THE CANADIAN MINING JOURNAL

VOL. XXXII. TORONTO, May 15, 1911 No. 10

The Canadian Mining Journal

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

Published fortnightly by the

MINES PUBLISHING CO., LIMITED

Head Office - - - 17-21-23 Manning Arcade Annex, Toronto
Branch Offices - Montreal, Halifax, Victoria, and London, Eng.
London Office - - - Walter R. Skinner, 11-12 Clement's Lane, London, E.C.

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

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

CIRCULATION.

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

CONTENTS.

ZINC.

We note that the London price of spelter has risen steadily until latest quotations are £24 2s. 6d. per ton. This is very gratifying to the zinc ore producers and is due to several causes, chief among which are the daily increasing uses of zinc and its products, and the gradual decrease in the supply of spelter on hand in the United States for export.

The zinc industry in the Missouri field has taken a new lease of life and the producers are looking forward to a revival of the prosperity and general good times of 1905 and 1906 and the early part of 1907. During that period the miners received from $50 to $58 per ton for 60 per cent. zinc concentrates, and the lead market reached a maximum of $88 per ton. This latter price, of course, was somewhat inflated owing to certain peculiar phases of the metal market, but nevertheless the ore producers profited by these conditions.

Ontario and British Columbia have several zinc prospects which could be converted into shipping mines if smelting conditions were altered. At present British Columbia is exporting a raw material of high grade, and the country as a whole is gradually increasing the volume of its refined zinc imports. The British Columbia ores could be largely supplemented by the product of Ontario mines if smelting conditions were favourable. We already have the ore. We should be getting our share of the benefits due to gradually increasing interest in this important industry. Let the Government act.

PUBLIC INFORMATION.

Repeatedly have we called attention to the fact that amongst certain mine owners there is a decided disinclination to make public the facts concerning the physical condition of their properties. Generalities cannot take the place of specific data; nor can glittering hopes do duty for actual statements of fact.

In our last issue we had occasion to reprint from a contemporary a very sane article touching on the Porcupine boom. For this we were called to task by a local paper. Certain figures were quoted to show that one mine, the Hollinger, is in an extremely favourable position. Had this answer come from the manager of the mine, we would have accepted it without qualification. Unfortunately no official statement has been issued by Mr. Robbins. This is unwise and regrettable. Mr. Robbins' reports when he was manager of the McKinley-Darragh mine at Cobalt, were models

of accuracy and completeness. A report of this kind can hardly be expected from the Hollinger. But a definite official statement of some kind is absolutely necessary. Even if the public had no right—and a right they certainly have—to demand this, it is desirable to correct all the vain things that are being said and published.

What is true of Hollinger is equally true of all the other flotations. It is cheap and nasty to depend upon the subsidized enthusiasm of the baser sort of newspaper correspondent. Nothing but good will result from full and frank publication of facts. The responsible mine manager is the only man who can provide these facts adequately and rightly.

MARITIME OILFIELDS, LIMITED.

The foresight and perseverance of the organizers of Maritime Oilfields, Limited, will bring their deserved reward if appearances are not entirely deceptive. At the company's New Brunswick gas and oil property a total measured flow of 37,500,000 cubic feet of gas per day has been developed. Considerable oil has also come in, and there is definite promise of large quantities in the future.

Of the thirteen productive wells all yield oil. Initial flows of oil as high as 60 barrels per day mark the maximum. But the backbone of the enterprise is the company's arrangement to supply the city of Moncton, a centre that has large industrial possibilities, with a cheap, plentiful, and highly efficient fuel.

Moncton's present demand is estimated at about one billion cubic feet per annum. Undoubtedly this will increase. New factories and new homes will be multiplied. Not only Moncton, but the whole surrounding country will be directly and indirectly enriched by the exploitation of this new source of fuel.

We note with approval the fact that the New Brunswick fields are being developed in such a manner as to prevent unnecessary waste and loss. Only one well per thirty or forty acres is being sunk. When the time comes to treat the area as an oil-field, it will be easily possible to sink additional wells for every five acres.

We reprint elsewhere an account of the annual meeting of Maritime Oilfields, Limited. A perusal of that report gives the impression that Dr. Henderson and his associates are to be warmly congratulated.

GOLD MINING IN WESTERN ONTARIO.

Under the above heading Mr. W. E. H. Carter writes in this issue of mining districts that from 12 to 15 years ago made as much stir as Porcupine. As Provincial Inspector of Mines, Mr. Carter had special facilities for observing and recording. The general tone of Mr. Carter's article is not discouraging. It is clearly stated that certain factors that contributed towards the lack of success were well within human control. Moreover, the reader is given food for thought in other directions. With much cheaper transportation, with better professional talent available, and with a public that has a keener and more direct interest in mining than ever before, it may be quite possible that not a few of the gold mines of Western Ontario will amply repay investigation. A boom is not necessary. But we suggest that it would be good business for investors to look into the merits of a district that, so far as we can judge, has never had fair play.

EDITORIAL NOTES.

At the annual provincial exhibition, British Columbia, the mineral and mining exhibits will include all types of modern mining and milling machinery. These exhibits will be amongst the chief features.

Advertisements of Porcupine stocks in certain of our contemporaries are curiously similar in tone and matter. Comparisons with the Rand, usually to the detriment of that region, are common. More common is the exploitation of the merits of the engineer in charge of the property. The long-suffering Mr. John Hays Hammond is constantly suffering eclipse.

The gross receipts of the Witwatersrand Deep mine during 1910 were £709,833. The net profits amounted to £290,049, and dividends to £271,824. The yield per ton of ore was 29s. 10d. The total cost of mining, treatment, etc., was 16s. 2d., and the profit per ton was 13s. 8d. Ore reserves to the extent of 1,692,922 tons are proved. The average value per ton is 28 shillings.

The serious phase assumed by the revolution in Mexico has alarmed foreign investors. No longer can the trouble be regarded as an inconsiderable insurrection. It is, in scope and effect, a revolution. President Diaz apparently must drop out of office—a tragical enough ending to a life that has been crowded with gratified ambitions.

The company that publishes Everybody's Magazine also publishes a monthly that is devoted largely to the past doings and undoings of George Graham Rice. Late reports have it that Rice is to promote a Porcupine scheme. It will be instructive to watch the use to which he will put his publishers.

The muck-raking habit has caught hold of many American magazine. Particularly refreshing is the Cosmopolitan June issue. In the text is a severe indictment of graft and corruption. In the advertising pages is the advertisement of a thorough-paced wildcat. The advertisement states that Canada contains not one metal refinery. Other glaring untruths are obviously visible. Cosmopolitan should be thoroughly ashamed of itself.

CORRESPONDENCE.

DIAMONDS IN BRITISH COLUMBIA.

Editor CANADIAN MINING JOURNAL:—

Sir,—Concerning the recently reported finding of diamonds in British Columbia, it should be noted that Mr. Robert A. A. Johnston, curator of the Geological Survey museum, who discovered small diamonds in some rock from Olivine Mountain, Tulameen district, British Columbia, has lately been quoted in a press despatch from Ottawa as having said: "The discovery is of no commercial importance. I have found it impossible to separate the diamonds from chromite and other varieties of rock in which they appear in the specimens found, without necessarily breaking them into small pieces. Of course, we could do this with a slow process, but commercially this would be out of the question."

Another press despatch quotes Mr. Chas. Camsell, also of the Geological Survey, as having suggested that diamonds may be found in the wash in streams near Olivine Mountain. I have no means of ascertaining—without delay—whether or not Mr. Camsell did so express himself, but I may say that if he did, his suggestion may, I think, be accepted as based upon reasonable conclusions. Mr. Camsell has during the four years last past done valuable work in investigating the geology and economic mineralogy of the Similkameen district of British Columbia, and two seasons of this time were spent in the Tulameen, which is in the northern part of the Similkameen district.

My object in writing on this subject is to make it quite clear that diamonds of commercial value may yet be found in the Tulameen region of this province, the small specimens discovered by Mr. Johnston, assuming him to have been correctly quoted, are so small and occur under such conditions as to make them valueless from the point of view of the prospector and miner.

British Columbia had last year's experience with gross misrepresentations relative to gold in the Portland Canal district; now it is risking similarly damaging notoriety in respect to Steamboat Mountain; and even the Tulameen district is being shown under false colours. This last statement is made by me after reading in two of the leading daily newspapers of this province a notice of the alleged doings of the Platinum-Gold Fields Company, Limited, which, it is asserted, has proved 6,000 feet of Tulameen River with a Keystone drill, in which 6,000 feet "the actual value in gold and platinum is estimated at $1,160,000. . . . The scene of present operations is just above the Nickel Plate mines at Hedley, which last year yielded a net profit of $200,000." Since there is absolutely not the smallest connection between alluvial gravels of Tulameen River and the Nickel Plate lode mines situated in mountains downstream and 40 miles away, the deceptive intent of the reference to the Nickel Plate seems obvious, though only to those who know the situation. It will be well that the actual position in regard to the finding of diamonds in this province be made perfectly plain, so that no disappointment and loss may occur by reason of lack of knowledge of the facts.

E. JACOBS.

Victoria, B.C., April 17, 1911.

Obituary

Mr. James C. Fuller, who since the Le Roi mine at Rossland, B.C., has been operating on only a small scale has been performing the duties of surveyor and assayer as well as mining engineer, met his death as a result of having apparently drunk a solution of potassium cyanide in mistake for water. At the time of the sad occurrence he was alone in the mine laboratory. The mine foreman, answering a telephone call while engaged in his own office, heard Mr. Fuller say "Oh, Peters," but no more, so he hastened to ascertain the reason. The assay office was not far away, and about 75 yards from it he found Mr. Fuller lying at the foot of some steps. He was still breathing but died in a few minutes, before the arrival of a doctor, who had been hastily summoned by telephone. He had on one hand an asbestos mitt, and in the other a sandwich, while near where he fell the small tongs, with which he handled the cupels when assaying, were found. On the table in the assay office were several beakers, containing fluids, and one had been capsized. The fluid spilled was pronounced by other chemists as potassium cyanide. The conclusion was that while attending to his assay work, Mr. Fuller was also eating his lunch and made a mistake in drinking from the cyanide beaker instead of the one containing water. A coroner's jury, after enquiring into the circumstances, returned a verdict of accidental death. Mr. Fuller received his first mining education at the Camborne School of Mines, Cornwall, leaving there to go to Rossland, whence he accompanied Mr. A. J. McMillan from London in 1904. Ever since, with the exception of short periods spent in Rhodesia and Mexico, respectively, on mining engineering business, he had been employed in various capacities at the Le Roi mine. For several years he was chief engineer, under Mr. A. G. Larson, superintendent. He was held in high regard by all with whom he came in contact, and the management bears willing testimony to his ability as an engineer. He was to have been married in June, proximo. The body was interred at Vancouver, B.C.

Capt. B. A. Wroughton, commander of B division of the Northwest Mounted Police, Dawson, Yukon Territory, when in Vancouver, B.C., last month, was reported to have told a newspaper representative, among other things, that "There was very little mining on the creeks during the winter by private individuals, as the rich ground has been pretty thoroughly worked out. Properties have now mostly passed into the control of large corporations which successfully adopt modern hydraulicking and dredging methods during the summer months. The outlook is bright, and the output this season promises to surpass the figures of recent years. There are enormous areas of ground available, and, in fact, the supply of gold is almost inexhaustible. At least twenty dredges will be in commission this season, the majority operated by the Yukon Gold Company, controlled by the Guggenheims. The Boyle outfit last fall completed a gold dredge which has the distinction of being the largest in existence. It will operate this year for the first time on Bear Creek, where the pay dirt is rich."

Personal and General

Mr. J. Edgar McAllister has retired from the position of general manager of the British Columbia Copper Company, Limited, at Greenwood, B.C., and is now the company's consulting engineer, with headquarters in New York. Mr. E. G. Warren, assistant general manager, is now in charge of the company's affairs at Greenwood.

Mr. D. C. Botting, state coal mine inspector, Seattle, Washington, and Mr. J. B. Warriner, mine inspector for the Northwestern Improvement Company, of Tacoma, Washington, owning several important coal mines in that state, were recent visitors to Nanaimo, where they were shown local mines. They were accompanied by Mr. F. H. Shepherd, chief inspector of mines for British Columbia.

Mr. W. H. Trewartha-James, general manager of the Tyee Copper Company, Limited, has returned to Victoria, B.C., from a business visit to England.

Mr. Anthony J. McMillan, liquidator of the Le Roi Mining Company, is again in Rossland, after an absence of several months in the East and England.

Among other mining men who visited the coast cities of British Columbia last month were Mr. James Cronin, of Spokane, formerly manager of the St. Eugene mine, East Kootenay, and Mr. H. L. Rodgers, manager of the Yankee Girl mine, Ymir, B.C.

Mr. Robert R. Hedley, now consulting engineer for a British Columbia mining development company, with headquarters at Vancouver, B.C., has been nominated as chairman of the Western Branch of the Canadian Mining Institute, in succession to Mr. Wm. Fleet Robertson, provincial mineralogist, whose year's term of office will expire this month.

Mr. Robert Musgrave (B.Sc. McGill, 1903) has returned to British Columbia from Mexico. After graduating Mr. Musgrave went to the Copper Queen mine, Arizona. Later he was general superintendent of the El Tigre mine, Ysabel, Mexico. Latterly he has been representing a British company in Mexico.

Mr. Oscar V. White, superintendent of the Byron N. White Company's Slocan Star group of mines, near Sandon, has returned to the Slocan to resume mining on that important silver-lead property. He was accompanied by Mr. B. N. White, president of the company.

Mr. Robert H. Stewart, general manager of the Consolidated Mining & Smelting Company of Canada, Limited, is back at Trail, B.C., from a visit to Los Angeles, California.

Mr. John B. Hobson, of Victoria, B.C., took a trip to California early in April. He intends, shortly after his return to British Columbia, to proceed to Quesnel Forks to commence the season's hydraulicking on his placer gold mine on Spanish Creek, Quesnel mining division.

Mr. Wakely A. Williams, superintendent of the Granby Consolidated M. S. and P. Company's big smelting works at Grand Forks, B.C., recently visited Chesaw, northern Washington, where the company has commenced the exploitation of a group of mineral claims it holds under bond and option of purchase.

Mr. R. P. Williams, of Vancouver, B.C., has resigned the position of western representative of the Canadian Rand and Jenckes Machine Companies, after having been 21 years with the former company. His first visit to British Columbia was made in 1892, in connection with putting in a plant at a slate quarry on Jervis Inlet. He was in this province again in 1893. In 1897 he was in charge of the Rand and Jenckes machinery sales office at Rossland; afterwards he removed to Greenwood, in the Boundary district, where he remained for three years, but returned to Rossland in 1902. Last year he transferred his headquarters to Vancouver. The territory he covered in the capacity of representative of the two companies included British Columbia, Alberta, and Yukon Territory, while for the Ingersoll-Rand Company he sought business in Alaska. His plans for the future are not yet definitely decided.

A newspaper despatch from Seattle, Washington, states that Thos. Hodgens, of Butte, Montana, and New York, on April 28th filed suit against M. K. Rodgers, a mining engineer well known in the West, asking for a judgment of $203,000 against Mr. Rodgers, and an order restraining him from foreclosing a mortgage against the Hidden Creek group of mineral claims, on Observatory Inlet, B.C. The complaint alleges that Mr. Hodgens supplied $417,000 to Mr. Rodgers, to purchase and develop mining properties in British Columbia, and that the latter has declined to account for any money except that used in purchasing and developing the Hidden Creek property.

On April 13 the steamer Northwestern arrived at Seattle, Puget Sound, Washington, from Cordova, Alaska, with the first cargo of copper ore from the interior of the mainland of Alaska. The shipment consisted of 1,700 tons of ore from the Guggenheims' Bonanza mine at Kennicott, Chitina region. The newspaper account of the enthusiasm aroused by the arrival of the steamer at Seattle indicates that much importance is attached to this commencement of production of copper by interior mines of Alaska. The ore is of unusually high copper tenor, and contains as well silver to the stated value of $25 per ton; it will be smelted at Tacoma, at the head of Puget Sound. The Copper River and Northwestern Railway, only recently completed, is nearly 200 miles in length, from Cordova to Kennicott. It was constructed by the Guggenheim-Morgan interests at a cost of about $20,000,000.

A Board of Conciliation and Investigation under the Industrial Disputes Investigation Act, 1907, has been appointed to investigate the labour troubles in Alberta and Southeastern British Columbia coal mining districts. The Western Coal Operators' Association nominated Mr. Colin McLeod, of Macleod, Alberta, as its representative, and the officers of District 18, United Mine Workers of America chose their secretary, Mr. A. J. Carter. These gentlemen were not able to agree upon a chairman, so the Minister of Labour appointed Rev. C. W. Gordon (Ralph Connor), of Winnipeg. The board afterwards met in Lethbridge, Alberta, but before entering upon its work of investigation, efforts were made to get the two parties concerned to come to an agreement without the lengthy enquiry that would otherwise be necessary. The Operators' Association first held a meeting at Macleod, and afterwards met the representatives of the U.M.W. of A. in Lethbridge, but the adjustment of matters concerning which the Operators' Association and the representatives of their employees are not in agreement was not brought about, consequently the Board of Conciliation and Investigation proceeded to make arrangements for holding its meetings and conducting its investigations.

REPORTING ON PROSPECTS

Written for the CANADIAN MINING JOURNAL by W. E. Segsworth.*

In writing this article I merely desire to set down a few ideas that have crystallized during the course of time, in the hope that they may be useful to others. I wish to disarm criticism by saying that many things which I have said might have been said better by others, or may be disagreed with. I may also have left unsaid many things that may seem to be of more importance to others than what has been said here. If, however, the article results in helpful discussion it will have served one of its purposes.

The examination of a prospect calls for cool judgment, close observation, wide experience, and the ability to weigh against each other many conflicting considerations. In addition to this the engineer must have the power of detaching himself from his own personal prejudices.

Undoubtedly the main facts to be ascertained are:

First, Is any ore exposed on any of the boundaries of the property?

Second, What is the average value and width of the ore exposed?

Third, Can the determined grade and width of ore be worked at a profit under the surrounding conditions?

