves and their parts are so made that in case of breakage it is impossible for the broken pieces to enter the bore of the cylinder. The valves are held in place in cages, which seat, by means of taper fits, in the cylinder walls. To remove these valves it is only necessary to unscrew the plug on the outside of the cylinder, when the entire valve and cage may be withdrawn for inspection or regrinding. The main bearings have adjustable caps and are heavily lined with a good grade of Babbitt metal. They are bored



Steam Driven Compressor

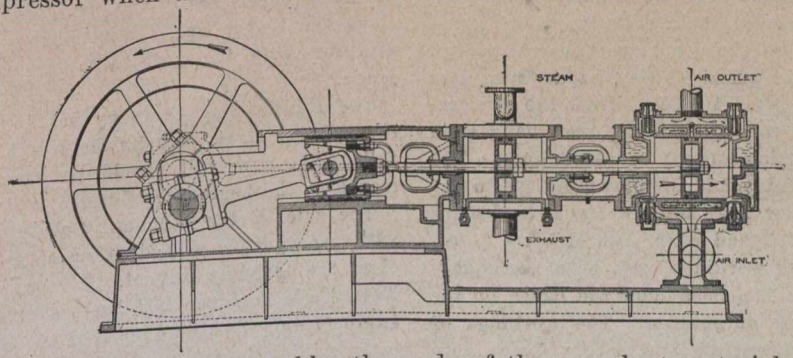
out at right angles to the centre line of the piston rod by a special fixture which assures accurate alignment. A box pattern cross-head is used, being the same type as that employed in cross compound machines of the highest grade. It is fitted with adjustable shoes and is regarded as unexcelled in wearing qualities and ease of adjustment.

The steam machines are governed by a split ball throttling regulator with an extra cylinder which places the throttle valve under the influence of the air receiver pressure. Ordinarily, the governor varies the speed of the compressor to supply the demand for air, the halves of the ball by their centrifugal action pre-

venting the compressor from exceeding a safe speed.

The power-driven machines are fitted when desired with an unloading device placed on the air inlet of the compressor. This device is set to shut off the incoming air to the compressor when the receiver pressure exceeds a pre-determined point. This enables the compressor to run at regular speed, an essential in power-driven machines, compressing no air until the receiver pressure again falls below the point set. This secures important reductions in the amount of power used when the compressor is furnishing air intermittently. The device is smooth and even in its action, throwing the load off and on the compressor without sudden jar or strain.

The machines described are fitted with sight feed oil caps on important bearings and on the air cylinder. They are so simple in their mechanism as to require only the most ordinary care, but as stated above are made of the very best materials which can be secured for the respective purposes of each part and they are manufactured and assembled with the same care employed on the largest and most expensive machines manufactured.



Machines of similar capacity are furnished for operation by electric motor, or gasoline engine, as desired.

Personal and General

The respected Dean of the Canadian Mining Institute, Major R. G. Leckie, is to be felicitated upon the arrival of a small daughter.

Mr. G. G. S. Lindsey left for England on January 6th. He will return to Toronto before the end of February.

Mr. Phil. H. Moore, E.M., has been appointed Canadian representative of the McKiernan-Terry Drill Company, 115 Broadway, New York. Mr. Moore has made the King Edward Hotel, Toronto, his temporary headquarters.

Mr. C. S. Herzig has removed his office to 42 Broadway, New York.

Mr. F. H. Sexton, director of technical education for Nova Scotia, is to accompany the Technical Education Commission on its visit to Europe.

Mr. Joseph C. Houston, late of the Right of Way, Cobalt, is at present at 163 Westminster Avenue, Toronto. Mr. Houston is one of the pioneers of Cobalt. He has lately returned from Mexico.

Mr. W. J. Woolsey, manager the Robertson Asbestos Mining Company, Thetford Mines, is absent on a business trip through Great Britain, the Continent, and the United States. He will not return until late in February.

Mr. E. T. Corkill has returned from the West, accompanied by Mrs. Corkill.

SPECIAL CORRESPONDENCE

NOVA SCOTIA.

Glace Bay.—The output of the Dominion Coal Company's collieries for 1910 was 3,529,700 tons. Compared with previous years the figures are as follows:—

1907	3,541,253
1908	3,555,068
1909	2,734,774
1910	3,529,700

The outputs of the individual collieries were as under:—

No. 1	578,942
No. 2	687,918
No. 3	277,027
No. 4	395,346
No. 5	364,926
No. 6	181,331
No. 7	180,466
No. 8	156,590
No. 9	327,353
No. 10	160,271
No. 12	162,429
No. 14	47,664
No. 15	9,037
	3,529,700

The output at No. 1 Colliery was the largest since the fire in 1903. The output of No. 7 (Hub Colliery) was the largest ever obtained from that mine. It will be noticed that about 220,000 tons of the total output was obtained from mines Nos. 12, 14, and 15, which are situated in the new coal field at Lingan. At some of the older mines, notably Nos. 3, 5, and 8, the output shows a considerable falling off and will continue to do so, but the consequent reduction in output will be more than made up by the contribution from the newer mines.

The U. M. W. strike was called off at the end of April, and the loss in output due to the strike amounted to probably 300,000 tons. Had conditions been normal, the yearly output would easily have reached 3,800,000 tons. If the demand for coal continues to be good and trade conditions continue to be as prosperous as at present, the output for 1911 should be somewhere between 3,750,000 and 4,000,000 tons.

Explosion at Sydney Mines No. 3.—An explosion occurred on January 3rd about four o'clock in the morning in the No. 3 Colliery of the Nova Scotia Steel and Coal Company at Sydney Mines, which caused the death of eight men. At the time of writing only six bodies have been recovered, but there can be no doubt but that the two men who are still missing were killed by the explosion. The explosion was a very severe one and completely wrecked the main deep below No. 12 level.

The severity of the detonation may be gauged from the fact that a small hoisting engine which was near the end of No. 12 level was lifted bodily from its bed and displaced a distance of over twenty feet. At the time of writing the men occupied on repair work had penetrated as far as the sixth cross-cut on No. 12 level, but their progress is very much hampered by extensive falls of roof. The bodies of six shiftmen were found all together under the debris on the deep near the end of No. 12 level. It is thought that the bodies of the two deputies who are missing will be found in No. 14 level. Until the exploration has been completed and the two missing men have been found, the cause of the explosion cannot be ascertained. The mine had been idle on the Sunday and Monday previous to the explosion on account of the New Year holiday, and it is thought that gas may have accumulated and been ignited by a defective safety lamp, but until the workings have been thoroughly explored and an investigation has been held the cause of the disaster can only be a matter of surmise. The workings of No. 3 Colliery are entirely submarine and safety lamps only are used.