Fourth, What are the prospects for the continuance of the ore, or for its increase or decrease in value?

To obtain answers to these questions, it is advisable to keep in mind the lines of inquiry that may be followed with profit. It will, of course, be understood that in any one prospect probably not one-half of these lines of inquiry are of immediate importance. Those that are of no importance can be quickly eliminated and attention concentrated upon those remaining. I give below a list of the important points.

Prospects of Ore (Economic Geology):

(a) Is there any ore exposed on any of the bounding planes of the property? If so, what is its length, breadth, and value?

(b) Is the formation favourable to the kind of deposit examined?

(c) Is the formation in which the deposit occurs likely to continue in depth; or to change? If so, what effect will it have on the deposit?

(d) Is the formation much faulted? If so, what effect will it have on the prospects of holding the ore, or the cost of working?

(e) What type of deposit is the one examined? What conclusions may be drawn as to its probable size, continuity, and value?

(f) Are there any evidences of secondary enrichment?

(g) Does the deposit show the effect of surface weathering? If so, to what depth?

(h) Effect of eruptives?

(i) Blind veins?

(j) Evidence to be gathered from surrounding properties?

Metallurgy:

(k) Can ore of the probable extent and value indicated by the exposures be treated at a profit under the existing conditions?

(l) If the ore is to be smelted can a suitable smelting mixture be made with the materials to be had within an economically possible freight rate?

(m) What influence will the process of treatment have on costs?

Costs of Operation:

(n) Transportation.
(o) Labour.
(p) Supplies.
(q) Development, cost per ton.
(r) Stoping, cost per ton.
(s) Cost of fuel.
(t) Water, cost of pumping.
(u) Cost of equipment.
(v) Cost of treatment.
(w) Interest and depreciation.
(x) Royalties and taxes.

Market:

(1) Quotation price.
(2) Smelter rate.
(3) Cost of transporting ore to smelter.
(4) Cost of transporting metals to market.
(5) Brokerage charges.
(6) Is the market free or restricted?
(7) Competition.
(8) Influence of increased production on prices.
(9) General market outlook.

Title:

Influence of the mining laws of the country on the industry.

Validity of title.

At the risk of being tedious I have tabulated these points, and will discuss them briefly later. This list might be lengthened indefinitely. Indeed I have seen printed lists of questions in book form for the use of the examining engineer which contained questions in regard to every conceivable matter in connection with a mine or prospect; but it seems to me that the use of such printed forms must lead to reports as stereotyped in form and conclusion as the form on which the data are recorded. For this reason the above list is only given as a guide and should be filled out, altered, or amplified to fill individual requirements and ideas.

Prospects of Ore—In considering (a), it should be kept in view that where there are no extralateral rights the property considered as a whole has the form of a prism of infinite depth, whose top is the exposed surface and whose sides are three or more planes (usually four) being common boundaries of the adjoining properties as in fig. No. 1. On the adjoining property to the south a shoot of ore has been opened on a vein striking north. This shoot pitches to the north and enters the prospect by the south bounding plane at depth. The ore has been mined up to the line of the prospect and has exposed a surface of the vein from (a) to (b) for sampling. It must be evident that such a surface, if it be accessible for sampling, is just as valuable a prospect of ore, other things being equal, as a like exposure on the surface. All exposures of ore should be sampled, measured and assayed just as carefully as would be done in examining a mine. There is no more reason for trusting to one's judgment for

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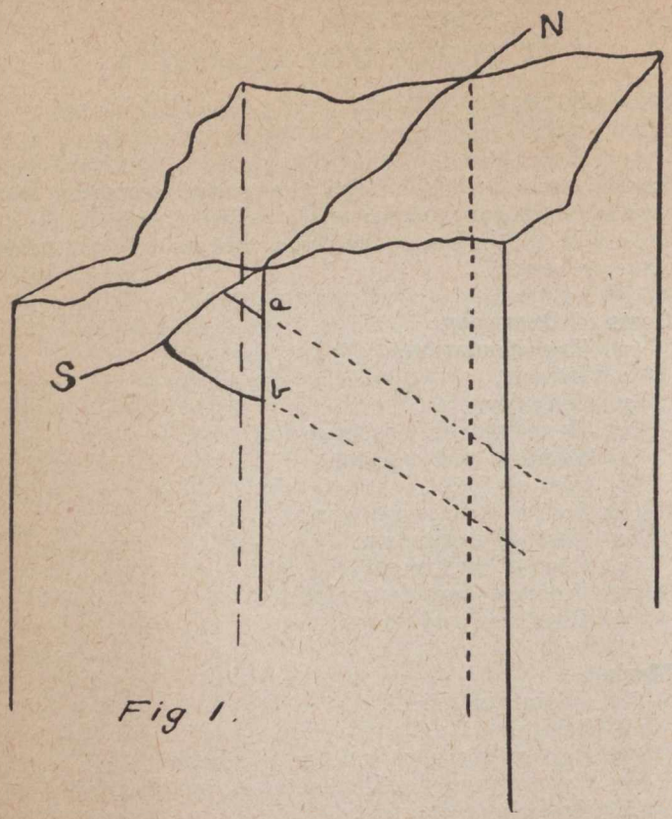


Fig 1.

the value of ore exposed in a prospect than in a mine. Yet this is often done. Before sampling a surface exposure it should be well cleaned of all surface dirt, and a wide deep groove cut in the solid ore. This groove should then be thoroughly cleaned out before taking a sample cut from the bottom. If the sample is cut from the natural surface it is liable to be too high on account of the concentration of valuable minerals in the small surface cracks or irregularities, or it may be too low on account of leaching out of part of the less valuable minerals from the immediate surface. One of the most common mistakes is to measure the outcrop on its horizontal width without taking account of the dip, and to assume that this is the true width of the vein.

(b) The preference which certain minerals have for certain formations is so well known that it needs no discussion.

(c) If a fissure cuts two formations and contains ore in one of them, it is quite likely to increase or decrease either in size or contained values on passing into the other. If the prospect is in a well developed district whose history in this respect is known, one may be able to foretell the change. If in a new district too much confidence must not be placed in comparisons with districts whose economic geology has already been worked out.

(d) In fig. 3, a section of a vein perpendicular to its strike is shown. It will be seen that the vein is faulted by a series of overthrust faults in a rather regular manner. However, as depth was attained, the fault planes were found to be closer together. After each section of the vein was worked out it was necessary to drive to the next section of ore and, of course, the dead work was charged to the development cost of the block so opened up. The first block paid handsomely, the second a little less, but it was found that no profit was derived from the fourth, although the vein was equally wide and of the same grade as in the former sections. This is but one instance of the way faulting may use up the profits of working an otherwise profitable ore shoot.

(e) The considerations suggested by question (e) could not be profitably discussed here as they involve the theory of the genesis of ore deposits—a field too extensive to be even touched upon.

(f) The theory of secondary enrichment should also be studied elsewhere. Its importance lies in the fact that where it occurs we have one of the few cases in which we may hope for enrichment in depth. If the sulphides are in their unaltered form on the surface there is no reason to expect enrichment in depth except in rare instances.

(g) Surface weathering without secondary enrichment points to the surface enrichment of the vein and a decrease of values in depth. This is due to the leaching out of some of the baser constituents of the ore, leaving the part remaining in a more concentrated form. It also sets free the gold and silver, leaving them in a state in which they may be more readily amalgamated and, if they are to be smelted, they are ready for smelting without roasting. However, it should be kept in mind that when we pass from the zone of surface weathering to the zone of primary sulphides, a change in treatment must be made. Surface enrichment may not always be an advantage as it may necessitate two distinct plants for the treatment of the ore, and the interest and depreciation on the first may offset the advantage gained by the richer ore.

(h) The effect of eruptives should be thoroughly studied.

(i) If the prospect is in a district already developed something may be learned on this point. If not, any prophecies are as dangerous as prophesying ore at depth in a fissure devoid of mineral at the surface under the same conditions.

(j) If a prospect is situated in a camp that has a number of operating mines, many of the questions discussed under "prospects of ore" may be studied under the best conditions and much information gained on the economic geology of the district. In most cases the market conditions, cost of operation, and metallurgical treatment may be determined with great accuracy. In cases where the adjoining properties have each worked up to their end lines nearly every factor of risk may be eliminated. In many mines in the Lake Superior copper region adjoining properties have so far determined conditions on a prospect that the management was justified in designing and installing ex-

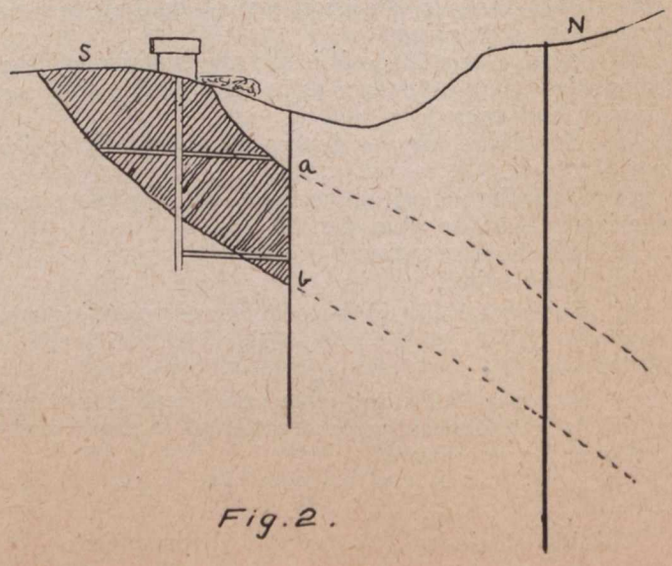


Fig. 2.

tensive plant and machinery before the ground was opened. These cases are rare, however, and evidence from surrounding properties should only be accepted with great care and applied with judgment. In the hands of the inexperienced such evidence is highly dangerous. It is not seldom part of the stock-in-trade of the fakir.

Metallurgy.

(k) A quartz ore containing a friable copper mineral may be so situated that it cannot be smelted owing to the impossibility of obtaining a base at a sufficiently low cost. It cannot be concentrated without too great a loss, and cannot be cyanided owing to the consumption of cyanide overbalancing the value of the gold or silver recovered. Again, the ore may be an intimate mixture of two metallic minerals having physical and chemical characteristics so similar that they cannot be separated economically. Of course, this discussion is based on the state of the art at the time the examination is made. Later improvements may make ores valuable that are to-day useless.

(l) If an ore is to be smelted at or near the mine the question of flux and fuel should receive the most careful consideration.

(m) In any case some limiting figures should be placed on the cost of mining and treatment. If this cannot be done, a report will be of little practical value.

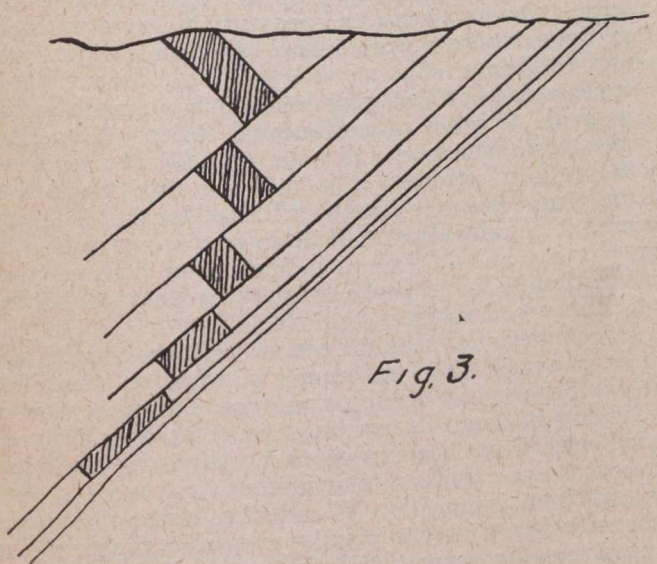


Fig. 3.

The final method of treatment cannot be determined, however, until the prospect has developed into a mine.

Cost of Operation:—This subject has been so exhaustively treated by Mr. Findlay in his admirable book that the different items need no discussion. If the prospect is surrounded by working mines and has the same character and grade of deposit as the surrounding mines, the cost may be taken from them. If the prospect is in a new district one should make as close an estimate as possible of the cost of working the ore, putting limiting values on each item as closely as may be determined, basing the estimate on the supposition that the ore will extend to a reasonable depth and have the same width and value. From this one may possibly arrive at the conclusion that the property is not workable at the time and under present conditions. Estimates made in this way are infinitely more valuable than mere guesses, and at least serve as a guide to the judgment.

Market

1. The price of gold is, of course, always fixed. The quotation prices of copper, lead, and zinc, are usually given very closely by the technical journals since these metals enjoy an open market. All the other metals together with the non-metallic minerals have their prices fixed by private contract or mutual agreement and the prices quoted for them in the technical journals serve only as a guide. Before accepting a price on any of these minerals the market should be most carefully investigated.

2. Smelter rates should be obtained from as many smelters as possible. It should not be overlooked that distance is not always of first importance in determining smelter rates, but that desirable fluxing qualities may overrule the long haul.

3. Freight rates may, of course, be ascertained from the published schedules of the railroad companies, but should not always be accepted as the best rate obtainable. By negotiation the rate may at times be lowered considerably The new rate is then published and becomes the public rate.

4. The producer of a metal must always pay for transportation to the open market even if the metal is never actually taken there for sale.

5. A great deal of ore and many mineral products are sold through brokers and selling agencies. In the case of those minerals which are sold in a restricted market the brokerage may amount to a considerable sum. This fact should not be overlooked in estimating costs.

6. As stated under (1) minerals that are sold under private contract or in a restricted market should be the subject of a most searching investigation. If the engineer is not already familiar with and in close touch with the market he should either get the time for an investigation, or frankly state in his report that he is not prepared to report on the state of the market. Many otherwise good prospects fail because when the producing stage is reached it is found that there is no market for the product or that the actual price is much below the quoted price. Another common mistake is to estimate each metal at its full value while, as a matter of fact, the smelter may pay for only one or two of the metals contained in the ore. Indeed, I have seen all the metals in an ore estimated at their full value in a report, and when the ore was sold a penalty had to be paid on some of these metals.

7 and 8 Competition and the influence of new productions on price are closely associated. With the more common metals and those which are produced in large quantities, the addition of a new producer is not likely to affect the price much, but the effect of new sources of production on the price of a metal which is produced and used only in small quantities is likely to be disastrous unless the production is kept within due bounds, or unless some new use can be found for the metal.

9. Mr. Hoover in his book on the "Principles of Mining," treats of what he has called the base price of metals and discusses the fluctuations of metal prices. This chapter should be read.

Title.

When examining a prospect in a foreign country or in one where mining has not long been carried on, the engineer should make a careful study of the mining laws. The laws as regards royalties, taxes, and customs duties should be ascertained. In some countries, especially in the Latin Americas, there are many charges against the operation of properties that do not come under any of these heads, but that nevertheless must be paid.

The validity of title will, of course, be examined

closely by a local attorney, but it is always well for the engineer to examine the title himself.

General Considerations.

The amount of capital to be used in developing a prospect is of first importance. There is a minimum amount necessary. What this is, one can only estimate, but limiting values can usually be placed upon the amount. If the purchasers are not prepared to find this amount the property will probably be a failure no matter how good a prospect it may be.

When a prospect is discovered in a new district and under new geological conditions, too much is often made of comparisons with older districts. Suppose that a mineral has been mined in four properties, A. B. C. and D, in four different parts of the world, and that the geological conditions at A, B, and C, are similar, but quite different at D. Now, if all the properties have been operating for some time, everyone accepts the difference in conditions between the first three properties and the fourth without comment. But suppose A, B, and C have been operated under similar conditions for years and let D be discovered under different conditions; then the impression may immediately arise that it cannot be of any value. This is a very common fallacy. But, while comparisons with older districts are of the greatest value as guides, an occurrence under new conditions should never be condemned on comparisons only.

In any one prospect a great many of the points touched upon will be found to be of little or no importance. However, each must be gone over and those of no importance may be quickly eliminated from the enquiry and the attention concentrated on those remaining. I would suggest that numerous sketches and careful notes of all the above points be made in the field note book. All this information need not go into the report but may become invaluable at some future time. Often after the report is made the engineer may be employed to direct the work, and copious notes and sketches may enable him to initiate operations without a second trip to the property.

It must be left to the common sense and judgment of the engineer as to what material should go into a report, but one should always remember that a report will be read by two classes of people, the layman and the engineer. The first desires a short and lucid statement of the main facts with a clear cut statement of the conclusion arrived at. The engineer, in addition to this, wishes to have the details before him so that he may decide for himself whether the conclusions are justified in the premises.

To fulfil the needs of each class to whom the report will be presented it is usually best to divide the report into two parts, first the general report and conclusion, and second an appendix containing the details, consisting of measurements, lists of assays, detail description of geology and outcrops, estimates of costs, freight rates, markets, etc., or such of these matters as are of importance. The report should as a rule contain a map of the property, showing the outcrop, assays, and geology. If the geology or development of the surrounding properties has had any bearing on the conclusions arrived at, a map showing these features should be included, if necessary to a proper understanding of the facts.

A few engineers try to protect themselves by leaving out the details, so preventing any criticism of the conclusions; but if the prospect is developed and fails to fulfil its promise, their lack of nerve receives its reward, for then they are denied the opportunity to present the details which they should have set out in the original report.

When examining a prospect in a district unfamiliar to the engineer, he should always obtain local advice if it can be had. Do not be too ready to condemn what is new to you in mining practice, when it has stood the test of time. Although it may appear to be wasteful, careful study may show you that it is the survival of the fittest under the ruling conditions. By obtaining local advice you may get a satisfactory explanation of what seems bad practice and save yourself from the mistake of promising economies which you cannot fulfil later.

In these days of changing conditions too much seems to be made of codes of professional ethics. If one has a sound conscience he will have no need of a conventional code of ethics. If he has not this conscience, there is no code of ethics he will not break. The one rule that should always be followed is to disclose in your report and to your principals your true position in relation to a property. Anything that cannot be set out there should not be done.