The Nova Scotia Company has twelve Draeger helmets and the first parties to descend the mine after the explosion used these for exploration purposes before the ventilation was restored. The extensive falls which blocked the deep rendered it impossible to do any rescue work, and nothing could be accomplished until the ventilation had been restored up to the point where the falls occurred. This was speedily done and every effort was made to discover the missing men, there being a faint hope that they might be found alive behind the falls. This hope was speedily dissipated by the finding of the six dead bodies as related above. It is extremely fortunate that the explosion did not occur at a later hour, as had this been the case the loss of life must have been severe. The usual day shift numbers five hundred men.

The explosion appears to have been very local in its character, but from all accounts it was one of the severest which has yet been experienced in Cape Breton coal mines. It has been for many years a matter for congratulation that Cape Breton coal mines have been free of the disastrous explosions which have characterized other coal fields, but this incident is a significant reminder that this fortunate immunity should not be presumed upon.

ONTARIO.

Cobalt.—The Green Meehan and Red Rock properties are being worked again by Mr. A. M. Thomson on a royalty basis. Twelve men are at work and operations have commenced at the 100-foot level. A royalty of ten per cent. is to be paid on ten-ounce ore, 50 ounces, 17½ per cent., and all over 50 ounces, 25 per cent. In the event of royalties going over $50,000 Mr. Thomson has the option of another five-year lease.

The Gould Consolidated lease on Cart Lake is to be worked again. It is stated that $10,000 is already on hand to work the property and that $30,000 will be spent in operations this winter. A capable engineer will be engaged to superintend the work.

On the last day of the old year the shipments totalled 418.96 tons and 13 cars left the yards. The shipments were made from the Nipissing, McKinley-Darragh, Cobalt Lake, Coniagas, Temiskaming, Crown Reserve, La Rose, and Trethewey.

A new vein of calcite carrying some smaltite and native silver has been cut on A90 of Gillies Limit or the Webb property. Considerable work is being carried on at this claim.

The Nipissing mines and La Rose Consolidated have yielded net profits for the year of $3,400,000. The Nipissing contributed to the total $2,228, 092 and La Rose $1,138,240.

The quarterly report of the City of Cobalt ended December 31st, shows a gain of $17,000. At the end of September the balance was $11,870, at the end of December, $28,525.21. Returns from smelters amounted to $51,850.74, while ore at smelters is estimated at $19,000.

Some of the most remarkable ore ever seen in Cobalt camp is now being mined at the Lawson. No. 8 vein, at the 200-foot level, has two ore shoots, one 25 feet long, the other 21 feet. The average width of these shoots is eight inches and values will go over 5,000 ounces. In places the vein is a foot wide of 12,000-ounce ore. Another good vein has also been cut along the Foster line. It is about two inches wide, shows up well for forty feet and there are occasional patches of high grade.

The Hudson Bay Company has cut another rich stringer at the 200-foot level. This is the fourth new vein discovered this fall. The new mill should be running by the end of this month or the beginning of next.

The sale of the Standard Cobalt mine, fixed for December 28th, was postponed and attempts are now being made to declare the company solvent. It is understood that a prominent New York engineer has been offered the post of consulting engineer and that the mine is likely to resume work on a legitimate mining basis.

The annual report of the McKinley-Darragh, which will be published at the end of this month, will contain a statement by Mr. P. A. Robbins, the retiring general manager, that there are three years' ore reserves in sight at the McKinley-Darragh alone. The cost per ounce of silver has not been reduced. The production will be in the neighbourhood of 1,700,000 ounces. The average tonnage milled is now 127.25, and, while the mill heads are running about the same as at the beginning of the year, the tails have been cut down from 7.24 to 5.80 ounces.

From a cross-cut, 510 feet below the top of the cliff, the King Edward has cut one of its veins. It contains some smaltite, but does not show up very well so far.

The mill report for November for the Buffalo mines reads: Mill ran 591 hours; ore milled, 3,417 tons; average assay per ton before milling, 32.03; ounces of silver recovered, 87,266 ounces; ounces silver shipped, 117,099.07 ounces.

The Empire Cobalt Mines has issued a statement to the effect that work will be resumed. Treasury stock is to be sold to defray the cost of development.

The production of the Buffalo for the first six months of the old year was 850,000 ounces, against 700,000 ounces for the same period of 1909. Development on the 300-foot level continues most satisfactory. No. 19 vein frequently shows nine inches of high-grade smaltite ore in the nine feet of milling rock.

The Hargrave has picked up the Kerr Lake No. 3 vein within its own territory. Two short but very rich ore shoots have already been passed through and driving on the vein still continues. Good values are being obtained by the Drummond on the extension of the No. 1 vein of the Hargrave.

Several discoveries of importance have been made on the Beaver mine within the past month. On the 250-foot level some distance from the main workings two or three inches of high-grade have been cut in a vein which on the surface showed nothing but cobalt and bloom. On the 300-foot level two shoots of high-grade ore have been driven through and good ore is being stoped out. A high-grade car will be shipped early in the new year.

The Coniagas annual statement shows a surplus of almost a million dollars and an increase of 3,000,000 ounces estimated ore in sight. The cost of production was lower by 13.28 cents per ounce. The total revenue was $1,010,000, and net profit, $753,888.

Porcupine.—The Vipond stamp mill is now in operation. About ten tons of hand-picked ore was all ready for the time when the mill should commence to operate, and it is expected that the Porcupine gold mines will be able to show results soon.

The Healey group of eight claims in southeast Deloro, the Ritchie four claims and the two Mancha claims have been taken over by a syndicate of Haileybury and Kentucky men.

Mr. A. J. Young, of North Bay, and Cyril T. Young, of Haileybury, have purchased two claims of W. S. Edwards for $10,000 cash. The claims lie near the Dobie claims in Tisdale on the edge of the Reserve.

The Hudson Bay, the Trethewey, and several other strong Cobalt interests are developing claims in the Redstone River section. A small settlement is starting up and a store and stopping place are being built.

Several finds of visible gold have been made on the Martin claims lying east of Simpson Lake and north of the Preston and Brydge properties. The claim is owned by S. A. Powers, L. G. Mayhew and C. T. Young, all of Haileybury.

There are now no less than seven townsites located round or in the vicinity of Porcupine Lake. There is a lively trade in real estate and the announcement of the route of the new Porcupine railroad is awaited with the greatest interest.

The Scottish Ontario, the first property to start operations in the Porcupine camp, has cut its vein at the hundred-foot level. At a depth of 47 feet, the vein dipped out of the shaft and was cut in a forty-foot long cross-cut. While the quartz shows no free gold it pans well.

Two shafts are being sunk on the Armstrong McGibbon property with the object of discovering, as soon as possible, how the ore runs below. Thirty-five men are at work and Mr. C. E. Watson is installing his small plant. The most spectacular portion of the find has been housed in to prevent high-grading.

To operate the old telephone lines from Matheson to Porcupine a company has been formed capitalized at $40,000. Communication has been reopened and it is stated that good business is being done.

A daily mail delivery in Porcupine has now commenced. It is better than the bi-weekly distribution, but the service is very poor yet.

Failure to do settlement duty on the Richard Mulchany veteran claim in Tisdale has led to the forfeiture to the Government of that valuable property. The lot adjoins Lake Simpson and is valuable on its location alone. It is thought that the Government may intend to lay out a townsite on Lake Simpson.

There is now a very lively interest in Thomas Township and good finds are reported. The dykes are wide and the values from $2 to $5.60, though low, are very uniform.

Mine owners are already commencing to take precautions against high grading. All gold showings in the Dome are plastered with black paint, so that any high-grading can be at once detected. On the Tisdale property the big lead will be housed in. Mr. Timmins has made the proposal that all mine owners should insist on all miners changing their clothes when they come up from below.

The Quebec Government has issued a report stating that free gold and sylvanite have been discovered in quartz bodies on Lakes Fortune and Renault, near the north end of Opasatika Lake, 45 miles from Haileybury. Mr. Robert Harvie, who made the examination, stated that but one specimen was discovered with visible gold, but it was quite representative. The gold occurs in combination with the sylvanite. Several properties have been working in this section of Northern Quebec for some time. The Porcupine Exploration and Mines Company has taken an option on three Deloro claims and has added them to the Herleahy-McPharland group it is already working.

A considerable amount of machinery is going into Munro Township. The Detroit syndicate is taking in two small boilers and a compressor, and the Gold Pyramid Mining Company a small mill.

The Porcupine trail is crowded after the New Year holidays, Fifty stages are running and they are crowded all the time.

The report of the quarantine of Porcupine has not foundation in fact. A suspect case found in a local restaurant has been isolated and an isolation hospital has been established.

Gowganda and Elk Lake.—The road into Gowganda is now in excellent shape. The road has been considerably shortened and it can now be made from Charlton in nine hours.

Sixty teams were, at the beginning of the month, on the trail taking in machinery.

The Hudson Bay Company, on its property at South Hangingstone Lake, is sinking three shafts on three promising veins. A boiler and compressor plant will be installed with all speed. Three tons of 3,000-ounce ore have already been bagged.

The machine shop at the Bartlett mines has been destroyed and the engine room damaged by a fire that broke out there last month. The management states that the machinery was only slightly damaged, and the net loss will only be $1,500. Mining operations will proceed as usual.

The Millerett has shipped two more cars of ore and the Miller Lake O'Brien has one on the road. Over 500 tons have now been despatched from the Gowganda camp.

The La Brick property will resume operations early this month. The La Brick belongs to the interests controlling the King Edward mines at Cobalt.

At Elk Lake it is reported that the Silver Alliance, Toledo and United States Silver Mining Company, all holding properties near the line of James and Tudhope, will resume operations this year.

Kenora.—The Kenora mining division and the adjacent lands in Manitoba between Ingolf and Rennie, round West Hawk Lake and Star Lake, are at present giving rise to speculation and rumour as to the probability of a second boom there.

The Mikado mine is being operated by the Kenora Mines, Limited, and the management is so much to the liking of the present shareholders that all treasury stock has been withdrawn from sale, and, although the mine has only been in operation under the present company for three months, and they have not at present got a cyanide plant, gold bullion to the amount of $3,911 has already been sent into the bank here, while Mr. Nickerson, the manager, reports that without the cyanide plant he can only extract 25 per cent. of the gold, and advises shutting down the mill and proceeding with development work only until the spring, when the new cyanide plant is to be installed.

This course will, undoubtedly, be followed, since a large sum has just been paid to the English syndicate formerly owning the mine, showing the Kenora Mines, Limited, shareholders to be amply satisfied with the showing of the mine and to have the utmost confidence in the outcome of purchasing and operating this mine.

Mr. Nickerson reports the presence of bismuth, molybdenite, arsenic, copper and iron pyrites in the ore, a splendid body of which has been located on the 7th level, 16 feet wide and extending upwards almost vertically to the 4th level, besides showing signs of strengthening as the depth increases.

On the hanging wall there is a streak of rich ore between 18 inches and 2 feet wide, giving values between $50 and $75 per ton, while the rest of the lode averages between $5 and $6, giving an average value for this immense body of ore of $20 per ton.

Locations K47 and K49 in Clear Water Bay, Lake of the Woods, are now under development and showing some good values. The main shaft is down about 50 feet, and the vein strengthening.

Oscar Cronlund is developing what promises to be a splendid property on Hell Diver Bay, Shoal Lake, not far from the Mikado. While development work only is being done here, there is enough free gold to make one expect interesting results from these claims.

Another property, "The Ophir," which formerly produced some of the richest specimens from this country, but which had to be closed down on account of litigation, has again been started up and a gang is now at work sinking. Great things are expected from this mine and rightly so from the richness

of lode right on the surface. There are some test pits and a 20-foot shaft already sunk and the work now going forward will open the property up and give the owners a chance to gauge the real value of the mine.

A new company is being formed to be known as "The Eagle Lake Consolidated Mines, Limited," to operate properties on Eagle Lake, which is partially developed and so far has shown itself to be well worth investigation. Mr. Newton Higbee is managing director, and was the original owner, and associated with him is Mr. Harding Rideout, of Kenora.

BRITISH COLUMBIA.

Cariboo.—Operations at Mr. John Hopp's Lowhee placer mine in 1910 were on a much larger scale than in earlier years. About 200,000 cubic yards of gravel was moved, as compared with 60,000 yards in 1909. More improvements were made, ditches having been extended, reservoirs constructed, and more plant put in. On the Mucho Oro property water was so short last fall that the quantity of gravel moved was much less than in ordinary seasons. The Forest Rose mine, also, suffered from a shortage of water, so the amount of gold recovered was smaller. At Mosquito Creek, the Alabama and Williams hydraulic mines were worked with fairly good results, 50,000 yards of gravel having been moved, notwithstanding unfavourable water conditions.

The hydraulic mines on China Creek and Nugget gulch are reported to have had a fair run for the season. The Waverley Hydraulic Company made a bedrock cut through a rim into another channel and opened ground that promises good results.

Other hydraulic properties worked were the old South Wales, near Van Winkle; H. H. Jones' property on Last Chance Creek, and several more in different parts of the district.

The Lightning Creek Gold Gravels and Drainage Company has been sinking a shaft at Wingdam, and is reported to be nearing ground from which rich prospects have been obtained.

Atlin.—The estimated amount of placer gold recovered in Atlin district in 1910 was $260,000, which is larger than in either 1909 or 1908. McKee, Pine and Spruce Creeks are the larger producers, the yield of other creeks not being nearly as much. The operations of the North Columbia Gold Mining Company are stated to have been successful, that company having had the benefit of an abundant water supply. Quartz mining received a little more attention last year than previously, and in several cases with promising results.

East Kootenay.—Last year's production at the St. Eugene mine totalled 77,500 tons of ore, practically the whole of which was put through the concentrating mill, the product having been about 12,600 tons of lead concentrate, which was shipped to the Consolidated Company's smeltery at Trail. This production compares unfavourably with that of 1909, in which year there was about 150,000 tons of ore mined and shipments to the smeltery totalled nearly 22,000 tons.