In conclusion, I would suggest that one should not be in a hurry when examining a property even if it be a prospect. Spend some time on a property (if it warrants it) and by turning the facts over in your mind with their bearing on each other, gradually arrive at a cool, deliberate judgment by a more or less unconscious integration of all the facts obtainable, remembering that one's judgment of a prospect can not always be correct and that your client is paying you to commit yourself definitely one way or the other. He should not, and likely will not, be satisfied with a report that does not commit the engineer.

OUR EUROPEAN LETTER

Mining shares quiet — Oil descriptions more active— Petroleum developements in Galicia, Roumania, Maikop, Persia, and Eastern Siberia — London Organizing an oil exchange — Many new companies Floated — Electric winding developments in British colonies — An interesting plant — The Waihi all-sliming process and tall tank treatment — Why the Rand is out of favour — Northern Nigerian tin a growing industry.

(Exclusive correspondence of CANADIAN MINING JOURNAL.)

London, April 21st, 1911.

Business in mines on the London Stock Exchange continues small and the speculative account for the rise is not large. Throughout the greater part of the present year the market in South African mining shares has been persistently dull and at the end of March it became acutely weak as the result of financial difficulties on the Paris Bourse. Whatever recovery has taken place recently has been largely on bear covering. Rhodesian shares keep very stagnant but Russian gold mining shares have been rather more active. Tin shares have been fairly firm and a continual stream of new tin flotations proceeds.

Oil is another fairly active spot although the mid-April spurt of activity soon petered out. Here again new companies are frequent. The oil trade outlook, in fact, is good and one of the most notable incidents

is the steady progress that is being made in the utilization of oil for power purposes either in the form of liquid fuel or applied direct in oil engines. The world's production of oil has more than doubled in the last ten years but all the same new areas are being continually opened out. Good oil lands in Galicia are being extensively sought after. One German group, for example, has expended between $150,000 and $200,000 in purchasing small properties in order to consolidate its interests, although only a small amount of drilling has so far been done in their particular district. The English producing companies with plenty of reserve lands for development are in a very healthy position. The Austrian Government intends largely to increase the use of oil fuel on State railways, and Waclaw-Wolski, president of the Crude Oil Producers' Union of Galicia, gave it as his opinion on April 17th that the present price of crude oil would undergo a small rise in the near future.

At a recent lecture by Professor Szainochau it was urged that the theory of the animal origin of petroleum allows of an easy calculation of the immense underground stores of petroleum to be extracted in Galicia. Taking the area of the menelithic slates to be equal to only 1,000 kilometres, and the thickness of the stratum of rocks to be only 50 metres, we have thus a mass of menelithic rock of 50,000,000,000 cubic metres. Admitting, again, the average specific gravity of the rock is equal to 1.2, the total weight of the rock must be not less than 60,000,000,000 tons, which, taking its contents in bituminous matter as equal to only 1 per cent., would give a total of 600,000,000 tons of bitumen. Assuming these bituminous matters to have given origin to only 50 per cent. of petroleum, we attain the lowest estimate of the Galician petroleum wealth as equal to 300,000,000 tons, of which only 12,500,000 tons have been extracted during the last fifty years.

The total production of petroleum in Galicia during last year was 1,762,560 tons, 91.6 per cent. of this being produced on the Tustanowice and Boryslaw fields. Following upon years of uninterrupted increase these figures show a decrease on the previous year—a decrease which would have been larger had it not been for the newer smaller fields in the east and west of Galicia. Activity is also reported amongst Roumanian producers, who are benefitting by the abolition of that portion of the taxes on kerosene known as the communal fund, which is levied at the rate of five francs per 100 kilogrammes. This is considered to be the first step to the total abolition of taxes upon kerosene in Roumania.

From as far away as the Eastern Siberian coast comes other interesting oil information. Engineer Proskuriakoff recently delivered a lecture before the Russia Technical Society, on his investigation during last summer of the petroliferous areas on the east shores of the Isle of Sakhalin. The lecturer gave a short physico-geographical description of the Isle, based on data supplied by scientific expeditions during the last three years, supplemented by his own observations during the four summer months of 1910. The petroleum and coal wealth of the Island of Sakhalin, said the author, was practically inexhaustible, and would be sufficient to supply the whole world with fuel for centuries. A rather large order this!

The Maikop district in the south of Russia is working hard upon its pipe line connections through some of which already oil has commenced to flow. Those Maikop companies that are already producing and have stocks of oil are now in a position to put their product on the market and earn profits. A new Russian law is reported to the effect that foreign companies in the Maikop district must employ only Russian subjects for their technical staffs and as managers of their properties.

From Persia comes the news of proved petroleum. Exceptionally rich are reported to be the basins of the rivers Ab-i-Dizi and Karun and the Isle of Kishma. In these places oil spurts from the earth in large quantities and almost all the deposits are situated near to the sea or a navigable river.

To organize the oil business of London better it is proposed to form an oil exchange which will bring into close touch producers, refiners, carriers, distributers, merchants, company promoters, brokers, underwriters, engineers, and promoters.

Recent oil flotations here include such varied emissions as the following: Franco-British Oil Trust, capital one million and a quarter dollars; Venezuelan Oilfields Exploration, capital $787,500; Central Ohio Oilfields, capital $800,000; Kuban Black Sea Oilfields, capital $1,500,000; Californian Amalgamated Oil, capital, $1,750,000; Caucasus Domains, capital $2,500,000; Asiatic Petroleum Company of Egypt, capital $1,000,000; and West Coast (of South America) Oilfield, capital $500,000. These were all registered within the first fortnight of April.

Colliery owners and colliery engineers in Great Britain are naturally increasingly interested in electric winding, and an installation just put down in the South Kenmuir colliery in Scotland is expected to be the beginning of a series of important changes in British colliery districts. The advent of electric winding here has been hastened by the appearance of the power companies which supply electricity at rates usually lower than the consumers can generate it for themselves. The winding gear at the South Kenmuir pits is designed for winding eventually from a depth of 160 fathoms, although at present it is only working from the 90 fathoms' level. Each cage carries two hutches with a total of 1,904 pounds of coal, the empty hutches being lowered in the other cage, and as a winding schedule of 65 winds per minute can be obtained, the gear is capable of dealing with 55 tons (of 2,240 pounds each) of coal per hour. The main winding drum is of the spiro-conical type, in which at the commencement of the wind the ascending rope is on a part of the drum which has a diameter approximating 5 feet, while the descending rope is on the centre of the drum, whose diameter is 10 feet. This arrangement has the effect of minimizing the effort required from the electrical plant during the period of acceleration, the rope being transferred to the larger diameter towards the end of the acceleration period by a cast iron spiral formed in the drum check. The electrical equipment involves the use of a motor generator which converts the three-phase alternating current taken from the power supply company to continuous current, which is found to be more suitable for driving two motors attached to the gear. The motor generator not only performs this conversion but is so designed that the characteristics of the continuous coal supply are exactly suited to the demands of the gear motors.

The actual control of the gear is manipulated by means of a regulator in the field circuit of the motor generator and by a reversing switch in the gear motor circuit, these two switches being electrically interlocked in such a way as to make it necessary that power should be removed from the motors and the brake applied before they can be reversed. A mag-

netically operated brake is provided, the action of which is controlled by the electrical circuits in such a way that the brake is applied and the cages are brought to rest in response to the movement of the controller or to the opening of the limit switches as well as to any interruption to the main power supply. A depth indicator geared to the winding drum is provided to show the position of the cage and to trip the overwinding switches in the event of the man in charge not attending to the indicator and bringing the controller to the stop position sufficiently early. Although it is not necessary in the regular manipulation of the gear, there is an additional brake having a foot pedal and a trip coil for directly applying it if the supply from the mains should fail. A series of tests have been made, from which it is possible to estimate the cost of winding. The maximum demand of power from the mains does not exceed 120 kilowatts, and the number of units taken when making 65 winds per hour is equivalent to 1.4 unit per ton of coal raised. Assuming that electrical energy can be purchased at the rate of 1½ cents per unit, the cost for power of winding coal from this depth is slightly less than 2.2 cents per ton, a figure which will compare very favourably with the cost of winding by steam, especially in view of the fact that only one man is required and that he only needs to attend during actual winding hours.

Interesting accounts are being published here regarding the remarkable results obtained at the Waihi Grand Junction mine of New Zealand by the all-slimming process and tall tank treatment. Considering that the ore treated is very refractory, and contains a large proportion of silver associated with 8 to 10 per cent. of sulphide-pyrite, saphalerite, chalcopyrite, with arsenic and antimony, a total working cost of under five dollars per ton of 2,240 pounds, after allowing one dollar per ton for ore development working on a 40-stamp basis, is an excellent result. The results are taken from the actual working of the plant over a period of six months, from January to June, 1910. One authority here holds that if such results on such a difficult ore can be obtained as exists in this mine, the same process, if applied to the simple ores of the Rand, would produce a revolution and allow costs to be reduced by several shillings per ton. With all the experience of the Rand, evidently much has still to be learned and much unlearned.

With regard to the Rand, as I have before indicated, the market has a sagging character upon which most of the newspapers here from the "Times" downward have been giving their views. Perhaps the truest view of the present dulness in Kaffir shares is that a lower level of prices at the present time suits the book of the big mining groups. Working on very excellent principles the mining houses take in stock when prices are low and off-load when they are above intrinsic merits. Most of the big Rand mining shares are at about two-thirds the price they stood at in 1909. But they apparently have got to be lower still before the public can be attracted in. The Rand eight hours' day and the miners' phthisis compensation bills have helped those who wanted to bring the market back and there has been a great deal of exaggeration about the results of these measures.

The fact also that Wernher Beit and Company are disposing of their interests in the Central Mining and Investment Company and that the Goldfields people are investing largely in the United States are things that do not tend to encourage the investor here. Neither does the suggestion that the Johannesburg Stock Exchange may be forced to close its doors. Furthermore, labour is decidedly more expensive on the Rand, partly owing to the high cost of recruiting, and general working costs are abnormally high at many well-known mines.

Against all these things, however, there is the solid fact that according to one authority there is still ten thousand million dollars' worth of gold to be won on the Rand, that labour is increasing in quality, with the result that good effects should be felt by May, and finally, that the experiments with small rock drills are so satisfactory that hopes are expressed by one of the leading groups that it may be possible by the end of this year to do away entirely with native labour in drilling.

The new tin mining district of Northern Nigeria continues to attract attention, and while there is no boom in Nigerian tin shares, every week that passes sees the registration of two or three new companies to work there. The existence of tin in Bauchi, in considerable quantities, became a recognized fact at the close of 1909, and the evident possibilities of great development are attracting to that district a large number of prospectors and mining engineers. The stanniferous area is very wide and appears to be much more extensive than was at first believed. Some of the alluvial deposits are so rich that they may be profitably worked even under great difficulties, and the prospects of developing our important mining industry are very promising.

The position of the tin market at the present time appears to be that whilst the world's consumption has increased by 1½ per cent., the world's production has decreased by 4½ per cent. so far as last year was concerned. It also appears that the production from the older tin fields is likely to decrease in quantity in the future. Even with the primitive methods of winning tin in Northern Nigeria the cost of tin oxide won in the Bauchi province delivered in London does not exceed $250 per ton, whilst the prices ruling for tin oxide from that field at the present time are somewhere about $600 per ton.

The Colonial Government is building a railway from Rigachiku to Leri, which was at the foot of the tin field, without calling upon any of the mining companies for financial guarantees, the simple stipulation being that the companies shall give the railway their carriage at an agreed rate both to and from the fields for a period of five years. The machinery, plant, and requisites for this valuable railway extension are to go out to the West Coast by about August of this year. The estimated cost of construction — $15,000 per mile —will make it the cheapest line ever constructed in tropical Africa. Life and property are now as safe in Northern Nigeria as in any other of the African protectorates, although the country has an area exceeding 250,000 square miles and a native population of about eight millions.

It has been announced that the coal lands in Alberta of the Consolidated Coal Fields, Limited, situated 32 miles southwest of Bickerdike on the Brazeau branch of the Grand Trunk Pacific Railway, will be extensively developed during the ensuing summer. Throughout the winter men have been engaged in laying out the lands and preparing for sinking shafts. The area of the property is stated to be 7,600 acres, surveyed last year. Coal from this property will, it is claimed, be the first to reach market from the Brazeau district.

SOME NOTES ON SAMPLING AS PRACTISED ON THE RAND.

(Written for the CANADIAN MINING JOURNAL by Robert W. Thompson.)*

In view of the likelihood of a gold camp of considerable merit and permanence being developed in Ontario, it may not be out of place to outline the general method of sampling as followed on the large producing gold mines of the Transvaal.

The object of the sampling department is to keep the management posted up to date on the values as found in the development work, drifts, winzes, crosscuts, etc., and also along the faces of the working stopes.

Each sampler has a section of the mine for the sampling of which he is responsible.

The sampling house is equipped with drying furnace, electrically driven crushers, and grinders, panning troughs or tubs, mixing tables, ordinary grocers' scales, and shelves for storing discards.

The whole of each individual sample is ground to pass a 60 mesh sieve before quartering for panning and assay samples. The crushing and grinding is attended to by a native "boy" who returns the ground sample to the sack in which it came from the mine with the tag bearing the sampler's initials and the sample number.

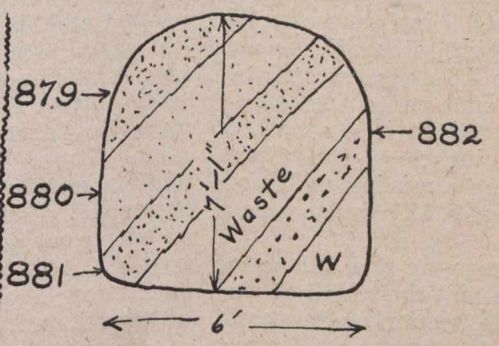
This is thoroughly mixed by rolling on a piece of American cloth. The panning and assay samples are selected and the discard filed away until the returns from the assay office are received, when if these are found to harmonize with the panning result the discard is thrown away. If the panning and assay returns do not agree a fresh portion for each is taken from the discard for a check, and the error located.

In development drifts it is customary to take a section across the face after each round. Some managers prefer taking samples at regular intervals of from five to ten feet along the walls. The former method is preferable as more accurate results can be secured and a better conception of the changes in character of the reef obtained by working on a clean face than by working on the dirty walls of the drift.

SECTION

DATE .....

LOCATION .....



DIP 43°

SAMPLE Nº	WIDTH	REMARKS	PAN	ASSAY
879	14"+	Scattered Pebbles	1 dwt	1½ dwt
880	12"	"	2 "	3 "
881	9"	Well defined Reef	16 "	23 "
Waste	25"			
882	11"	Heavily Mineralized	22 "	37 "
Waste	15"+			
MIXED PAN			9 dwt	14·6 dwt

Figure 1.

The distance of the section from the nearest survey peg is accurately measured so that the results can be platted on the assay plan.

Samples are taken across the face, starting at upper part of reef exposed and working towards the footwall, or vice versa, as the sampler prefers.

The width over which each sample is taken depends on the appearance of the reef and the discretion of the sampler, usually not more than twelve to fifteen inches is covered by any one sample.

A typical section as it might appear, with accompanying notes in a sampler's notebook, is given in fig. 1.

*Mining Engineer, 14 West Charles St., Toronto.

A portion of each individual sample after drying and grinding as above described, is panned by the sampler and the result entered in his notebook after the corresponding sample number. Another portion is sent to the assay office and the returns entered in a similar manner. As a check on the pannings as well as on the assay returns, a "mixed pan" is made up by taking an amount from each sample proportional to the width over which the sample was taken. In the example, fig. 1, this would be made up as follows:

From sample 879 take 14 ounces.
From sample 880 take 12 ounces.
From sample 881 take 9 ounces.
From sample 882 take 11 ounces.

These are thoroughly mixed and a portion panned. The result from this panning should agree with the average worked out from the individual pannings. Also the assay returns from this "mixed pan" should agree with the average worked out from the individual assay returns. When it is found that the panning and assay returns check up, the final results are entered up in the sampling ledger with a section as shown in fig. 1. The stoping width and values are also worked out and entered in the ledger. In the example taken, that part of the reef covered by samples 879 and 880 being below pay value, would not be included in the stoping width. This latter would be: Reef 9 inches, waste 25 inches, reef 11 inches, equals stoping width 45 inches, and the average value equals pan 8.6 dwts., assay 13.6 dwts. Again, the milling width and value are calculated from these results and entered up in a separate column. In this case about 12 inches of the waste rock would be fair sorting, leaving a milling width of 33 inches and a milling value of pan 11.7 dwts., assay 18.5 dwts.

In entering up the results on the assay plan the average value of the pay reef is given and the width of the included waste rock noted. The section under consideration would be platted on the plan as follows: W 25 R 20 P 19.3 A 30.7, meaning that there is 20 inches of pay reef panning 19.3 dwts, assaying 30.7 dwts., and having included waste rock of 25 inches.

In sampling stopes the same method is followed except that the "mixed pan" is not used. Sections are taken along the stope face at regular intervals of from five to ten feet. The results are entered in the stope sample book in detail and the final result obtained for each section is platted in its proper position on the plan of the stope as surveyed at that date. From these data the average stope value is worked out.

Sampling records of winzes, raises, and cross-cuts are kept in a separate ledger.

Steamboat Mountain, B.C.

The "Standard," published at Kamloops, British Columbia, on April 7th printed an article headed "Wildcat Staking," in which the opinion of a visitor to Steamboat Mountain district, which is being much "boomed" in Vancouver, B.C., is quoted to the effect that irresponsible staking is very prevalent and that unless it shall be discontinued it will work harm to the whole of this new prospecting camp. The statement is made that there are men in the district staking mineral claims, being paid a salary for doing so, and that the object of some seems to be only to stake claims and sell them for $100 each, if more be not obtainable. It is alleged that up to April 1 there had been about 700 claims recorded and that on one day in March 40 records were taken out. The significant comment is made that those who know what things are like in Steamboat Mountain district and the amount of snow there is in the hills, will realize the conditions under which staking must have been done.