From the Sullivan group, which was not a producer in 1909, between 24,000 and 25,000 tons of ore was taken and sent to the smeltery. This ore contained about 172,000 oz. of silver and 8,494,000 lbs. of lead. Operations were commenced in December, 1909, and the first shipment of ore under the Consolidated Company's lease was sent out about January 1. Since then a skip hoist for hoisting coal from the railway track to the top of the lower terminal of the aerial tramway has been put in. A bin to hold 100 tons of coal was built at the mine, and a 200-ton ore storage bunker at the lower terminal of the tramway. At the mine, electric lights were provided for the surface plant. A skip in the shaft, a belt conveyor for hand-sorting ore, and a rake, attached to a double-drum hoist for moving the ore in raises or stopes where the footwall is too flat for the ore to run by gravity, were added to the mine plant.

Ainsworth.—Prior to the fire which, last summer, destroyed the Whitewater concentrating mill and so damaged the Kaslo & Slocan railway as to prevent trains being run to Whitewater, the following shipments were made: Whitewater mine, crude ore 184 tons, silver-lead concentrate 47 tons, zinc concentrate 290 tons; Whitewater Deep mine, crude ore 275 tons, silver-lead concentrate 357 tons, zinc concentrate 2,052 tons. The total metal contents of all the before-mentioned shipments were: Gold 75 oz., silver 104,583 oz., lead 642,028 lbs., zinc 1,920,078 lbs. The Whitewater lease was abandoned by the lessees after the destruction of the mill, and the Whitewater property(outcrop) reverted to the English company owning it (The Whitewater Mines, Ltd.). The "deep" of the Whitewater vein was developed up to the time of the fire, and development is being continued throughout the winter by The Deep Mine, Ltd. Since the fire the latter company has been engaged in making necessary repairs to power plant and equipment, this involving the construction of practically new equipment. Further development is being done this winter below the "outcrop" property by J. L. Retallack & Co. In the property controlled by this firm, about 400 feet of development tunnels and raises was driven prior to the fire. The Deep Mine, Ltd., also did some 300 feet of development about the same time, but when the vein was cut by this company, the rush of water drove the miners out and prevented work from being continued.

Slocan.—Work done in 1910 on the Panama, which is situated high up on the mountain above Bear Lake, was about 500 feet and 75 tons of high-grade ore was mined. Of this, 55 tons was shipped to Trail; its average silver content was 200 oz. per ton. Snow having fallen in sufficient quantity to make the hauling good, ore is being hauled from the Rambler-Cariboo mine to the Canadian Pacific Railway at Three Forks. More than 350 tons had been hauled half-way before the snow came. It is expected that while the road shall continue good enough for hauling to be continued, the output will be fully 200 tons a month. There is much ore available, shoots having been opened on several levels down to the 1,050-foot. The further development of the Washington mine was continued during the greater part of last year. The total footage of work done was more than 1,300 feet. No ore has been shipped from this property for some time, but the mine is being prepared to make a large production later.

No other mine in the Slocan has attracted so much attention during recent months as the Standard, a description of which was published lately in the Canadian Mining Journal. The sensational accounts sent out last month from Spokane, Washington, to the effect that a 65/100th interest in the Standard group had been sold on a basis of $2,500,000 for the whole, it has since transpired were quite unwarranted. The truth is that an option has been taken on a controlling interest, probably that mentioned, but the statement that a large sum of money has been paid is at variance with the facts. There is reason to believe that the Spokane syndicate that has obtained the right to purchase control will work more men on the property so as to develop it more quickly and so enable them to sooner determine more concerning the big shoot of ore that has been opened on No. 5 level.

Rossland.—A brief summary of the results of mining in Rossland camp to the end of 1910 gives the following information: The records of production of Rossland mines to the end of 1909 show a gross tonnage of 3,318,007 tons of ore, valued at $46,352,947, or nearly $14 per ton general average value. If the production of 1910 be added, an aggregate tonnage of more than 3,500,000 tons, and a gross value of approximately $50,000,000, will be the result. Of this large quantity, the production of the Le Roi mine totals about 1,550,000 tons, value $20,600,000, and that of the Centre Star-War Eagle group, a rather larger tonnage and higher value. Then the mines of the Le Roi No. 2, Ltd., have produced, roughly 300,000 tons of ore, of a total value of $6,000,000, or more. The Jumbo, Rossland-Koo-

tenay, Rossland-Great Western, Velvet-Portland, Spitzee, White Bear, Giant, I.X.L., Evening Star, and others, together contributed the remainder of the aggregate production shown above. Notwithstanding the decision to wind up the Le Roi Mining Company, Rossland is still an important mining camp, and there is good reason to think it will long continue to be productive, for several of its mines are known to still have large reserves of ore.

Lardeau.—The Ferguson Mines, Ltd., in 1910, did about 1,600 linear feet of development work and mined between 800 and 900 tons of ore of shipping grade. The winze from the lower Sunshine tunnel of the company's Silver Cup mine entered the ore, while drifts from it also opened ore shoots. A commencement has been made to ship ore from the Beatrice mine, situated in the vicinity of Camborne, Fish River.

Boundary.—The total tonnage of ore from the mines of the Boundary district for the year 1910 was about 1,680,000 tons. In round figures the proportions of the respective mining companies were as follows: Granby Co., 1,100,000; British Columbia Copper Co., 383,000 tons; Consolidated M. & S. Co., 143,000 tons; New Dominion Copper Co., 54,000 tons. With the exception of that produced from the mines of the Consolidated Co., this large quantity of ore was smelted at the works of the Granby and British Columbia Copper companies.

Similkameen.—Mr. Chas. F. Law, of Vancouver, who lately returned from England, is arranging for commencing work on the property of the British Columbia Platinum Company, situated at the mouth of Slate Creek, near the confluence of that stream with the Tulameen River. Mr. Law has succeeded in interesting in this enterprise, Messrs. Johnston & Matthey, the well-known, old-established firm of platinum refiners, of London, England. The platinum-bearing gravels will be prospected with a Keystone drill. Slate Creek is stated to be the most highly auriferous and platinum-bearing stream in the district. The expectation is that an important platinum-producing property will be developed here and that British Columbia will hereafter supply an appreciable amount of platinum to the market, which is now largely dependent upon Russia for this mineral.