Our British Columbia correspondent informs us that while specimen assays have indicated that ore containing comparatively high value is found in the district, there has not yet been done sufficient development to demonstrate that payable mines will be found there. The deep snow of the winter has prevented much effective work being done on the claims, so it is yet quite premature to conclude that there is warrant for many statements to which publicity has been given, and which may yet, and probably will, be found much exaggerated. One extreme case of trying to excite the public in this connection is that of a two-page advertisement in one of the Vancouver daily newspapers, the advertisers seemingly having little regard for anything but how to get hold of the dollars of those foolish enough to be induced to part with their money for very small pieces of land platted as town lots in a mountainous district as yet altogether undeveloped and the future of which is, and pending several years' steady development must remain, quite uncertain. Some illustrations, seemingly intended to mislead, suggest that mining and milling has reached a stage far beyond what the present situation is in the camp. It will be well, therefore, for those whose attention has been attracted by "boom" notices of Steamboat Mountain, in Yale district of British Columbia, to make careful enquiry before putting money into it. This is not saying that the camp will not eventually be a good one; only that as yet it is quite unproved, and that many very extravagant statements concerning its value have been and are being given publicity, against which it is desirable to warn the public.

Keekeek Lake Region

Through the courtesy of Mr. Theo Denis, Superintendent of Mines, Que., the CANADIAN MINING JOURNAL is enabled to publish the latest map of the Keekeek Lake region. It will be noticed that considerable staking of gold claims has already been done. A glance at the map shows many names of mining men identified with Cobalt and Porcupine. Amongst these are: P. A. Robbins, E. J. Darragh, C. A. Foster, B. Crawford, M. F. Fairlie, Alex. Gillies, W. H. Reamsbottom, R. Shields, T. J. Renwick, N. Bilsky, and many others.

As Keekeek Lake is in Pontiac County, Quebec, near the Ontario border, there will probably be a considerable number of prospectors ready and willing to have their attention diverted to a new land of promise.

The map reproduced herewith shows the number of claims staked up to April 10. Only a few claims along the lake were staked before snow fell.

During the coming summer Dr. J. A. Bancroft, of McGill, and Mr. Valequette are to work over the district for the Quebec Mines Branch.

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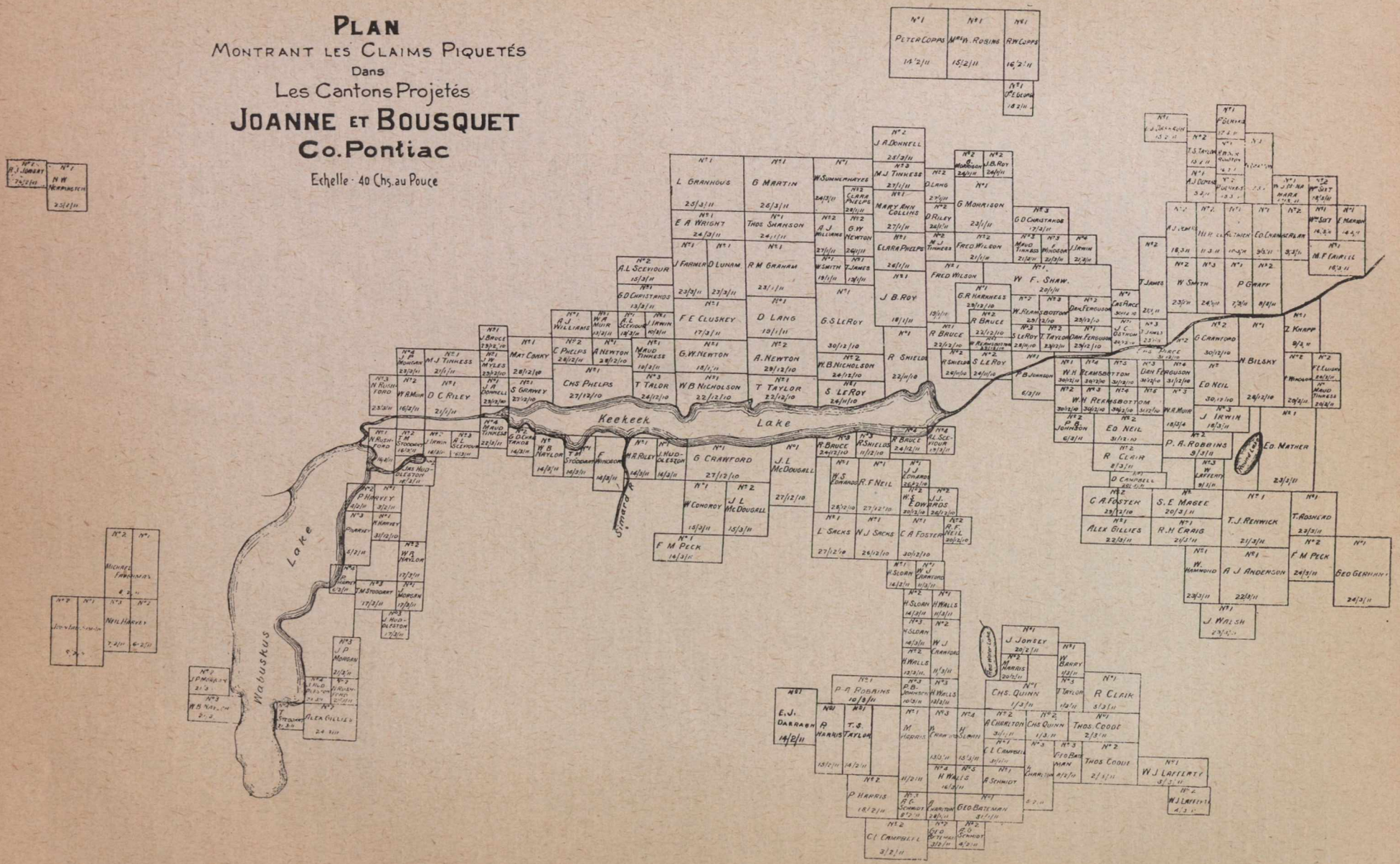


MARITIME OILFIELDS, LIMITED

The following account of the second ordinary general meeting of Maritime Oilfields, Ltd., held recently in Glasgow, is reprinted from The Financial Times, of London, England. To many of our readers the facts here set forth will come as a surprise. It is noteworthy that New Brunswick's chief industrial centre is soon to have a supply of excellent natural gas. 37,500,000 cubic feet of gas per day can now be supplied by the company. The details as presented hereunder are worth reading:—

The chairman said the company's financial position was strengthened during the year by the increase of capital to £100,000 and the issue of 30,000 ordinary shares, upon which 7s. 6d. per share had been called up; 29,000 ordinary shares are held in reserve. During the year Messrs. Claud A. Allan and William Walker had joined the board. After dealing with the accounts the chairman reminded the shareholders that when they last met together in general meeting test wells Nos. 3 and 5 had proved, in addition to high-grade oil, the existence of natural gas in large quantities upon its property in New Brunswick, Canada, and having in view the possibility of immediately turning the latter product to profitable account, it was decided to concentrate all work upon natural gas development on the anticlinal at Stony Creek, in Albert County, upon which these wells had been drilled. Accordingly, development work was carried on energetically and systematically upon this "gas pool," and excellent progress was made, with the result that during the financial year under review eight further wells were sunk at Stony Creek. Of these, two had to be abandoned on account of becoming crooked before the third, or most prolific, group of oil and gas sands was struck, but all of the remaining wells proved exceptionally fine gas wells, with an aggregate yield of 9½ million cubic feet of gas per day. These gas wells are all oil producers, some indeed promising excellently, and were it not for the much greater relative value of their gas yields, would be treated as oil wells. Excellent as these results were, still more remarkable developments took place immediately after the close of the financial year, and in October and November three large gas wells were brought in (well No. 14—12,000,000 cubic feet per day; well No. 15—6,500,000 cubic feet per day; and well No. 16—9,500,000 cubic feet per day), with a combined gas yield of 28,000,000 cubic feet per day. Other wells are being completed or are in course of drilling.

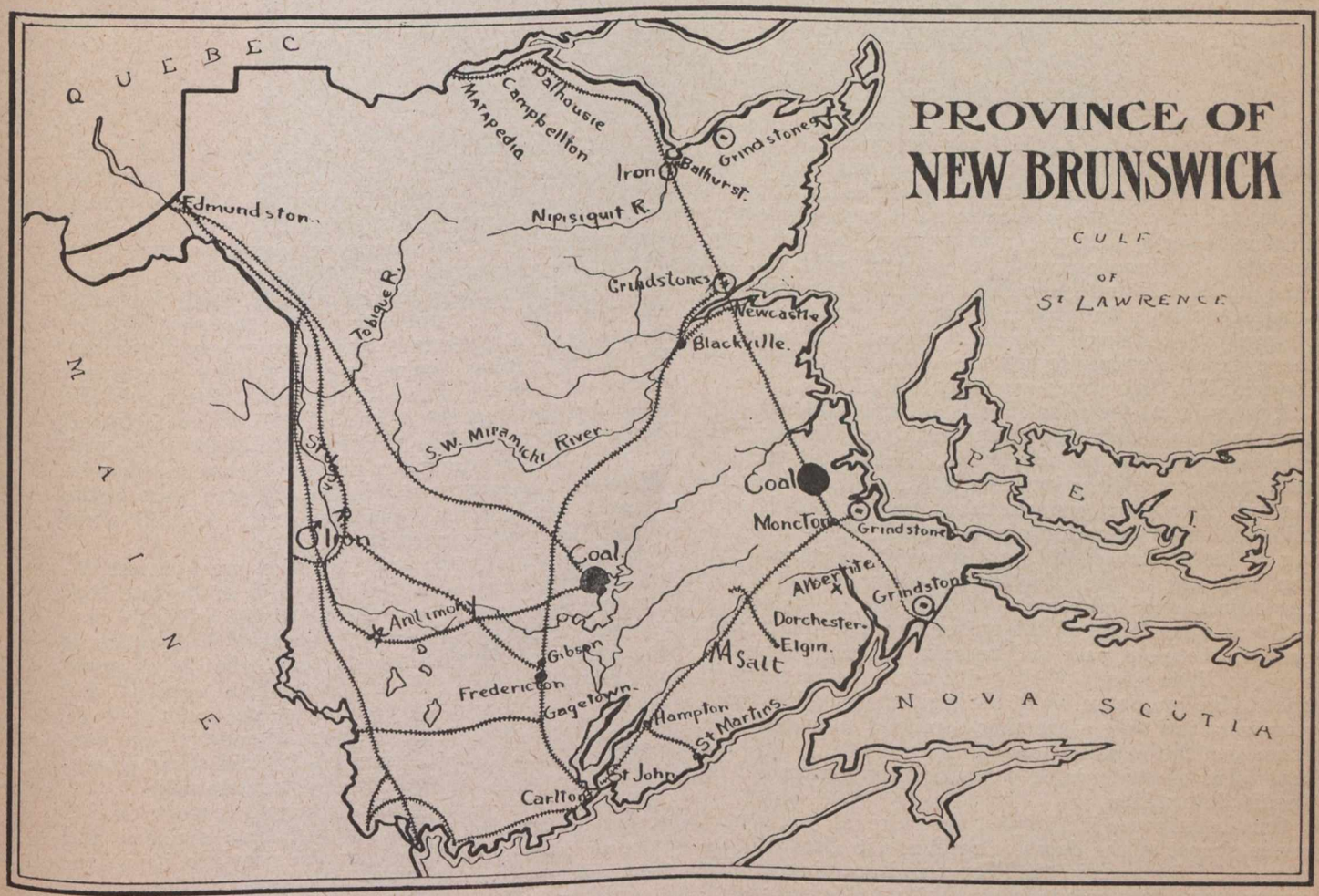
The Company's Property.

The company had now 13 productive gas and oil wells, yielding a total measured flow of 37,500,000 cubic feet of gas per day and a considerable flow of oil, which latter is impossible of measurement owing to the necessity of shutting in the wells under the great gas pressure existing (as high as 600 pounds per square inch), but in certain wells which it was possible to "shoot," initial oil flows ranged up to 60 barrels per day. The development work on the Stony Creek "gas and oil pool" had now thoroughly proved a length along the anticlinal of over 1½ miles and a breadth of over half a mile. The successive wells westwards have proved to be increasingly valuable, and the geological conditions continue favourable. In accordance with the best natural gas practice, the company has sunk only one well per 30 to 40 acres. As the greatest portion of the area developed is oil-bearing also, and as oil-well practice calls for one well per 5 acres or less, there is room for over 100 additional oil wells to be sunk on the area already developed when the time comes to treat this as an oil-field. The Albert County anticlinals had been traced over 40 miles west, where natural gas springs occur, and there were thus great possibilities in this southern section of the company's area. The three groups of productive oil and gas sands tested at Stony Creek had proved persistent in character and extent as gas and oil-bearing. Each group contained up to six distinct sands—individual sands varying from 2 feet to 100 feet in thickness—and the maximum aggregate thickness of sands in any one well exceeded 250 feet. A still deeper group of oil sands as yet untested at Stony Creek was known to exist, whilst the total thickness of the oil-bearing formation is still unknown, but has been proved to exceed 3,000 feet. The natural gas had been a source of very great economy in the company's operations for all power, heat, and light purposes, in connection with which about 60,000,000 cubic feet of gas were consumed during the year; indeed, since gas was first struck, the company has used for its own purposes not less than 100,000,000 cubic feet. The company was now in a position to run three strings of tools continuously during the current year. Several additional rigs have also been constructed and a large amount of spare material has been purchased in order to secure the best working results. The company's developments have attracted considerable attention throughout New Brunswick and other parts of Canada, and in oil and gas circles in U.S.A. A large number of influential people had visited the property and were much impressed by the results attained. Two directors, Dr. W. Hope Henderson and Mr. L. A. McGeoch, whilst in New Brunswick, took the opportunity of paying a visit to the property.

Value of Natural Gas.

In dealing with the question of the value of natural gas the chairman said that it was one of the most important products in North America, where the growth of the industry had been phenomenal, and it now ranks amongst the great industries of the age. In the United States natural gas companies' securities are regarded as first-class investments, the total capital invested in this business approximates $225,000,000, and last year's production of gas was valued at $57,000,000. Natural gas is used for all household purposes—heating, cooking, lighting, etc.—wherever it is available, owing to its extreme convenience and economy. The demand for these purposes is invariably greater than the supply, and in the United States the price of natural gas is rising rapidly. For manufacturing purposes natural gas, as is well known, has had an enormous effect on the rise of industrial centres, such as Pittsburg. Natural gas is eagerly sought after for the production of cheap power, and for fuel in iron and steel industries, glass making, cement making, etc. The question as to the life of gas wells, which, next to that of markets for gas, is most frequently asked, had to be very carefully considered in opening up a new field. He was glad to say that the Stony Creek wells, from prolonged tests, had proved good "stayers," and that geological conditions also warranted the confident belief that these gas wells would prove long-lived. Gas wells in the United States, in similar sands, have proved, with proper care and management, to have great staying quali-

ties, and wells of 20 to 30 years of age are not rare, whilst it is held that 40 or 45 years is by no means the limit in certain districts. For the purposes of the company's estimates, however, the soundest and most conservative natural gas practice had been adopted, and estimates were based upon 10 per cent. of the measured yield of the wells as an average effective delivery over an extended period. Abundant markets for natural gas exist in this long-settled country, within easy piping distance of present and possible future developments. It is estimated that the present demand for domestic and industrial purposes within the towns extending from the port of St. John on the west to Sackville on the east amounts to £500,000 in value per annum. The city of Moncton, an important and growing railway and industrial centre, lies about 8½ miles due



north of the gas wells, and the company had, through the medium of Acadia Syndicate, Ltd., entered into a satisfactory arrangement with Moncton Tramways, Electricity & Gas Company, Ltd., for the supply of natural gas to the city. It was estimated that the demand for natural gas for domestic and manufacturing purposes in Moncton would be at least 1,000,000,000 cubic feet per annum, and it was hoped that the Moncton Company's gas installation would be completed by the autumn, when Maritime Oilfields, Ltd., should become a regular profit-earning institution from this one source alone. During the year applications had been received for the purchase of the company's oil output over extended periods, but the board considered it premature to enter into any such arrangements. The policy outlined in last year's report had been adhered to into consideration, hold that it is important to secure a large amount of working capital by the flotation of a large company whenever a favourable opportunity occurs. They believe that the very favourable results already achieved fully justify them in appealing to the public. Drilling operations will be carried on as usual during this year until other arrangements are made. The chairman referred in terms of high appreciation to the services of the field manager, Mr. Oren P. Boggs, and the staff in New Brunswick.

The reports were adopted.

Mr. L. A. McGeoch, in referring to his visit to the company's property, said he had nothing to add to the speech of the chairman, which covered the ground very fully. He was much struck with the scope of the field development work, and the thorough and busi-

nesslike manner in which it was carried on in the face of difficulties which were not always realized at home. He considered it an extraordinary thing that only two or three scout wells had been necessary to locate the anticlinal upon which the company was obtaining its results. The great pressure of the gas and its terrific roar made him realize the amount of gas which existed there. He referred to the local confidence in the future of the field, and to the possibilities in store for the city of Moncton, into which the gas would be introduced this year.

The retiring directors, Messrs. Claud A. Allan, William Walker, and W. Hope Henderson, were re-elected. The auditors were reappointed. A vote of thanks to the chairman brought the proceedings to a close.

Gold Mining in Western Ontario, A Lesson from Mining History.

(Written for the CANADIAN MINING JOURNAL by W. E. H. Carter.)*

Illustrations furnished through courtesy of the Ontari o Bureau of Mines.

The great activity in the hunt for gold in the Porcupine area and adjacent fields, brings forcibly to the writer's mind another gold-bearing region in this province, and also the fact that there is a psychological element in the growth and success of any mining camp, probably most pronounced in the case of gold. Unless this element be understood one may look in vain for adequate causes for the unfortunate subsidence into obscurity of certain mining fields, once the cynosure of the eyes of the mining world. As regards Western Ontario, this fact never was appreciated.

It is easier to look back and see the mistakes made, than to recognize them in the making. In the first case one sums the subject up for himself. In the second, there are endless interests in the field, each working out his mining problem in the way in which each thinks lies the salvation of his pocket. That the lining of his pocket should be derived from actual dividends earned by the mine has almost always been the last object provided for.

There is no desire on the writer's part to draw comparisons between past and present, for such comparisons do little good. Only with the advancement in knowledge by the public of the legitimate business side of mining and with a growing appreciation of the evils attending the exploitation of any new field, will the real value of any mining camp be properly and thoroughly determined.

Our experiences in the past six or seven years with mines almost at the doors of residents in Central Canada, as for instance in the Cobalt and outlying mining camps, have been manifold and without doubt are already exercising a beneficial effect in the development of the most recent discoveries of gold in the Porcupine areas. Had it been any mineral other than gold, which in a new and apparently deserving field always has awakened afresh the interest of the world, no such general speculative and investing interest as is already in evidence would have resulted.

In the April issue of the Mining Magazine (London) is an article entitled "Mining Speculation," signed by "A Director," of whom the editor speaks as "a financier not without authority." These remarks amongst other things put in words a truth that we have probably all realized dimly before, to the effect that "The speculator is a more important factor in mining finance than the investor." The speculator is a psychologist in operation if ever there was one, and therefore let us not now tax his credulity to too great an extent by asking his financial aid in any and every forty acres of ground in the north country. If those who make it their business to sell mining property to the company promoter (not, of course, the prospector offering his own claim, for he is too strongly biassed), will only take the trouble to secure ground which on the report of a technically and morally qualified member of the mining engineering profession has a fair chance of success with development., there will be many less failures, the public interest will be retained long enough to provide working capital for those properties which are gradually proving themselves deserving and the speculator will in the end give place to the investor. Indeed the speculator will himself often enough become the investor.

As a community we are, I believe, much better fitted than we were a few years ago to appreciate that "mining engineering is now one of the scientific professions, a high standard of technical knowledge is demanded and is forthcoming and, what is of equal importance, a high code of professional conduct and etiquette has been set up and is for the most part observed." To quote further, "In all respects the contrasts between the conditions to-day and those obtaining ten years ago is striking and unmistakable."

In my opinion, formed by actual contact over a period of five years, first as operating engineer, and later as Inspector of Mines for this province, it was the utter carelessness of those who put up the money, speculator and investor alike, that finally, about the beginning of the last decade, brought to naught the Western Ontario gold areas in spite of the many developed and finely equipped mines, a number of which had for some years been producers.

Gold was first discovered in the Lake of the Woods country in 1883. Sporadic attempts at mining continued only for a year, or two. Soon, however, fresh discoveries gave a renewed impetus and operations were steadily enlarged extending to practically every accessible part of the western end of the province. The height of activity was reached in 1897, after which the reaction set in, inevitable after the abuse of all codes of mining business, and the industry gradually lost ground. Even then a good deal of irregular and more or less successful prospecting was done, for until as late as 1900 new gold-bearing territory was added, the last land of promise being Sturgeon Lake, 50

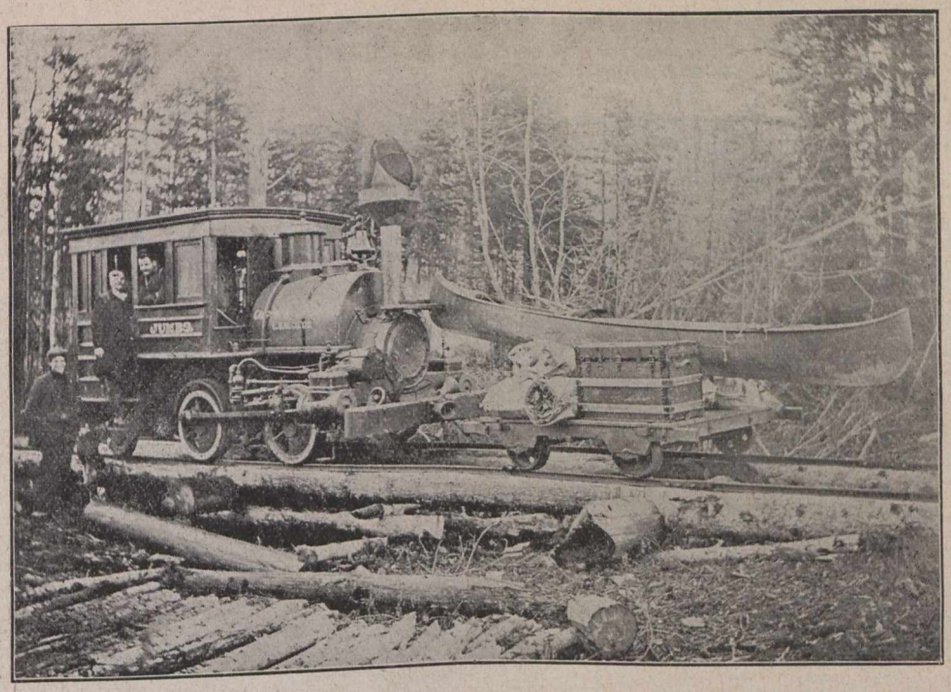
*Mining engineer, 85 Front St. East, Toronto, Ont.

miles north of Ignace on the C.P.R., and the Eagle Lake area, south of Eagle Lake station on the same railway.

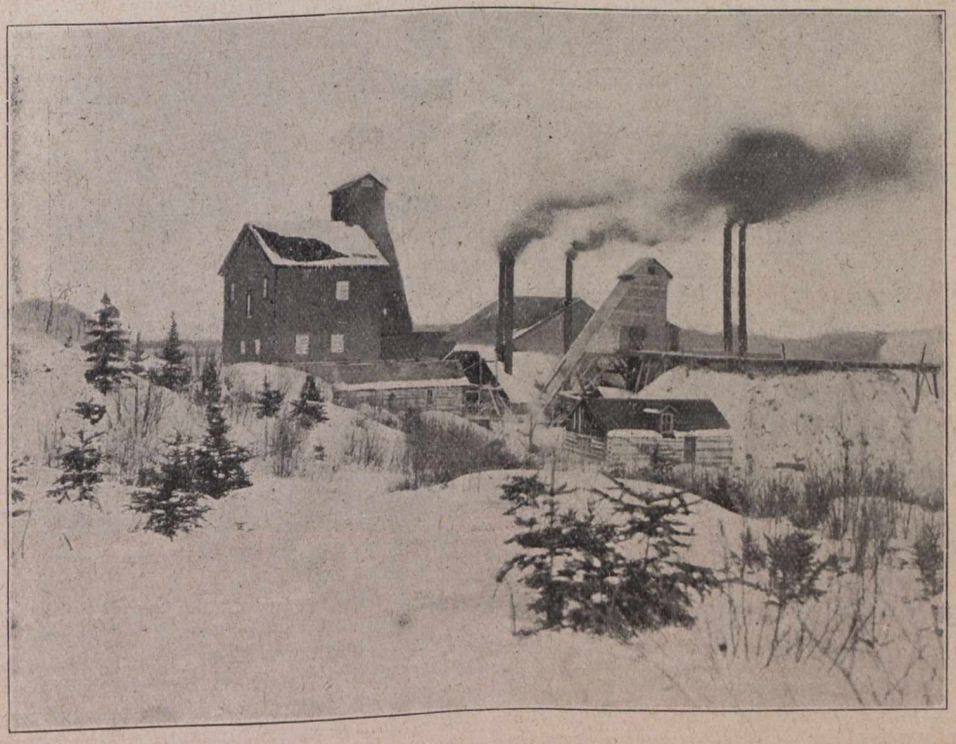
Of the numerous gold properties in Ontario, 34 had, in the year 1901, stamp-mills ranging in size from 2 stamps to 40 stamps. The total number of stamps installed was 460. With the exception of a very small number these were all erected on Western Ontario gold mines.

The most important producers during the last years of active work were the Sultana, Mikado, Sakoose, Golden Star, and Olive mines. The following table gives the number of gold mines that attained in their underground workings a greater depth than 100 feet:

Mikado mine, depth between 800 and 900 feet.
Sultana mine, depth between 500 and 600 feet.



View on Railway from Mine to Mill at Camp Bay.



Mikado Gold Mine, View of Works.

Three other mines, depth between 400 and 500 feet.
One other mine, depth between 300 and 400 feet.
Ten other mines, depth between 200 and 300 feet.
Twenty to thirty other mines, depth between 100 and 200 feet.

The deepest mines have been the largest producers.

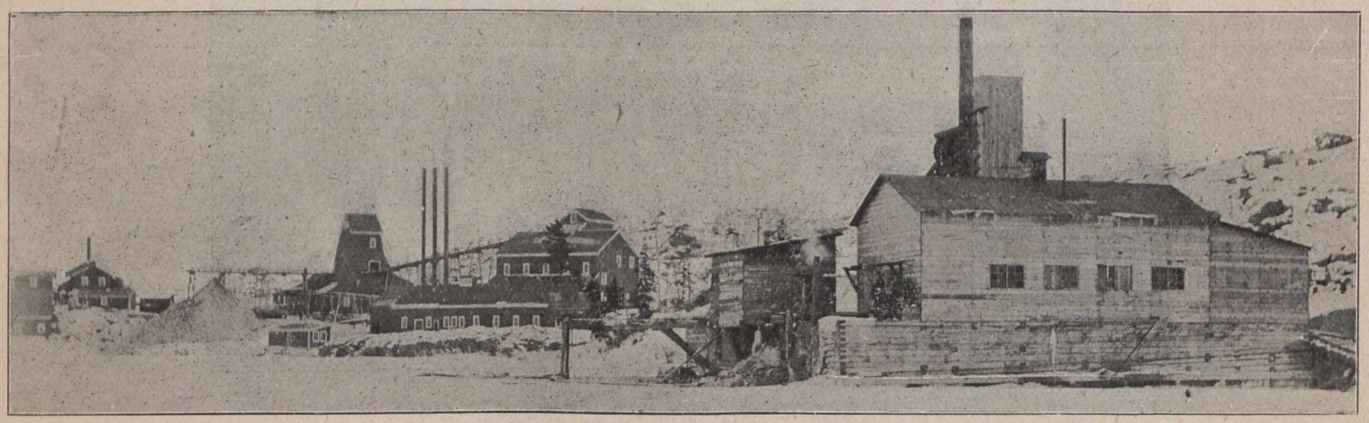
To-day, transportation facilities in that western part of the province are greatly improved, along the southern boundary by the advent in 1904 of the Port Arthur to Winnipeg branch of the Canadian Northern Railway; and in the north by the addition of the Grand Trunk Pacific. In the early days, however, and even as late as 1903, the whole area was handicapped with the greatest difficulty of access. There was but one line of railway, the Canadian Pacific, in addition to which practically the only means of travel in the summer was by the endless chain of waterways, rivers and lakes, and that mostly by canoes; although on the larger lakes there were a few small steamers. On account of the numerous portages, transportation of supplies was extremely expensive, hence practically everything, and, of course, all machinery, had to be hauled in during the winter months by team over winter roads, frozen lakes and rivers.

The hunt for gold had carried the prospector to such distant outlying areas that many camps in the early days of their development could be reached in winter only by dog-team, or by the lonely snowshoe tramp with pack on back. Many a time has the writer attained the end of his journey by such means, to find there a busy little mining camp with development going eagerly forward.

Such was the general enthusiasm at that time in the gold mining region of Western Ontario. No obstacle was too great to be overcome, and no expense too heavy for the investing public to meet.

The final reckoning was a long time coming—ten years or more. There is no particular need of mourning now. It is well, however, to profit by the errors committed. These errors may have been numerous, but after all none compared with, and all were more or less the result of the one unpardonable sin of omission, that in almost every case no qualified advice was sought, nor apparently wanted. I have discussed affairs with mine managers whose qualifications doubtless were all right up to their limit, but whose original occupation ranged from a one time bar-tender up to a General of the British army, each having in his control the expenditure in mining development and plant of large sums of money. Any crack in the solid country rock, a few short quartz stringers and similar "showings" were in numerous cases sufficient for the establishment of a camp and the attempt to develop a mine. These are the regrettable incidents. Many thousands of dollars thus wasted in useless mining might have been saved by the outlay at the very beginning of a small fraction of the subsequent expenditure in fees for technical advice, which would have warranted the turning down at once of such so-called mining prospects.

On the other hand, there were many worthy properties, a number of which produced pay ore in considerable quantities. Had the visibly worthless ones been culled out of the way, the interest in the area would have been confined of necessity to the smaller number of possible mines, and these would at least have re-



Sultana and Burley Gold Mines.

Regina Mine

tained a longer lease of life than they did. So far as known there were no particular bonanzas, such as the Hollinger mine in the case of Porcupine, to stimulate interest. Such outstanding prizes make the heart glad, but it is not they alone that are able to pay dividends. Many an ore body of less value per ton is well worth the attention of the miner, and Western Ontario may have several of these.

The worst that may be said of these more promising gold properties in Western Ontario is that they never had a fair show, either financially or, with but few exceptions, technically. The money of the investing or speculating public was spread over an immense area of country in prospects everywhere. It is history with but few exceptions, of which latter Cobalt may be instanced, that in no mining camp or field does more than a very small percentage of the properties exploited turn out profitably. To preserve the balance, nature has not been overlavish with the miner. Hence when almost countless prospects, which either at the start or after a course of preliminary development could have by competent men been reported worthless, continued in all parts of this western field to give no promise of return the public confidence in the whole field waned, and the deserving properties suffered with the rest.

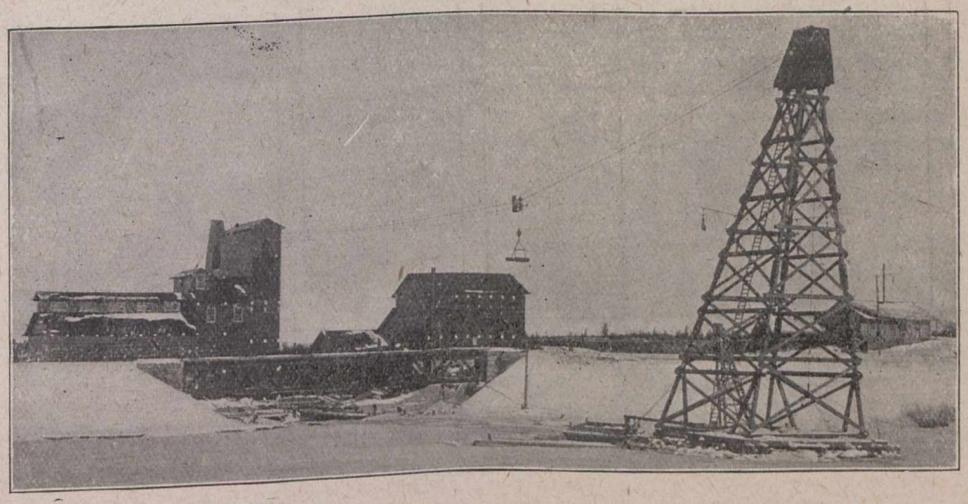
The height of activity in these western gold fields arrived, as mentioned above, in 1897. By 1900 the general public had lost interest (as well as their money) and only a few mines struggled on. By 1903 practically every property had ceased to operate.

Porcupine has come to Ontario as the saviour of the gold mining industry. It took a good year to instil into the mind of the public and mining men alike the idea that possibly after all Ontario could produce a valuable gold mine.

See now how rapid has been the effect upon this older camp in the west end of the province. Within the year the old Mikado mine, the deepest and one of the most completely equipped, absolutely abandoned, I believe, by the former operators, has been reopened by strong financial interests, who have placed a capable engineer in charge. Already an entirely new body of pay ore has been found, which is now under actual development. Other of these better known old properties are being spoken of in mining circles and in the press, which can be taken as an indication of what may shortly come about, the re-opening for examination at least of more of them.

The reports of the Bureau of Mines of the Department of Lands, Forests and Mines of Ontario have from their inception, twenty years ago, been carefully compiled, with the result that a complete history of the underground and surface workings of practically every property, from the prospect up, is now available as a guide to those interested. Of the actual gold content of the veins, little definite information will, however, be found. The chief reason for this is that the operators themselves did not always know. Outside of this source of information the only means of determining the same would have been by systematic sampling, and this was not one of the functions of the mine inspector.

Among the most interesting mining properties in Western Ontario, which might bear inspection, may be mentioned the Sultana, on the Lake of the Woods. This reached the depth of 470 feet at the seventh level, with many hundred feet of drifting on all the levels. One of the ore stopes was of great size, measuring (I write from memory) at its greatest cross-section about 40 feet wide, by 100 feet or more along the strike of the vein, and extending from the surface down to the fifth or sixth level. The surface plant was elaborate, including a 40-stamp mill, a roasting and chlorination plant.



Ottawa Reduction Works– Keewatin.

The Regina mine, on Regina Bay, Lake of the Woods, was sunk to a depth of 535 feet. At this time also extensive drifting was done. No later than 1900 the mine changed hands. More underground development was then accomplished and an entirely new reduction plant erected, including a battery of 30-gravity stamps to replace the original 20 Tremaine steam stamps. The Golden Star just north of Mine Centre in the Lower Seine River area, is another well developed property, having attained a depth of 530 feet at the seventh level, with a great deal of drifting on all the levels. The ore was treated in a 20-stamp mill connected by a mile or so of aerial cable-way with the mine.

In addition to the above, one might continue enumerating gold mine after gold mine in this western part of Ontario, each with defined and substantial veins, and all more or less elaborately equipped with the best of mining plant. Of many of these it may be safely said that the value of the veins for profitable operation has never been definitely determined.

It is not my purpose here either to state or to imply any more than this. I often enough, then and since, felt that many of the gold mining properties of Western Ontario never had a fair chance to show whether or no they were, under the proper conditions, capable of profitable operation.

An Efficient Steam Pipe Support

The accompanying sketches illustrate a design of steam pipe support which has proven very efficient about the plants of the Southern Division of the Republic Iron & Steel Company.

In figs. 1 and 2 are shown the support, which allows of a free movement of the steam pipe both in the direction of the steam line and also at right angles to that direction. The uprights are standard W. I. pipes fitted on the upper ends with standard companion flanges, and with the lower ends imbedded in a concrete foundation. Attached to the flanges is a channel iron, in the trough of which are placed five short pipe rollers at right angles to the axis of the channel. On these short rollers and with its axis at right angles to the axis of the short rollers is placed a long transverse pipe roller on which the steam pipe rests. Usually, however, a pipe saddle is attached to the pipe, and rides on the upper roller as it affords a greater bearing surface.