Princess Royal Island.—During 1910, Mr. A. B. Clabon and associates acquired nine mineral claims, known as the D.L.S. group, situated at or near Surf Inlet, Princess Royal Island. Two parallel veins had previously been opened on the Bluff claim of the group, chiefly by adits and a shaft. The adit on the upper, or west, vein was driven 140 feet, while the length of that on the lower, or east vein, was in 293 feet. The shaft was commenced at an elevation of about 265 feet above the lower tunnel and was sunk 60 feet, which leaves a distance of 205 feet between the bottom of the shaft and the lower adit. The difference in elevation between the two adits is about 100 feet. The veins are stated to run more than 6,000 feet on their course through the group. The usual outcrop is given as being 18 inches to 4 feet, but where opened shows a width of 6 to 12 feet. The ore is quartz, with iron pyrites containing gold and a small quantity of silver. A list of assay results from 40 samples shows value varying from $1 up to $207.20 per ton, the average of the lot being nearly $40 per ton, though only 15 of the 40 gave a return of $20 or over. The ore is regarded as of a character better adapted to concentration than to stamp-milling for the recovery of its valuable contents. The development done in 1910 was not considerable, but it served to show that where cross-cut in the lower adit, at nearly 200 feet from its portal, the vein is 16 feet in width and assays of average samples yielded a value in gold of $15 per ton. A winze sunk 20 feet in the vein from the floor of this cross-cut showed the occurrence of similar ore.

MINING NEWS OF THE WORLD.

UNITED STATES.

New York City.—At a meeting of the Tisdale Mining Company, Frank C. Armstrong, of New York, was elected president, E. P. Earle, president of the Nipissing Mines Company, vice-president, and D. Lorne McGibbon of Montreal and Samuel J. Dobie of Haileybury, directors. This company takes over the properties of the Armstrong-McGibbon syndicate, the 17 Dobie claims in Tisdale township, Porcupine mining district. All of the unissued treasury stock was taken up by the original syndicate, which also undertakes to provide the necessary money to develop the property. Charles E. Watson, who has been identified with the management of some of the most important properties in the Cobalt district, has assumed the management of the Tisdale Mining Company and will direct developments of the properties of this company.

Globe, Ariz.—While it was the intention of the Miami Copper Company to have its concentrator in shape to start at least one unit of its 2,000-ton mill by the first of the year there yet remain so many details that it seems that operations will not start before February next.

El Paso, Texas, December 28th.—An explosion of dynamite stored in a pit at the El Paso smelter has buried under the debris a score of workmen, many of whom, it is believed, have been killed. The smelter is the property of the American Smelting and Refining Company.—Reuter.

Washington, D.C.—Statistics and estimates received by the United States Geological Survey from all plants known to produce blister copper from domestic ores and from all Lake mines indicate that the copper output from mines in the United States in 1910 will fall considerably below the output of 1909, but will exceed the production of any previous year. The figures showing smelter production, which have been collected by B. S. Butler of the Survey, represent the actual production of each company for 11 months, and include an estimate of its December output. The November figures for a few companies were not available, and these companies furnished estimates for the last two months of the year. According to the statistics and estimates received the output of blister and Lake copper was 1,079,000,000 pounds, as against 1,092,951,624 pounds in 1909. Statistics showing the output of refined copper by plants in the United States are not collected by the Geological Survey at this time. Figures published by the Copper Producers' Association for the first 11 months of 1910 indicate that the production of marketable copper by the regular refining plants from all sources, domestic and foreign, will amount to about 1,448,000,000 pounds, as against 1,405,619,519 pounds in 1909.

Washington.—A bill which Senator Nelson of Minnesota will introduce will doubtless be regarded as the most thoroughly effective conservation measure that has ever been brought to the attention of congress. Senator Nelson, as chairman of the committee on public lands, has given careful consideration to this question and he has embraced in this bill which relates to Alaskan coal lands, two or three striking features, namely:—That the coal lands of Alaska shall be leased or operated under license upon conditions which shall place the question whether the price of coal so mined is fair and reasonable under the jurisdiction and control of the interstate commerce commission. That provision shall be made for payments of royalty to the United States on every ton mined. That no lease of coal lands shall be acquired except under regulations prescribed by the secretary of the interior who shall see that no monopoly in mining in Alaska be permitted. That provision be made for acquiring coal in Alaska for the use of the United States navy under a system of leases to firms or corporations who may con-

tract to furnsh coal for the navy at agreed price. Senator Nelson is engaged in considering a number of measures intended to conserve the national resources of the United States in the public lands and a general bill will soon be offered by him intended to secure for the United States all the coal and oil lands under systems of leasing and rentals somewhat along the lines of the Alaskan bill which he will present.

Ely, Nev., January 6th.—The year which has just closed has been a banner one for production for the Nevada Consolidated Copper Company. Few people living in the district, familiar as they are with the working of the great Eureka pit at Copper Flat, have any real conception of the vast amount of work which is going on there. Ore trains passing daily through the district, from the mine to the concentrator at McGill, tell in part the story of production; but the results at the end of the year tell the whole story. For the fiscal year commencing October, 1909, and ending September 30, 1910, the ore output was 2,237,-028 tons dry weight, the average assay of copper being 2.06 per cent. and about 22 cents in gold and silver. For the calendar year of 1910 the ore production will amount to 2,350,000 dry tons, averaging the same percentage in copper and the precious metals. All of this great output came from the steam shovel pit at Copper Flat, and there has been more than that in overburden taken from the workings. The stripping operations, meaning the removal of overburden from the Eureka ore bodies, must be kept in advance of the production of ore, and during the year, in addition to the output of ore there have been removed 1,650,000 cubic yards of this waste. In all the Eureka pit has been stripped over an area of 22 acre.s

So many factors enter into the determination of the output of copper that a forecast of the probable production for 1911 is of little value. During the latter part of 1910 several of the large companies were reducing their outputs and it is probable that this policy will be continued into 1911. Two large companies, the Miami Consolidated and the Ray Consolidated, will begin production early in the year, and the Chino Copper Company, and probably the Bonanza mine of Alaska, will be producers late in 1911, but so that unless there is a decided curtailment by the older companies the output for 1911 will exceed that of 1910.

Goldfield, Nev., January 7th.—An estimate of mineral production in the state of Nevada during 1910 places the total at $40,521,000, which is divided into counties as follows: Esmeralda, $13,311,000; Nye, $9,525,000; White Pine, $9,000,000; Eureka, $2,000,000; Humboldt, $1,500,000; Lander, $2,000,000; Storey, $1,500,000; Lincoln, $800,000; Churchill, $500,000; Clark, $200,-000; Elko, $50,000; Washoe, $25,000; Douglas, $10,000; total, $40,521,000.

WALES.

After having been on strike for two months 5,000 men employed at the Powell Duffryn Collieries, Aberdare, resolved at a mass meeting recently to resume work immediately and to relegate their grievances to the Conciliation Board. The 8,000 men at the Bwllfa and Cwmaman Collieries, who ceased work in sympathy, have resumed work.

SPAIN.

Spain, January 10th.—One hundred and ninety workmen in Anita mine, at Castro, Santander, Urdiales, were entombed alive when the roof of a shaft caved in. Fire followed the crash, which is supposed to have been caused by explosion.

Rescue parties were prevented from entering the pit mouth by the dense volume of smoke which rolled outward.

With great effort one party of rescuers were able to penetrate a short distance into the shaft and removed four dead bodies. Members of this party expressed the fear that all in the mine had perished, as the supply of air was cut off.

GENERAL MINING NEWS.

NOVA SCOTIA.