In figs. 3 and 4 are shown the end and side elevations of anchor towers, which are used about every twelfth support.

On one occasion in which is was desired to convey the steam generated from the waste gases of an iron furnace, to run the plant of an adjacent dolomite (flux) quarry, an 8-inch pipe line about 1,200 feet long was used with supports spaced every 20 feet and having four anchor towers and three expansion joints. The short rollers on these supports were 6 inches long and made of ¾-inch W.I. pipe, while the long roller was of 2-inch W.I. pipe, 2 feet 4 inches long. The uprights were W.I. pipes 4 inches in diameter.

The anchor tower braces in the sketch show an item to which usually very little attention is paid namely, that the brace turnbuckles to permit of convenient handling should always be placed near the ground.

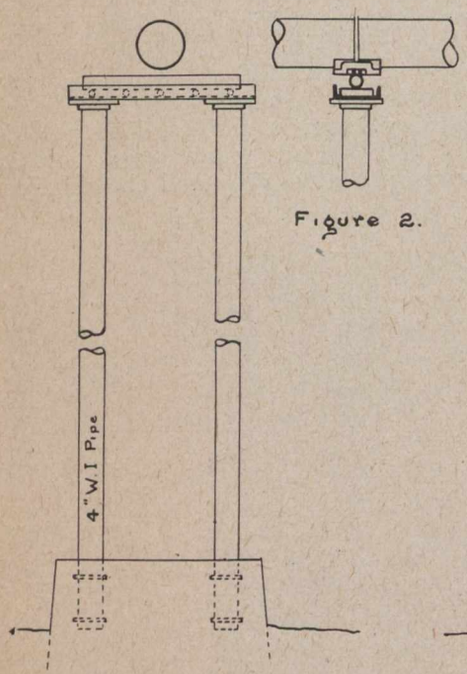


Figure 1.

Figure 2.

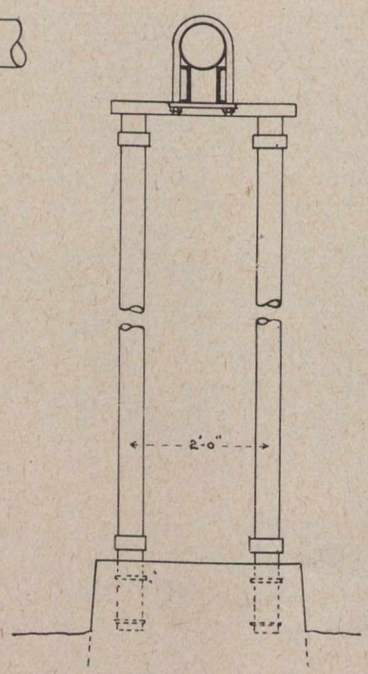


Figure 3.

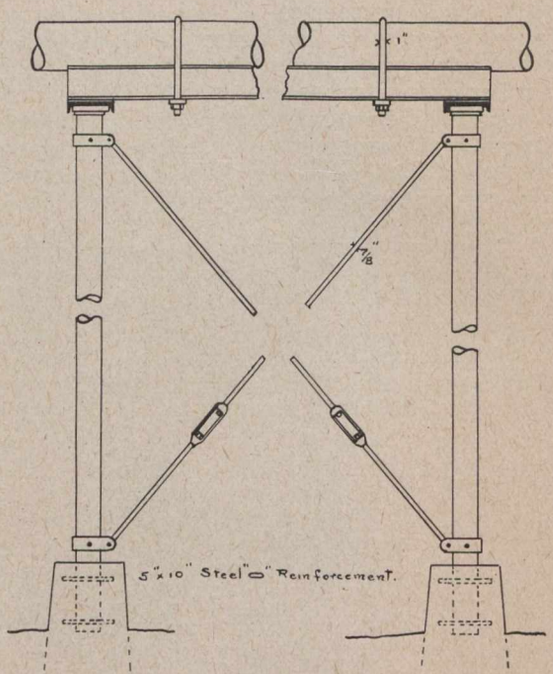


Figure 4.

AN EFFICIENT STEAM PIPE SUPPORT

Scale ¼" = 12"

On March 22 the Nelson, B.C., "Daily News" published a list of the contributions to the fund in aid of the widow and orphans of the late Fred C. Alderson, who sacrificed his own life in saving that of an Italian miner in the Bellevue coal mine, Alberta, last December. The statement, which was supplied by B. L. Thorne, secretary-treasurer of the committee having the matter in hand, showed a total of $4,795.91. To this there will shortly be added $500 from the Government of British Columbia. Probably the Government of Alberta will also contribute, if so, its amount should bring the total up to nearly $6,000.

The gold output of South Africa is now one-third of the world's total. In 1887 the output was only 0.78 per cent. of that of the whole world. In 1910, about $45,000,000 was paid in dividends.

PROGRESS IN MEXICAN MINING AND METALLURGICAL METHODS DURING THE CENTURY OF INDEPENDENCE

Read by A. Grothe on behalf of the Mex. Institute of Mining and Metallurgy at the meeting of the "Concurso Cientifico y Artistico del Centenario," promoted by the Mexican Academy of Jurisprudence and Legislation on Feb. 25th, 1911.

To the present generation, accustomed to look upon steam and electricity as indispensable auxiliaries to our industrial operations, means of locomotion and everyday life, the ore-yard of the Mellado and Rayas mine at Guanajuato, on an early morning of the year 1809, would have presented a strange and interesting scene.

In the dim twilight the general contour of an irregular polygon surrounded by high walls, is faintly discernible. At the corners, substantial watch towers, provided with loopholes for musketry fire, protrude above the skyline. Several massive buildings are contained within the walls, among which the splendid chapel, erected in 1730 at a cost of $54,000 by Don Vicente Manuel Sardaneta (afterwards the first Marques de Rayas) forms a strong contrast to the shingle-covered sheds in the background, where the 1,400 mules and horses forming the motive power equipment of the mine are housed. Aside is seen the gallows-frame (horca) over the main shaft of "tiro general." On each of its eight sides a set of "lechuguillo" ropes are ascending to bring up water or ore and descending with tools and supplies. Just now a squad of the nightshift is coming up, clinging to the hoisting rope and dexterously jumping to the ground as the surface is reached. The men gather their rags about them as a feeble protection against the cool morning air, which they feel the more on account of the contrast with the stifling heat of the badly ventilated workings they have just left. One or the other gives a last re-adjustment to the sample of rich ore which he has concealed on his person and intends, if possible, to add to his private collection.

At the massive gateway, which forms the only exit from the yard, the portero, muffled in his sarape, is waiting to search the men before they are allowed to leave. He is a man of experience, has been through the mill himself, and is certain to detect any ordinary place of concealment on the person of those who are not friends. But a new trick may have been invented and at any rate one may succeed where others fail. Once outside the gate the booty is in no further danger and the successful robber, unrestricted by any sense of wrongdoing, (for has not God made the stones for us all?) is safe and can easily find a purchaser for his ill-gotten gains. Large sums are thus abstracted from their legitimate owners, but these themselves are not by any means free from blame in the matter, for they view these delinquencies with indulgence, and seldom take adequate steps for the punishment of the offenders. One of these gentlemen on his return from a journey to Rome, announced to his miners that he had procured for them a complete absolution for past misdoings of this kind! Thereupon the stealing went on as before, in the expectation that the owner would have to go on another journey to Rome sooner or later. Another, who acted on the principle that the people should be rigorously searched, but not molested when they got safely outside, was made the bearer of a rich sample which had been placed in his pocket by a miner who demanded it back after passing the gate, saying: perdone Ud., senor Conde, eso es mio! Such misplaced leniency bred a laxity of morals which is felt to the present day. The least of its evil consequences is the loss of a large amount of money to the rightful owner, and the far greater one that of obliterating the moral sense and honesty of a whole class of workmen, a degeneration which cannot fail to spread to their families and associates. To eradicate this evil by education will take as long a time as it has taken to grow.

The dayshift (pueble de dia) has now assembled and is mustered under the capataces near the mine entrance (boca-mina). First there are the miners, the aristocracy of the workpeople, working either in days-wages, by contract, or on "partido," in the latter case receiving by way of remuneration for their work one-half of the ore they extract. We shall presently follow them into the mine and be able to judge of their skill and methods. In the next group are the tenateros and charqueadores, the former carrying the ore and waste in sacks of ixtle fibre, hanging by a band from the forehead, and the latter the water in leather sacks suspended in the same manner. These two classes may rightly be considered the pariahs among the workers, and it is doubtful whether the mine slaves of antiquity led a more hopeless existence than these unfortunates. Probably still under the influence of last night's debauch, in which every cent of yesterday's earnings was spent; clearly not having broken their fast this morning; more than half naked, they form a pitiful spectacle and it seems impossible that they should perform the feats of strength and endurance which we shall see them capable of. They go to their work literally with nothing; having even to leave their own name behind, for each receives a new one by which, for purposes of accounting, he will be known for the day, from an alphabetically arranged list of biblical names. They are not on the regular paylist of the mine and apply for work when they choose. The capataz counts off the necessary number for each day's work from the file, the rest are sent away and perforce have to remain idle as it is now too late to apply for work at another mine. At two o'clock in the afternoon they cease work for the day and are at once paid off according to the work performed and depart to spend their earnings as soon as possible.

The pepenadores (ore sorters) have already begun their task as they too, are paid by results. They have to break the large pieces of ore with short hammers, throw out the waste and sort the ore into heaps of different classes. Not the least skilful are the women, some of whom have a wonderful eye for rich ore and consequently have to be examined with particular care by female searchers appointed for the purpose. Over every group of workers stand veladores to watch their doings. There is no sign of the slightest trust in the honesty and integrity of the people under their charge, either as concerns their abstinence from pilfering or their intention to perform an honest day's work in return for the wages received.

The capataces or foremen, after receiving their final instructions from the administrador, are now preparing to go into the mine accompanied by their morrongos, smart boys who carry a torch made out of tallow and vegetable fibre. Some of these morrongos later attain eminence as first class miners, having profited by the conversations of their chiefs.

The whole force (pueblo) has now left the patio. But who are those men, evidently waiting for coming events, with a kind of chair strapped to their backs? We are told they are the "caballitos," and on the chair the administrador or the minero mayor will presently seat himself for the purpose of making his tour of inspection through the intricate mineworkings in greater comfort than if he went on his own feet. This office, in our opinion more degrading to those who make use of it than for those who perform it for the sake of making a living, is still in existence at the time of our supposed visit, though abolished shortly afterwards.

Before descending into the mine let us cast a look at the main shaft or tiro general. It was started in 1805 by Don Jose Maria Sardaneta (second Marques de Rayas) to obtain access to the rich oreshoot of Sangre de Cristo. Its depth, when completed, will be 475 varas (398 met.) but at this time it has only been sunk 318 varas (266 met.), at which depth it is to remain for several years. The shaft is octagonal in section, measures 38 feet across, and is lined with substantial masonry from the mouth to the level at which firm rock is reached. Its cost, including accessories, has been not less than $1,700,000.

It is surrounded by eight horsewhims (malacates). The hoisting ropes lead from the overhead sheaves in a few turns round the vertical drum, to which a rotary motion is imparted by 16 horses, harnessed to four long crossbeams on which the drivers are seated. Their monotonous chant, mixed with frequent imprecations, the beat of the horses' hoofs, the cracking of whips, and the creaking of the overhead sheaves of mezquite wood, produce a strange unharmonious concert which is not easily forgotten. By keeping the horses steadily at a short gallop a hoisting velocity of 0.8 met. per second is maintained, but the horses have to be changed every four hours. Some of the malacates are used for lifting the water from the sump at the bottom of the shaft by means of a sack of about one cubic meter capacity, consisting of two raw cowhides sewn together and held open at the top by an iron ring which is suspended with leather straps from the hoisting rope. The quantity of water to be lifted is not great; about four litres per second in times of drought, to fourteen litres during the rainy season. With modern appliances, 50 h.p. would suffice to keep the mine drained; but here 576 horses, without counting the sick and invalid, are barely sufficient for this purpose.

For the hoisting of ore a single cowhide, suspended from the four corners, is used. When the load reaches the mouth of the shaft, it is pulled sideways to the firm ground and emptied. In the meantime the harnessing of the horses has been reversed and on the signal from below that the load is ready they start in the opposite direction.

We now direct our steps to the "boca-mina," a commodious entrance to a massive stone stairway, leading at an angle of 45 degrees to a large open space at a depth of about 40 feet, which has been expressly blasted out and fitted as a chapel. From here the stairway continues on somewhat less imposing dimensions, following the dip of the vein, but at times at an incline of 50 to 70 degrees. Suddenly the masonry steps come to an end and before us we have a yawning abyss, the depth of which can only approximately be judged when an occasional light appears at the bottom. On our left and right crooked drifts lead away, one forming the direct road to the loading station at the bottom of the shaft. Here a timekeeper is in attendance with the alphabetical list and a weighing beam, in case of need. A weird figure, carrying a heavy load on his back, slowly emerges from the winze at our feet and on passing the timekeeper gives his name as Abraham. The timekeeper feels the load, suggesting 12 arrobas as its weight, and the tenatero, being satisfied, passes on his way. He could have the load weighed, but the loss of time would not be compensated for by the addition of a few pounds to his credit. The weight these men carry seems incredible, being ordinarily from 9 to 12 arrobas (103 to 161 kilos), but loads of from 18 to 22 arrobas (206 to 247 kilos), are sometimes carried. A truly wonderful performance, especially when considered in connection with the road these men have to travel 8 to 10 times a day, the vitiated air of a temperature of 20 to 35 degrees they have to breathe, and their usual mode of life. And for this they receive, if all goes well and they do not slip off one of the chicken ladders or get crushed by a falling rock from a shaky roof, the sum of 75 cvs! And the most pathetic part of the story is that this is far in excess of what they can wisely spend.

Let us now descend to the lower workings from which our friend Abraham has just emerged. The road becomes much more difficult and without our pathfinding morrongo we should make but little progress. After a time we turn into a low and crooked drift, now rising, then falling. The roof in some places is so low that we are obliged to abandon the upright position, and again we have to scramble over debris fallen from the roof. We now come to a raise accessible only by means of a chicken ladder, consisting of a single notched pole, which leads to another drift, and from there we descend into a winze at the bottom of which two men, surrounded by a misty halo, are drilling holes. The drilling tool is an iron bar with a bit or point of steel, and naturally has frequently to be repaired. These men are "buscones," who have found a good field and are working it for all it is worth, without giving a thought to the fact that they endanger the safe working of the mine. Each squad follows its own instincts, with the result that the interior workings consist of a labryinth of intricate drifts, raises, and winzes, without direct connection with each other; mining, instead of being a science directing its efforts to the finding of ore, and at the same time to the most rational and economical method of extracting it, becomes simply a matter of luck. This spirit characterizes the whole industry and finds even to this day too many adherents, to the great detriment of mining, in which, like in any other undertaking, the element of mere chance should not find a place.

We leave our friends, who have no idea that by their reckless proceeding they are providing endless difficulties for the future working of the mine, and may make great riches forever inaccessible, with the usual underground salutation "alabado sea Dios" (praised be God), and receive the pious reply, 'siempre sea alabado su santo nombre," (His holy name be forever praised), and proceed with our investigation, now forward then backward, now down winzes and up raises, to meet everywhere the same conditions: a mine ruined for future work by ignorance and greed.

But as we proceed upwards, out of the reach of the pestilent atmosphere, and again perceive the light of

day, the comforting thought comes to us that these things cannot be for ever; that a time of greater enlightenment will come, and that when the yoke of oppression under which the people have suffered for more than two centuries shall have been thrown off, the natural intelligence possessed by the people of Mexico in such high degree, shall bear fruit under a just and peace-loving government, and a more rational and economical exploitation of the mineral resources of the country will follow.

On reaching the patio again, we find a scene vastly different from that of the morning. A large cavalcade has arrived and the dismounted riders are busy examining the numbered ore-heaps. It is the day appointed for the ore-sale or "rescate" and the visitors are the owners or managers of the many reduction works in the valley near town, all intent upon purchasing ore for their "haciendas." Note book in hand they proceed from heap to heap, judging the weight by the eye, and the contents by panning in a small lacquered gourd (jicara). They are wonderfully expert at the operation (tentadura), when dealing with ore of which they have experience. The art of assaying is hardly practised as yet (any more than that of mine surveying), and in consequence grievous mistakes occur occasionally; as, for instance, when some years later ore was found in abandoned workings in the upper levels of Valenciana, which had the look of compact iron-pyrites and gave no indication of silver in the tentadura. Nevertheless, it was found by fire assay to contain from 22 to 24 marcos of silver per "monton" (3.5 to 4 kilos per ton). Still these mistakes are the exception, and ordinarily the estimate of weight and contents is astonishingly correct.

When all are ready with their calculations, the manager of the mine (administrador) takes his position near one of the heaps and invites bids for this number. The competing buyers approach him one by one and make their bids in whispers. The proprietor of the mine or his representative do the same as a protection against possible collusion amongst the rescatadores. When after the auctioneer's solemn: No hay quien diga mas? no further offer is forthcoming, the name of the highest bidder and the price to be paid are announced, and the group moves on to the next monton, until all are sold. In this manner thousands of dollars' worth of ore are sold every week. Losses are made, and great bargains secured, and it seems that this gambling nature of the method makes is so attractive to those interested, that it has survived in Guanajuato until the end of the last century, when the San Cayetano Company still sold the production from their mines in this manner. And crude as the system was, perhaps no great injustice resulted to either buyer or seller. Writer had the ore offered for sale by those mines in 1888 carefully weighed and assayed, and found that at the end of the year the computation of the value on this correct basis, differed only 2 per cent. with the price realized, the latter being the higher. He thereupon published his figures on the day before the rescate and sold the ore on the basis thereof. This put an end to the picturesque but risky proceeding of former times.