The strike situation at the Port Morien colliery is considerably improved, and is developing nicely toward a peaceable end of the difficulty. About half of the total number of employees are at work to-day. Nearly all that can be placed are now at work in the new section of the mine. The construction work in the old sections is proceeding well. Many who ceased work are anxious to go back, but it will be some time before places are ready for them. The statement that the company had violated the Lemieux Act is incorrect. There has been no violation of the Act, the management having notified the employees of the proposed reduction of rates for the winter as long ago as the latter part of November. Nor is it correct that the management has been notified by the labour organization of the claim of the latter that the company has violated the Act. No notice of the kind has been received by Manager McKenzie. It is reported, however, that former President Dan McDougall of the U.M.W. stated that their solicitor was writing a letter to the company to that effect.

Sydney Mines, Jan. 5.—The body of another victim of the No. 3 disaster was taken from the mine at three o'clock today. The body was that of Henry Purchass, a deputy, who with Archy Ferguson was inspecting the mine in that section where the explosion occurred. When found Purchass was lying face down across the haulage rope. Underground Manager John Hill, Henry Walsh, Peter Coll, and James Hurone, the advance guard of a searching party, came upon the body at No. 11 landing. These men had directed their search down the slope while another party was working towards them, having gone through the rooms off the last two levels. There was not a cut or bruise on Purchass' body, and it was at first thought that the man was alive. Doctors McDonald and Love quickly made an examination, but found that life had been extinct for some time. From this it is evident that unlike the rest, Purchass was not injured by the explosion but succumbed to the after-damp. His lamp was found in his hand in the same condition in which it had left the lamphouse. The body after being prepared for burial was removed to the residence of Doran Ludlow, at Old No. 3, whose wife is a sister of Mrs. Purchass. Purchass was twenty-eight years of age, and was a native of Twilingate, Newfoundland. His widow and three children reside at Florence.

The bodies of five of the victims of the accident went down by the steamer Bruce to-night for interment at their homes in Newfoundland. These are: James Messervey and Israel Parsons, Sandy Point, St. George's Bay; John Wade and Brian Murphy, Colliers, Haley's Point, Conception Bay; Eugene Reid, Hearts Delight, Trinity Bay. The last named was only seventeen years of age, and came here but five weeks ago.

Sydney, N.S., Jan. 3.—A serious explosion occurred in the Nova Scotia Steel Company's No. 3 colliery at Sydney Mines this morning. At the time of the explosion there were eight men in the mine, whose names are said to be John R. McIntyre, Archie C. Ferguson, Hugh Dickson, Henry Purchass, Arthur Amy, James Bond and Luke Drivel. The two latter have been rescued and McIntyre has been brought out from No. 14 level to No. 5 level, where attempts are being made to revive him. The fate of the others is in doubt. The other levels are full of damp and the heat is very great. A heavy fall of roof in levels Nos. 11 and 13 followed the explosion. There is thought to be a fire in No. 14 level. A gang of 100 men have gone down as a rescue party. The bodies of six of the eight men entombed have been recovered. The bodies were huddled together and so badly burned that it was impossible to

recognize one from the other. Owing to the deadly gases the rescuers were unable to reach the bodies of Deputies Ferguson and Purchass.

QUEBEC.

Quebec.—According to the report of the special commission appointed to investigate the Chibougamou mining region, which is 125 miles northwest of Lake St. John, the prospects are not sufficient to justify the Government in building a railway extension there from Lake St. John. Since 1903, there have been reports of rich discoveries of gold, asbestos and other minerals, but the report declares that none of the discoveries of copper and gold are in deposits of such magnitude or promise as would enable the experts to state without a considerable degree of hesitation that they would, with further development, become "mines" in the strict meaning of this term. The reputed "finds" of silver, smaltite and cobalt bloom must be treated as false. As to iron, it is possible that large and pure bodies might be discovered, but the expense of prospecting and the remoteness of the district will be ample deterrents. The asbestos noticed in the working faces of the various open cuts is insignificant in amount. The commission was composed of Dr. A. E. Barlow, lecturer in economic geology at McGill, chairman; Prof. J. G. Gwillim, professor of mining at Queen's, and E. R. Faribault, of the geological survey of Canada.

ONTARIO.

Sault Ste. Marie, Jan. 6.—Some sweeping changes among the officials of the several departments of the Lake Superior Corporation came into effect with the advent of the New Year. The department of transportation is now under the general management of W. C. Franz, who retains his seat on the directorate, while the general management of the entire corporation falls to Vice-President J. F. Taylor. Other changes are understood to include the elevating of Mr. C. H. L. Jones to be assistant secretary-treasurer, and that Consulting Engineer Ernest becomes general manager of the steel plant and the Algoma Steel Co., while C. E. Duncan, superintendent of steel plate, becomes general superintendent, succeeding D. J. Williams, retiring.

BRITISH COLUMBIA.

Nelson, B.C., Jan. 6.—Another dividend of 30 cents and an extra dividend of 20 cents a share has just been declared by the Hedley Gold Mining Company. The property, the famous Nickel Plate, at Hedley, B.C., continues to produce the precious metal in substantial quantities. This company has only been in existence a little over a year, having acquired the Nickel Plate from the Marcus Daly estate in August, 1909, and with the disbursements will have paid back to its shareholders a total of $203,520, or profits at the rate of $1.70 a share, par $10. This is the fifth dividend during the current calendar year.

A general meeting of the shareholders of the St. Eugene Consolidated Mining Company, the Rossland Power Company, the War Eagle Consolidated Mining and Development Company, Limited, and the Centre Star Mining Company, Limited, is to be held at Rossland on Monday, February 6th next for the purpose of receiving the liquidators' reports.

COMPANY NOTES

DOMINION COAL DIVIDEND.

The Dominion Coal Company has declared the regular half-yearly dividend of 3½ per cent. on the preferred stock, payable February 1st, 1911. Books close 18th to 31st January, inclusive.

CUMBERLAND RAILWAY.

The annual meeting of the Cumberland Railway and Coal Company will be held on February 8th. Books close from February 1st to February 10th, inclusive.

CANADA COMPANY'S DIVIDEND.

The interim dividend of 10s per share just declared by the Canada Company is an increase of 2s as compared with the corresponding period of 1909, and reflects the increased prosperity that has attended operations this year. A statement of the land business down to the end of November shows that 4,244 acres have been disposed of, as against 4,562, the average price realized being $19.10, as compared with $14.91 per acre. This is an increase of 28 per cent. on the 1894 valuation. The cash receipts for the same period were £22,200, or £400 more than in 1909.

CROWN RESERVE.

When the Crown Reserve dividend and bonus of 15 per cent., payable January 16th, has been paid, the company will have paid back over half a million dollars more than its capitalization, the dividend record of the company being as follows:

Date.	P.C.	Bonus.	Amount
1908.—July 2nd	4	.	$ 70,752.56
1909.—January 15th	12	4	238,010.24
1909.—April 15th	6	9	265,322.10
1909.—July 15th	6	9	265,322.10
1909.—October 15th	6	9	265,322.10
1909.—December 20th	.	10	176,851.40
1910.—January 15th	6	9	265,322.10
1910.—April 15th	6	9	265,322.10
1910.—July 15th	6	9	265,322.10
1910.—October 15th	6	9	265,322.10
			$2,387,808.90
Payable January 16th, 1911....	6	9	265,322.10
			$2,653,131.00

STATISTICS AND RETURNS

NOVA SCOTIA PROVISIONAL FIGURES.

Coal	$15,675,000
Coke	1,960,000
Gold, iron and other metals	379,500
Gypsum, limestone, etc.	830,000
Building materials	260,000
Pig iron	1,000,000
Steel, steel rails, rods, etc	14,200,000
	$34,304,500

PROGRESS AT GRANBY.

At a cost approximating 10.20 cents a pound, Granby produced in November 1,410,261 pounds of copper, as compared with 1,184,234 pounds in October. Precious metal contents totalled 36,228 ounces of silver and 2,587 ounces of gold.

In November six furnaces of the smelter were in blast. Early in December another furnace was blown in, and soon after January 1st the eighth and last will be started, so that the entire battery will be in operation.

The company's copper product by months, in pounds, follows:

January	2,077,985
February	1,958,294
March	2,059,257
April	1,915,475
May	1,866,625
June	1,677,257
July	1,671,000
August	1,430,315
September	1,120,732
October	1,184,234
November	1,410,261
Total, 11 months	18,373,435

MONTHLY AVERAGE PRICE OF SILVER.

	London.		New York.	
Month.	1909.	1910.	1909.	1910.
January	23.843	24.154	51.750	52.375
February	23.706	23.794	51.472	51.534
March	23.227	23.690	50.468	51.454
April	23.708	24.483	51.428	53.221
May	24.343	24.797	52.905	53.870
June	24.166	24.651	52.538	53.462
July	23.519	25.034	51.043	54.150
August	23.588	24.428	51.125	52.912
September	23.743	24.567	51.440	53.295
October	23.502	25.596	50.923	55.490
November	23.351	25.680	50.703	55.635
December	24.030	25.160	52.226	54.428
Total	23.706	24.670	51.502	53.486

COBALT ORE SHIPMENTS.

The shipments for the week ending January 6th and for the year in tons now read as under:

	Week ending Jan. 6.	1911.
Nipissing	140.60	43.40
Coniagas	113.40	54.75
McKinley-Darragh	71.73	.....
Cobalt Lake	65.70	.....
Trethewey	48.62	26.32
Townsite	32.85	32.85
Temiskaming	40.65	.....
Beaver	31.75	31.75
Crown Reserve	32.00	.....
Buffalo	31.55	31.55
La Rose	31.15	.....
Kerr Lake	30.16	30.16
Silver Cliff	23.96	23.96
	694.12	274.74

BRITISH COLUMBIA ORE SHIPMENTS.

Year ending December 31st ,1910.

The following are the returns of the ore production and movement for the week, and also for the year to date:

Boundary Shipments.

Granby	29,539	1,112,925
Mother Lode	8,234	364,650
Snowshoe	2,343	146,845
Jack Pot	420	16,783
Rawhide	4,000	47,350
No. 7	50	1,042
Other mines	.....	9,523
Total	44,586	1,699,118

Rossland Shipments.

Centre Star	2,930	192,309
Le Roi No. 2	376	31,354
Le Roi No. 2, milled	300	15,600
Le Roi	118	13,904
Other mines	.....	1,692
Total	3,724	254,859

Slocan-Kootenay Shipments.

St. Eugene, milled	2,775	144,300
Queen, milled	420	21,841
Granite-Poorman, milled	250	13,000
Nugget, milled	110	5,720
Wilcox, milled	75	1,425
Richmond-Eureka	31	4,071
Rambler-Cariboo	59	802
Mollie Hughes	26	378
Sullivan	223	22,790
Utica	21	165
Hope	55	418
Athabasca	21	91
Hewitt	23	131
Aurora	29	48
Society Girl	50	50
Twilight	19	19
Other mines	.....	91,880
Total	**4,187**	**307,128**

The total shipments for the week, including the estimated milling, were 52,497 tons, and for the year to date, 2,261,105 tons.

B. C. Copper Company's Receipts.

Greenwood, B.C.

Mother Lode	8,234	364,650
Jack Pot	420	16,783
Rawhide	4,000	47,350
Other mines	.....	9,339
Total	12,654	438,122

Granby Smelter Receipts.

Grand Forks, B.C.

Granby	29,539	1,112,925
Other mines	.....	120
Total	29,539	1,113,045

Consolidated Company's Receipts.

Trail, B.C.

St. Eugene, concentrates	110	13,557
Le Roi No. 2, part concentrates	376	31,354
Centre Star	2,930	192,309
Le Roi	118	13,904
Snowshoe	2,343	146,845
Richmond-Eureka	31	4,071
Rambler-Cariboo	59	802
Mollie Hughes	26	378

Sullivan	223	22,790
Utica	21	165
Hope	55	418
Athabasca	21	91
Hewitt	23	131
No. 7	50	1,042
Aurora	29	48
Society Girl	50	50
Twilight	19	19
Other mines	.....	30,141
Total	6,848	458,115

The total receipts at the smelters, including concentrates were for the week, 48,677 tons, and for the year to date, 2,009,-282 tons.

SILVER PRICES.

		New York. cents.	London. pence.
December	22	54⅜	25⅛
"	23	54⅜	25⅛
"	24	54⅛	25
"	26	Holiday.	
"	27	54	Holiday.
"	28	53⅞	24 15/16
"	29	53⅞	24 15/16
"	30	54⅛	25 1/16
"	31	54⅛	25 1/16
January	2	Holiday.	
"	3	54⅝	25¼
"	4	54⅝	25¼
"	5	54½	25 3/16
"	6	54½	25 3/16
"	7	54⅝	25¼
"	9	55	25⅜

COBALT STOCKS—High and Low, 1910.

Amalgamated	.07½	.01
Bailey	.12½	.06⅞
Beaver Consolidated	.38¼	.18½
Buffalo	2.50	1.97
Chambers-Ferland	.42¾	.13¼
City of Cobalt	.55	.19½
Cobalt Central	.23	.06
Cobalt Lake	.29⅞	.12
Coniagas	5.62	4.50
Crown Reserve	4.10	2.53
Foster	.31	.04
Gifford	.220	.03
Great Northern	.12½	.05¾
Green Meehan	.11¾	.01
Hargraves	.44	.14
Hudson Bay	143.00	98.00
John Black	.17	.02
Kerr Lake	10.99	6.03
La Rose	5.02	3.30
Little Nipissing	.35	.12
McKinley	1.42	.75
Nancy Helen	.17½	.03
Nipissing	11.80	9.80
Nova Scotia	.48¼	.14½
Ophir	.91	.11½
Otisse	.20	.01
Peterson Lake	.29¼	.13¼
Right of Way	.34	.19
Rochester	.23	.03
Silver Leaf	.13¾	.05
Silver Bar	.19½	.01
Silver Queen	.23	.04⅞
Temiskaming	1.00	.52
Trethewey	1.45½	1.13
Watts	.16	.02
Wettlaufer	1.42	.52

COBALT ORE SHIPMENTS.