At the conclusion of the rescate the mules which have to convey the ore to the reduction works, swarm in, and the arrieros proceed to load the ore in leathern sacks, while their masters sit down to a sumptious lunch, after which the tables are cleared for a friendly game of cards, which is often prolonged far into the night, in the course of which many of the purchased heaps of ore change hands.

Not being possessed of the gambling spirit, we shall rather follow the ore to the reduction works.

At the hacienda it is weighed, without, however, a determination of the moisture being made. This and other inaccuracies make the returns as to results obtained not quite so trustworthy as might be desirable. The coarse ore (grueso) is then crushed to pea size in crude wooden stamps, or equally primitive roller-mills with stone runners, and, after being mixed with the smalls, is fed to arrastres where it is ground to impalpable slime under addition of water. The arrastre is a circular stone tub of about 9 feet diameter, half sunk below the floor and provided with a bottom of hard basalt or porphyry, the stones being placed on end. The grinding stones are large pieces of the same material suspended by chains from crossbars fixed to a vertical shaft, to which a mule imparts a rotary motion. Eighty or more arrastres are placed in row in a large shed or galera. The bottom of the arrastre is covered by a thin layer of silver or copper amalgam, to which the fine particles of metallic silver and gold contained in the ore adhere. Every morning the arrastres are emptied of the ground pulp, which goes to the "patio" for further treatment. The capacity of an arrastre is from 7 to 8 cargas (1,100 to 1,300 kilos) per day, according to the degree of softness of the ore. Every two to three months a "raspa" is made, that is, the amalgam is removed from the bottom and joints. The scrapings are thinned out with mercury, filtered, and the remaining mercury distilled off in vertical iron retorts or "capellinas." The resulting bullion, which is very rich in gold, is then melted in charcoal furnaces, cast into bars and taken to the mint, where it is assayed and parted, that is, the two metals are separated, and obtained in an almost pure state. By this process about one-half of the gold contained in the ore is recovered, the other half, remaining in the pulp, is lost, as we shall see.

The pulp is collected in flat heaps, called "tortas," each containing about 100 tons of ore, on the flagged floor of an open yard, called the "patio," from which the name of the whole process is derived. It was invented by Bartolome de Medina and first practised by him in Pachuca in 1557. It was admirably adapted to the available resources and the requirements of the country, and, crude as it may appear to the modern metallurgist, has been of incalculable benefit to the mining industry.

(To be continued.)

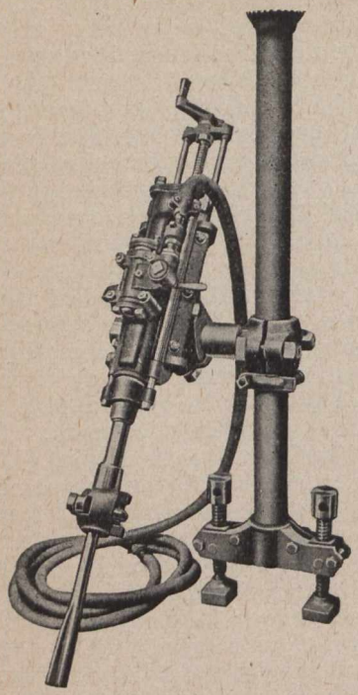
The San Salvador Spanish Iron Ore Company, Limited, an English corporation, operates ironstone quarries near Santander, Spain. The annual report of this company contains the information that in the first half of 1910 the rainfall interfered seriously with the operation of the quarries. The fall amounted to no less than 38 inches. As the ore is embedded in a very tenacious clay, it may easily be imagined that work was badly impeded. All the ore has to be concentrated. Despite adverse climate, bad labour, and low grade ore, this company has a fine dividend record.

The Crown Reserve mine, Cobalt, has paid a total of $3,006,983.80 in dividends. The record of the company by years is as follows: 1908, $353,762.80; 1909, $1,238,169.80; 1910, $1,061,288.40; 1911, $353,762.80. The grand total of disbursements is $3,006,983.80. The capital of the company is $2,000,000, divided in shares of $1 each. The stock was quoted as low as 20 cents in 1908. It ran up to $6 in 1909, and now stands about $3.20.

INDUSTRIAL SECTION

HOLMAN DRILL.

The Holman Rock Drill, which has attained success in South Africa, Australia, and Great Britain, is now being introduced in Canada.



Holman Drill Mounted on Column.

The Holman drill is manufactured by Holman Bros., of Camborne, Cornwall, who are considered to be one of the most progressive manufacturers of rock drills in the world. Established since 1839, and continually improving their product, has made the name "Holman" known most favourably wherever rock drills are used.

In bringing their drill to its present state of perfection, Holman Bros. have been materially assisted by the practical experience gained as very large users of rock drills in their numerous underground undertakings; they being miners as well as manufacturers. Their dual experience places Holman Bros. in an unique position, as compared with other makers, and is without a doubt an advantage, the value of which cannot be overestimated by mining men the world over.

That the Holman drill possesses real merit is shown by the many records it has established and holds. Among the most important of these are:

The world's record for incline shaft sinking.

Six world's records for shaft sinking and driving, during the last two years.

Winners of the $12,000 prize in the 1910 Rand stope drill competition.

Also numerous local records.

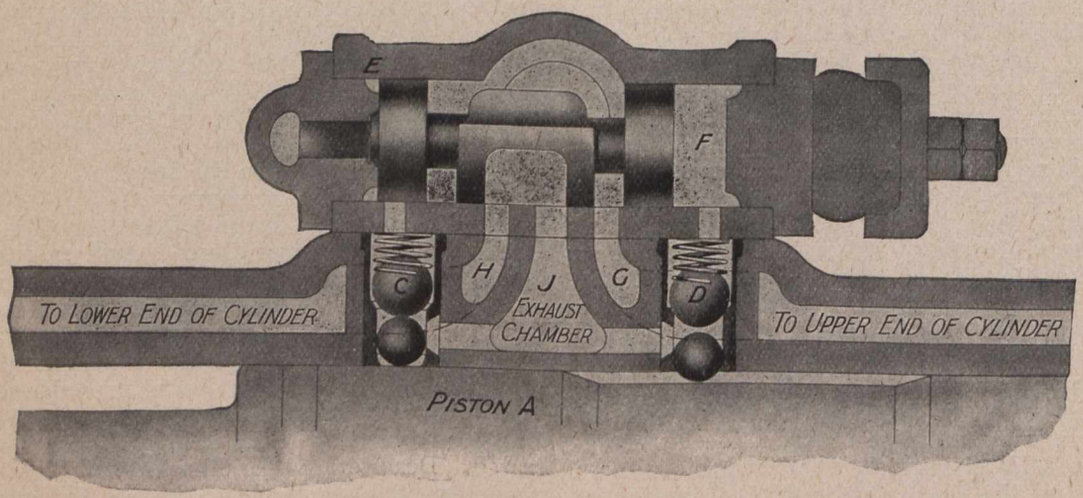
The Holman 1911 model, air valve drill, is considered by many mining and mechanical engineers to be the best machine on the market to-day, because it combines:

Simplicity of mechanism.
Compactness of build.
Lightness, in comparison to strength.
Quality of material and workmanship.
Economy in the consumption of air.
Economy in upkeep.
Drilling speed over long periods.

The drill has a comparatively small number of parts, has large bearing and wearing surfaces, and is easily adjustable and accessible.

As will be seen from the above illustration, the Holman valve is simple, durable, efficient, and economical. There is absolutely no chance of live air passing over the valve into the exhaust, and from the position of the piston and valve, there can be no "sticking" or "fluttering."

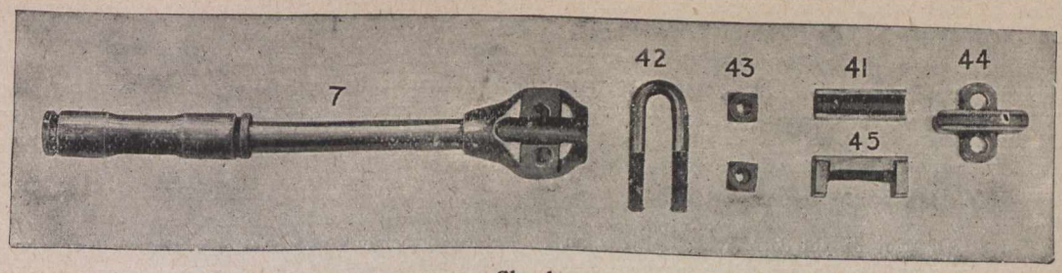
The Holman drill has a variable stroke, from one inch upwards, depending on the size of the drill. The value of this variable stroke is well understood.



Holman Air Valve

The Holman patent chuck is without a doubt one of the greatest improvements made on rock drills in many years. Not only does the Holman chuck save blacksmith costs, but it saves labour charges, as the changing of steel is a much quicker operation than with the old type chucks.

The Holman drill has a split front head, with removable half bushing, and taper gland, which is a de-



Chuck

cided improvement on the old style four or six-bolt head.

All Holman drills are tested at varying pressures up to one hundred pounds, and are given a thorough trial under conditions severe as those obtaining underground. The drills are covered by a broad guarantee, both as to efficiency, material, and workmanship.

Mussens, Limited, are stocking these drills, with all spares, in Montreal, Cobalt, Porcupine, and Vancouver, and are always able to make immediate shipment of orders.

Catalogue of Eugene Dietzgen Co.—Ninth Edition —Eugene Dietzgen Co., Limited, Toronto, Ont. To publish a strongly bound, profusely illustrated volume of nearly 600 pages is no small undertaking. The catalogue before us is one of the most complete and most instructive that we have seen. Everything that the draughtsman and engineer need is here described and listed plainly with prices. The catalogue is so complete, and comprises so many modern refinements, that it is genuinely educative to study it. It can be obtained by applying to the Toronto branch.

The death-rate amongst mine labourers in South Africa is 30.75 per 1,000. In 1905 the rate was 38.8.

LABOUR TROUBLES AT WESTERN COAL MINES.

Following receipt of notice from the Minister of Labour, Ottawa, that unless either the Western Coal Operators or their employees made application for the appointment of a Board of Conciliation and Investigation under the Industrial Disputes Act, 1907, the Government would proceed to appoint a Royal Commission, with power to make full investigation into all the conditions bearing upon the labour difficulties that occur periodically in the coal mining districts affected, the representatives of District 18, United Mine Workers of America, on April 13, telegraphed a preliminary request for the appointment of such Board of Conciliation and Investigation. Meanwhile it is expected the men will return to work in the mines on the understanding that whatever rates of payment to them shall eventually be agreed upon, they will take effect as from the time of resuming work.

No serious effects of the cessation of production of coal and coke have yet been felt in the copper mining and smelting districts of British Columbia, the smelteries having a sufficiently large reserve supply of coke on hand to keep their furnaces going for several weeks after regular supplies had been stopped. It is now hoped that an agreement will be reached without necessitating the shutting down of the copper mines and smelteries of Kootenay and Boundary districts. There is no certainty, though, that the findings of the Board of Conciliation will be accepted.

SPECIAL CORRESPONDENCE

NOVA SCOTIA.

Dominion Coal Outputs.

The output for April is approximately 285,000 tons, this being quite a low figure. There were only 24 working days in the month. The drift ice was a great hindrance, the whole island being ice-bound. For a week together no ships were able either to leave port or to enter.

The total outputs for the first four months of the year compare during the past four years as follows:

1908	1,249,535 tons
1909	957,471 tons
1910	899,250 tons
1911	1,164,954 tons

The Coal Company is undertaking an extensive programme of improvements and additions to its plant during the ensuing summer. At Sydney a new shipping pier—to be known as International Pier No. 3—will be erected, and a Baum coal-washer, with the necessary railway extensions and sidings. In anticipation of largely increased coal traffic on the railway additional rolling-stock is being purchased, which will include two locomotives, and 100 fifty-ton pressed steel cars. Several new railway branches will require to be built to the new collieries. In the Lingan-Victoria field a large amount of new construction is projected. No. 12 Colliery is now almost complete, and is producing well over 1,000 tons daily. At No. 14 Colliery the coal is now being put over the permanent bankhead, and the large permanent hoisting engine is in use. An electrically-operated air-compressor is nearing completion and a number of percussive coal-cutters will be operated as soon as the compressors are in working order. This mine will produce up to 800 tons daily this season. At No. 15 Colliery it is intended to complete the permanent bankhead, compressors, boiler-plant and all the plant necessary to make this mine a regular producer for the season of 1912. At No. 16 Colliery the usual colliery buildings, such as wash-house, lamp-house, office, etc., will be erected, and the foundations for the bankhead put in. Contracts have been let for about 150 dwellings for the workmen and officials in this district. It is not unlikely that an electric tram-line will be constructed to connect with the Sydney & Glace Bay Railway. The population of this district is growing very rapidly, and this necessary convenience cannot be long deferred. The site of No. 17 Colliery will be cleared and the slopes driven for preliminary development.

The slopes at Birch Grove, on the narrow coal-basin situated to the rear of Morien, on what were known as the Cumberland

areas, have been developed and are producing about 1,000 tons monthly. The block of coal which it is proposed to work is quite narrow, and the slopes are being driven from crop to crop. The coal is proving to be of excellent quality and shows a good analysis for metallurgical uses. It is expected to connect the slopes with the Sydney & Louisburg Railway this summer, and to install the permanent plant. The motive-power will probably be electricity, transmitted from the central plant at No. 2 Colliery, some 5 miles away.

The Labour Situation.

The leaders of No. 26 District of the U.M.W.A. take themselves very seriously, far more so, indeed, than anyone else. It was a foregone conclusion that none of the coal operators of Nova Scotia would take cognizance of the request—or perhaps demand would be the more correct word to use—made by the Scale Committee of the U.M.W.A. for a joint meeting of the operators and U.M.W. representatives to consider a wage schedule. Nevertheless the committee attended at the place and time appointed, and afterwards gave out a statement to the newspapers that as the Scale Committee had not received the assistance of the operators the responsibility of drafting a satisfactory wage schedule had devolved upon themselves and had been undertaken. The operators will doubtless appreciate at its true value the self-sacrificing labours of this self-appointed committee. The public, if informed that the U.M.W. numbered among its adherents less than one-third of the miners of the province, the other two-thirds being at utter variance with their methods, would also appreciate the humour of the situation. It must be conceded that the U.M.W. leaders in Nova Scotia are thoroughly impressed, or obsessed, by a sense of their own importance. The Scale Committee were very insistent, both in their letter to the operators and in the statement to the newspapers on their desire to promote harmonious relations, peace, and amity all around. It is therefore significant that the submissal of this schedule to a United Mine Worker meeting at Glace Bay was attended by an unfortunate shooting affray in which two men lost their lives. It is rather singular that a propaganda which claims to have for its end the establishment of peace and harmony should have been accompanied by riots, shooting affrays, murder, dynamiting, and other little pleasantries. The leaders of the United Mine Workers of America in Nova Scotia preach with whole-hearted enthusiasm the principles of international Socialism. These principles viewed academically and in the abstract, may be held by the quietest of men, but translated into action by unlearned and untravelled miners, who follow the lead of agitators irresponsible and destructive to the extreme, even abstract principles become dangerous. But when these doctrines are preached by citizens of the United States, who are here to-day and gone to-morrow, who regard with undisguised contempt the laws of Canada and teach that all forms of outward authority are the outcome of capitalistic oppression and bureaucratic greed, the menace is no longer local, but national.

There are not lacking signs of dissatisfaction among the local members of the U.M.W. with the dominance of the Socialists, and it may well be that the doctrine of the social revolution will prove the final undoing of the U.M.W. in this province.

Since the appointment of the Police Commissioner at Springhill, conditions have steadily improved. It is now possible for the men who are at work to visit the town and to move about without molestation. The strikers are returning to work in twos and threes, and it is the general opinion that the strike cannot last very much longer.

Fatal Accidents and Work.

The "Colliery Guardian" recently had a short paragraph stating that an English colliery company and its workmen had entered into an arrangement whereby in the event of a fatal accident in the mine the work should not cease as had hitherto been the custom. The colliery company undertook to contribute £25 and the men devoted a portion of their earnings to the relief of the dependents of the deceased workman, which they could easily afford seeing that their earnings were not reduced by going home after a fatal accident. This seems a very practical solution to a difficulty which is felt at every colliery, benefitting, as it does, the colliery company, their workmen, and the relatives of those who are overtaken by death in the mine, and should commend itself to employers and workmen in Nova Scotia.

ONTARIO.

Cobalt and Other Silver Areas.

A disagreement as to site having led to the abandonment of the establishment of a customs plant at Kerr Lake, the Crown Reserve Mining Company has signed a contract with the Nova Scotia Mining Company to have all its low grade ore treated at its mill. The Nova Scotia mill is a distance of 5,000 feet from the Crown Reserve, and the distance will be bridged by the construction of an aerial tramway to be built by the Nova Scotia. Under the terms of the agreement the Nova Scotia is required to treat the ore and return the bullion to the Crown Reserve for shipment. The contract calls for a hundred tons of ore per day for five years. The Crown Reserve has on the dump alone 35,000 tons that will run between 15 and 20 ounces to the ton.

With the improvement of power conditions the production of the camp has reached a normal level again. The British Canadian has now all the water that it can possibly require and is giving full pressure to all its customers at Cobalt, Kerr Lake, and South Lorrain, and there is very little probability that there will be any serious breakdown this season. The Cobalt Hydraulic was not so fortunate. No sooner had this company a sufficient head of water, when there was another accident at the intake pipe and the power had to be shut off for a time. It has now been turned on and there should be no further interruption of service. That the interruption of power has been a source of great loss and inconvenience to the whole of the Cobalt camp needs no demonstration.

Many silver prospects allowed to lie idle while the air was off are now going to be worked again. This is particularly the case round Peterson Lake, where most of the leases will be worked this summer. There will again this summer be a determined attempt to find ore on some of the silver prospects.

The Nipissing is prospecting with but a small gang this summer, the management having decided to carry out the greater part of the surface work with a turbine pump to wash off the overburden. The gang of prospectors will thoroughly trench that portion of the conglomerate area adjoining the Savage mine on the east side of Cart Lake, where so far no systematic surface work has been carried out. The turbine pump will be stationed on Cobalt Lake and will operate on Nipissing Hill.