The following table shows the shipments from Cobalt for 1909 and 1910. There are now 29 shippers, as compared with 30 in 1910:

Mine.	1909.	1910.
Bailey	36.85	.....
Beaver	51.38	140.06
Buffalo	648.86	1,244.88
Casey of Cobalt	8.50	20.00
Chambers-Ferland	517.88	885.47
City of Cobalt	466.82	329.40
Cobalt Central	399.01	285.12
Cobalt Lake	95.47	263.95
Cobalt Provincial	.....	20.08
Cobalt Townsite	27.35	339.39
Colonial	.....	178.60
Coniagas	806.93	1,268.37
Crown Reserve	3,167.52	2,843.75
Drummond	1,225.47	2,232.76
Foster	113.90	.....
Green Meehan	.....	.....
Hargrave	.....	343.68
Imperial Cobalt	.....	.....
Kerr Lake	1,173.42	5,114.90
King Edward	146.58	134.12
La Rose	6,758.21	5,131.38
Lawson	.....	.....
McKinley-Darragh	1,056.49	2,389.39
Nancy Helen	116.32	.....
Nipissing	6,470.52	6,826.14
Nova Scotia	224.79	.....
North Cobalt	6.87	.....
O'Brien	1,419.11	582.28
Peterson Lake Leases—		
Little Nipissing	39.62	313.16
Nova Scotia	121.15	.....
Provincial (Govt.)	.....	32.05
Princess	.....	.....
Red Rock	.....	.....
Right of Way	1,608.99	980.72
Silver Bar	.....	.....
Silver Cliff	149.06	156.84
Silver Leaf	.....	.....
Silver Queen	316.64	.....
Temiskaming	852.14	1,118.62
Temiskaming Cobalt	.....	.....
Hudson Bay	743.64	259.62
Trethewey	1,134.50	535.66
University	.....	.....
Victoria	.....	.....
Violet	.....	.....
White Silver Mining Co.	.....	.....

Waldman		31.99
Wyandoh		24.15
Total	29,942.99	34,026.45

SHARE MARKET.

(Courtesy of Warren, Gzowski & Co.)

Miscellaneous—January 12th, 1911.

	Bid.	Ask.
Amalgamated Asbestos	11	12
Black Lake Asbestos	16	..
Dominion Coal	..	..
Dominion Steel	..	..
Dominion Steel Corp.	56½	57
Granby	37	39
Consolidated Mining	50	60
Nova Scotia Steel	86½	..

Cobalt Stocks.

Amalgamated	.01	.03
Bailey	.06½	.06¾
Beaver Consolidated	.26	.27
Buffalo	2.15	2.35
Chambers-Ferland	.14	.14½
City of Cobalt	.17	.20
Cobalt Central	.08½	.10
Cobalt Lake	.13	.13¼
Coniagas	6.40	6.53
Crown Reserve	2.42	2.48
Foster	.05	.07
Gifford	.01	.03
Great Northern	.11&	.12¼
Green Meehan	.01¾	.02¼
Hargraves	.22½	23½
Hudson Bay	110.00	117.00
John Black	.01	.03
Kerr Lake	6.70	6.85
La Rose	4.39	4.45
Little Nipissing	.14	.14½
McKinley	1.39	1.41
Nancy Helen	.01	.04
Nipissing	10.50	10.75
Nova Scotia	.20	.24
Ophir	.05	.11
Otisse	.01	.02
Peterson Lake	.15¾	.16¼
Right of Way	.14⅞	15½
Rochester	.04¼	.04½
Silver Leaf	.04⅜	.05
Silver Bar	.01½	Sellers
Silver Queen	.04	.05
Temiskaming	.75¾	77½
Trethewey	1.16	1.20
Watts	.01	.03
Wettlaufer	1.04	1.08
Hollinger	4.21	4.28

New York Curb.

British Columbia Copper	.06½	.06¾
Butte Coalition	.17¾	18
Chino Copper	.22 5/8	.21¾
Davis-Daly Copper	.01 7/16	.01½
Ely Consolidated	.31	.33
Giroux Mining	.06⅝	.06¾
Goldfield Consolidated	.07	.07¼
Greene-Canadian	.06⅝	.06 11/16
Inspiration Copper	.08⅝	.08¾
Miami Copper	.19⅜	.19½
New Baltic Copper	.05	.08
Nevada Con. Copper	.18½	.18⅞
Ohio Copper	.01 7/16	.01½
Rawhide Coalition	.03	.04
Ray Central	.01 5/16	.02
Ray Consolidated	.17½	.17¾
Union Mines	⅝	¾
Yukon Gold	.03 7/8	.03 15/16

TORONTO MARKETS.

Metals.

Jan. 11th (Quotations from Canada Metal Co., Toronto).
Spelter, 5.60 cents per lb.
Lead, 3.65 cents per lb.
Antimony, 8 to 8½ cents per lb.
Tin, 44 cents per lb.
Copper, casting, 13.40 cents per lb.
Electrolytic, 13.40 cents per lb.
Ingot brass, 8 to 12½ cents per lb.

Jan 11th—Pig Iron (Quotations from Drummond, McCall Co., Toronto)—
Summerlee, No. 1, $23.00 (f.o.b. Toronto).
Summerlee, No. 2, $22.50 (f.o.b. Toronto).
Midland, No 1, $20.00 (f.o.b. Toronto).
Hamilton, No. 1, $18.75 (f.o.b. Hamilton).
Hamilton, No. 2, $18.25 (f.o.b. Hamilton).
Clarence, $20.00 (f.o.b. Toronto).
Cleveland, $20.00 (f.o.b. Toronto).

General Markets.

Coal—Anthracite, $5.50 to $6.75.
—Bituminous, $3.50 to $4.50 for 1¼ inch lump.

Coke.

Jan 9th—Connellsville Coke (f.o.b. ovens).
Furnace coke, prompt, $1.40 to $1.50 per ton.
Foundry coke, prompt, $2.00 to $2.15 per ton.

Jan. 9th—Tin (Straits), 40.30 cents.
Copper, prime lake, 12.80 cents.
Electrolytic copper, 12.65 cents.
Copper wire, 14.25 cents.
Lead, 4.50 cents.
Spelter, 5.60 cents.
Sheet zinc (f.o.b. smelter), 7.50 cents.
Antimony, Cookson's, 8.25 cents.
Aluminium, 22.00 to 22.50 cents.
Nickel, 40.00 to 45.00 cents.
Platinum, ordinary, $39.00 per ounce.
Platinum, hard, $41.00 per ounce.
Bismuth, $2.00 to $2.10 per lb.
Quicksilver, $42.00 per 75 lb. flask.