At a depth of 450 feet the Carson vein of the Crown Reserve shows two inches of 1,000-ounce ore. The greater part of the output is still from the 100-foot level, where exploration is showing extraordinary enrichment in a very small area.

The Crown Reserve is shipping but a very small proportion of low grade ore and the management states that for the past three months the ore despatched will run 5,000 ounces.

Development work at the Lawson has now been resumed, air being available as required. A raise has now been put up for 60 feet from the 200-foot level of No. 8, and while the ore is by no means as spectacular as in the bottom, it still shows in the roof of the stope. When the main shaft is connected with the 200-foot level of No. 8, No. 8 shaft will be sunk to the 300-foot level and the vein cross-cut. From No. 8 a long cross-cut is being run to catch No. 9 vein at 125 feet. This lead near the Foster line has shown up some unexpectedly good ore during the past quarter and has contributed handsomely to the monthly output of the mine.

In prospecting its claim near North Cobalt the Temiskaming Mining Company has opened up a narrow calcite vein about an inch wide showing flakes of native silver. This, and the fact that some nice ore has been taken out of the 100-foot

level of the Green Meehan, will ensure active development of the many prospects in the Township of Bucke between the townsite of North Cobalt and Lake Temiskaming.

At the beginning of next month Mr. Chas. A. O'Connell will enter upon his duties as manager of the Trethewey Cobalt in place of Mr. George MacNaughton, who has resigned to look after his Porcupine and Nova Scotia interests. During the past two months two new finds have been made on the Trethewey, one at the No. 4 shaft near the T. & H. B. line, and the other at the 60-foot level of the old No. 1 shaft.

The Silver Leaf shaft is now being pumped out preparatory to putting down the shaft to a depth of 450 feet. It is under lease to the Crown Reserve and the work is undertaken by that company.

There is little doubt expressed that the Cobalt Central will come under the hammer when it is offered for sale on May 18.

There are at the present time five men working on the Central property, one to look after the pump and the other four as caretaker of the building and to keep steam up in the boilers. At the bottom level of the mine the vein in one place shows two inches of rich ore in the floor but otherwise the property seems to have been pretty well stoped out.

Owing to power conditions last month the Nipissing was for two weeks compelled to cease underground work entirely and, speaking generally, its operations during April consisted mainly in pulling ore from old stopes.

Porcupine and Other Gold Areas.

While passage over the Porcupine trail has always been possible, this spring it has been arduous and no one who could escape it has made it. Consequently there has been comparatively little intercourse between the Porcupine camp and the outside world; nor will there be until the railroad gets in, about the beginning of June.

There has been much building activity at South Porcupine. The provincial authorities are forcing the burning up and disposal of all rubbish, but the water question still remains unsolved. The wells that are being used should be safeguarded from contamination by a collar of clay or concrete. At South Porcupine there is some talk of getting water from Porcupine River.

With increased interest in the Porcupine camp all over the world, sales of properties for big sums are reported. The claims of the Watson syndicate have been sold to Mr. Frank Armstrong, of New York, for $25,000; the Brydge claims in Deloro have been taken over by an English syndicate and a preliminary payment made on the total purchase price of $200,000; the Martin properties have been sold to New York capitalists, and many other purchases have been made. English syndicates, while unwilling to make substantial first payments, are eager to take over claims at big prices if long options are granted.

Before the ice went out and left the Cripple Creek district isolated, some excellent samples were brought down from this camp 30 miles to the west of Porcupine. Two hundred men remained in there doing their assessment work. All the veins occur in intrusions in the granite, and while there is little visible gold, the assays run surprisingly high from many of the best claims. An engineer of Augustus Heinze has been in the camp and has taken up some properties, and a Scotch company known as the Aberdeen syndicate, has bought some claims and is now working them. The Great Northern and the Josey, Woods syndicate, sent in three months' provisions to their gangs of men before the ice went out.

Several mining men with prospectors in the field are taking interest in the finds reported in the Matachewan district half way between Gowganda and Porcupine. Nothing can be known for some weeks yet, until men can be sent up to make a thorough examination.

The Great Eastern Mining Company, with properties in Deloro, is installing prospecting plant and will at once sink a shaft to a hundred feet.

Underground work has been resumed at the Dome, where the main shaft is now being sunk to the 500-foot level. Good progress is being made with the new power plant and the big mill.

Interest in gold at Porcupine has wakened speculative interest in the yellow metal in other centres. A considerable number of men are waiting with their outfits ready for the first news that they can get into the Keekeek country in Northern Quebec. In the meantime many are going into the Swastika country, where the inevitable townsite is being laid out for the first flight of stakers and settlers. Mr. Frank Armstrong and other big interests have bought claims in here and a considerable amount of work is being undertaken in the neighbourhood of the Swastika mine, from the lower levels of which it is reported some very rich ore is being taken.

From the Jupiter properties near Pearl Lake comes a report that an excellent discovery has been made. All of the specimens brought into camp were chipped, so it was stated, from the surface of the main vein. Captain Anchor, of the Dome Extension, is sampling the property, and when his examination is concluded the owners will know better what they have got. Mr. A. W. McDougall, of Montreal, has acquired control of this company.

In opening up a wood road on a part of the property hitherto unexplored, the Porcupine Imperial exposed a wide lead of quartz in which some free gold was discovered.

The burning of the sawmill at the Cobalt Power Company's plant at the Mattagami River will not set back the opening of the service more than two weeks. It is confidently expected that the Hollinger and adjacent properties will be given the opportunity of getting electric power by the middle of June or before the railroad reaches the gold camp.

BRITISH COLUMBIA.

East Kootenay—The "Prospector," published at Cranbrook, recently printed the following comment on district mineral resources: "We are proud of the progress made in the development of the Cranbrook district, but do we recognize that we have not exploited ten per cent. of the area of the district? Think of the extent of its mineral wealth in the shape of gold, silver, copper, and lead, which has been proved to exist in the few square miles which have been developed, and enquire what there may be in the thousands of miles which have not had a dollar expenditure. . . Think of the magnificent water-powers on fifty rivers and streams and only three—Mark Creek, Bull River, and Wasa Creek—in process of development.

"We see what the development of a small fraction of the coal areas has done for Southeast Kootenay. We know what the operations of the North Star, St. Eugene, and Sullivan have done for the mining interests of the Cranbrook district The actual development of these big silver-lead mines to a shipping stage entitles us to the first position among the mining districts of British Columbia. The whole Dominion can see the result of the opening of the coal areas in the Crow's Nest Pass by the building of the Crow's Nest Railway, but can anyone realize the extent of the prosperity to Cranbrook and the whole of Southeast Kootenay when the Kootenay Central Railway shall be completed and in operation? What shall we do to induce capital to take hold of our yet undeveloped water powers, timber, and mining resources? This is a question which affects us all, for we have the most valuable and largest undeveloped resources of any district in British Columbia."

The Prospector's information may be supplemented by the statement that the aggregate production of the St. Eugene mine alone to date is about 1,000,000 tons of ore, containing approximately 5,300,000 ounces of silver and 225,000,000 lbs. of lead, of a combined value of about $11,000,000. The production of coal from Crow's Nest district coal mines in British Columbia has reached an aggregate of approximately 9,000,000 short tons gross, part of which has been made into

coke, of which latter, between 2,200,000 and 2,300,000 tons has been made. The total value of this fuel—both coal and coke—may be placed at not less than $30,000,000.

Kaslo.—There now appears to be promise of the Kaslo & Slocan Railway from Kaslo to Sandon being again placed in running order. The Nelson Daily News has published an account of a public meeting held in Kaslo on April 21, under the auspices of the local board of trade, at which there was announced a definite plan for repairing and again operating this railway. It is stated that the Great Northern Railway, owning the line, offered the line to citizens of Kaslo for $25,000 if that amount should be forthcoming by April 30. Negotiations were opened with the Provincial Government with the object of obtaining from it financial assistance requisite to allow of the railway being repaired and bridges rebuilt, providing new rolling stock, and for making other necessary improvements. It has been announced that the Government has guaranteed a loan of $200,000 for three years without interest, and this amount, it is estimated, will be sufficient for the purposes indicated.

Slocan.—The Van-Roi Mining Company's new concentrating mill had, by the middle of April, produced about 350 tons of silver-lead and silver-zinc concentrates. The first starting of this mill took place on March 15, after many delays caused by non-delivery of some of the machinery and plant by those who had the contract to supply it. The new equipment, having been adjusted to suit Van-Roi ore, is working effectively, and a long run is confidently expected, there being much ore blocked out in the mine ready for stoping. The management of the Standard mine, which is situated on the opposite side of Four-mile Creek to the Van-Roi, is proceeding with preliminary work in connection with the erection of a concentrating mill, provision of water supply for the mill, and construction of an aerial tramway between mine and mill. Meanwhile good progress is being made with the further development of the big orebodies opened in the mine. The season's work on the Slocan Star group, near Sandon, has been commenced. It is reported the Colonial, a Slocan mine over which there has been much litigation, is to be worked again this year.

Nelson.—The Consolidated Mining and Smelting Company is repairing and remodelling the concentrating mill at its Molly Gibson mine, above Kokanee Creek. Tests of ore from this mine have been made at the company's testing plant established last year at its St. Eugene mine, East Kootenay, with the result that changes in the Molly Gibson mill are being made for the purpose of ensuring the saving of a larger percentage of silver and lead from the second-class ore that has to be concentrated before shipment to the smeltery. More work is to be done on Eagle Creek this season; the Shoestring group has been bonded to Spokane men, who state they intend deepening the two 30-foot prospect shafts and afterwards to drift. Some rich gold ore has been taken out of this prospect, which is situated in the vicinity of the Granite-Poorman gold mines, the latter having been productive for years. The Athabasca is reported to be developing profitably, and yielding gold to an extent that is encouraging those operating it to plan for production on a larger scale. There is a 10-stamp mill and cyanide plant on the property, which in past years was one of the important producers of Nelson district.

Sheep Creek.—Vancouver men have purchased nearly 142,000 shares of treasury stock of the Nugget Gold Mining Company at $1 per share, this sale bringing the total of issued capital up to $500,000. In connection with this transaction, it is stated that the proceeds of sale of these shares are to be used in further developing the Nugget mine, and in the erection and equipment of a 20-stamp mill and providing other plant and machinery requisite for the economical mining and milling of the gold ore, of which there has already been proved to be ample to warrant putting in the mill and considerably extending the development work in the mine. The registration of the Mother Lode Sheep Creek Mining Company has been gazetted; its authorized capital is $1,250,000, and its head office in the city of Portland, Maine, U.S.A. Mr. E. C. Wragge, of Nelson, is attorney for the company in British Columbia. Reports of developments at some of the other Sheep Creek properties, those that have not yet commenced production, are, in several instances, favourable, and the outlook for a busy season in this part of Nelson mining division is considered promising.

Rossland.—A news despatch from Rossland states that the Consolidated Mining & Smelting Company of Canada, Limited, intends to increase the quantity of ore sent from its Centre Star group of mines to its smelting works at Trail to 900 or 950 tons a day. The Le Roi mine is still shipping a comparatively small quantity of ore to Trail. It is stated on good authority that it is making a profit on its limited operations, and that a few more men will be employed from now on. The March report of the Le Roi No. 2 Limited, has been printed. The information given includes the following: "Josie mine—Shipped 2,240 tons of ore and 147 tons of concentrates. Receipts from the smeltery were $34,289, being payment for 2,133 tons of ore and $4,573 for 147 tons of concentrates; in all, $38,862. Estimated costs for corresponding period were: Development work, $8,000; ore production, $11,000; milling, $1,600; total costs, $20,600." Development of the Cliff mine by the Granby Company, under a working bond and option of purchase, is being continued, but it is not yet sufficiently advanced for much to be known of the ore-producing capabilities of the mine.

Boundary.—While the Granby Company still has a considerable quantity of coke in reserve at its smelter at Grand Forks, the work of raising it to the furnace charging bins, into which under ordinary conditions the coke is dumped direct from the cars bringing it from the ovens) is too great to admit of all eight furnaces being operated, so two have been blown out. It is stated that there is sufficient coke on hand to meet the requirements of six blast furnaces until about the middle of June, but if operations shall not be resumed at the collieries a week or two before then, it will not be practicable to keep the smeltery running. The British Columbia Copper Company is supplementing its coke supply on hand by shipments of Pennsylvania coke, notwithstanding the higher cost of this fuel from so distant a source of supply. This company is now working its Lone Star mine, situated immediately across the International Boundary line, and distant nine or ten miles from its smeltery, to which the ore is conveyed, first by a long aerial tramway to near Boundary Falls, and thence to Greenwood by railway. A vein of ore of good grade has been cut in the big tunnel the Greenwood-Phoenix Tramway Company is driving from Boundary Creek into the mountain towards Phoenix. Where cross cut in the tunnel it is 818 feet from the surface.

Portland Canal.—Recent information received at the Portland Canal Mining Company's office is to the effect that in No. 2 adit another shoot of ore of good grade has been entered and the working for 40 feet is in it with ore still in the face of the drift. The ore varies in width from two to six feet. No. 3 adit, which had been in concentrating ore, at last advice seemed to be entering the downward extension of the oreshoot just mentioned as having been opened in No. 2.

At the annual general meeting of shareholders in the Stewart Mining & Development Company, held in Victoria recently, the directors reported as follows: "The tunneling done during the year on the four ledges amounts to about 1,000 feet. On No. 4 ledge, where the most work has been done, an ore shoot of great promise was encountered. Considerable work has been done and a winze sunk to a depth of 50 feet in this ore. The ledge widened with depth. Careful assays taken all the way down, give an average value of $20 per ton in gold, silver, and lead. This is highly satisfactory, but, owing to the presence of water, we decided to postpone work on the winze for the present and continue drifting in the face of the tunnel on this ledge, which is one of the best on our property. At the time of writing we are advised by the foreman at the mine

that the work on this drift continues to expose good ore. . . The most feasible plan for working the property as a mine will be by a tunnel from the Bear River side. This will obviate the necessity of constructing an aerial tramway, and will give approximately 700 feet vertical depth below the present workings, beside permanently draining the mine. The mouth of the tunnel will be only a short distance from the railway, which will be in operation before the end of next June. At a rough estimate, the tunnel will be 1,000 feet in length and, with a spur from the railway to its portal, it will facilitate handling the ore at lowest possible cost.'' It is estimated this adit will cost about $20,000.

The Hidden Creek copper mine, on Observatory Inlet, an arm of Portland Canal, which mine is under option of purchase to the Granby M. S. & P. Company, Limited, is reported to be looking well. According to a printed statement attributed to Mr. Jay P. Graves, general manager of the company, ''the property has developed tonnage much more rapidly than we expected or hoped for, and has revealed ore in the deeper levels of considerably higher grade than was known to exist at the time we bonded it. Everything indicates that it is the best property we are now developing, and it is going to make a most important producer.''

It has been announced that the Glacier Creek Mining Company has made arrangements with Mr. W. J. Elmendorf (with the approval of the Portland Canal Mining Company, of which he is general manager) to direct development work on its claims throughout the ensuing summer. As its property is in the same part of Portland Canal district as that of the Portland Canal Mining Company, the additional work this arrangement will entail is not likely to interfere with Mr. Elmendorf's continued close supervision of operations at the latter company's mine and concentrating mill.

GENERAL MINING NEWS.

NOVA SCOTIA.

Inverness, May 1—W. D. Barclay, general manager for Mackenzie & Mann in Eastern Canada, visited Inverness some days ago. J. McGillivray, the superintendent of Mackenzie & Mann's big interests in Cape Breton, accompanied the general manager on his tour of inspection. So far as can be learned, it appears that Superintendent McGillivray's jurisdiction will soon include the famous ''Chimney Corner'' coal property. The report from a reliable source is that Mackenzie & Mann intend to develop this rich and extensive coal bed.

The threatened difficulty between the U.M.W. and their employers here will not result in a strike. Both parties understand that in future arbitration will be first invoked. Manager H. A. McLeod has the confidence of the men.

The extension of the railway line to St. Rose is an early possibility. It is contingent upon the projected development of the St. Rose coal deposits.

Springhill Mines, April 26.—Some sixteen English miners with their families arrived in town on Monday, having been brought out under contract with the Dominion Coal Company. It appears that they understood they were to work in Glace Bay, and when they arrived here and found a strike on they sent a committee to interview the officers of the local union of the U.M.W. They did not show up for work on Tuesday, but to-day nearly all began work, the remainder leaving for Montreal, where they will probably go to the West for employment.

Last evening some nineteen Spaniards arrived to work in the mines here. They were also brought out by the Dominion Coal Company and are the first of their nationality to arrive in town. It is claimed that they are good miners and present a fine type of manhood.

To-night twelve more English miners arrived and will add to the list of employees of the colliery. They are experienced miners and will add materially to the working of the mines.

Halifax.—Anticipating the construction of the new Canadian navy, the Nova Scotia Steel & Coal Company is about to install machinery and adopt a scale of manufacturing far in advance of anything yet attempted in Canada, which will enable the company to manufacture all classes and kinds of heaviest steel forgings. A new forge house, equipped with massive hydraulic forging presses, is to be built at New Glasgow. This plant will be able to handle work of a much larger dimension than ever before attempted in Canada, and in size, equipment and capacity will rival the best similar establishments in Great Britain or Germany.

ONTARIO.

Toronto.—Silver Queen shareholders at their annual meeting voted to increase the capital from $1,500,000 to $2,000,000. The company's assets were shown to be $51,074, and their total liabilities $3,593.

The statement showed a nominal loss on operations to date of $27,518.74. Messrs. E. P. Smith, J. H. Stephens, H. Yeomans, Thomas Shortiss and N. D. MacLean, all of Toronto, were appointed directors for the ensuing year. The first two named were on last year's board.

Cobalt, May 5.—The power situation is gradually improving. Yesterday two carloads of machinery arrived at Gillies depot for the Cobalt hydraulic plant. It will be floated down with expedition. For the present, temporary head pieces over the intake pipes are working and since Sunday morning a pressure sufficient to work drills has been maintained. It is hoped to get the permanent machinery in next week. With two power plants furnishing air again many silver prospects are getting ready to start development again. On Peterson Lake, Cross Lake and Giroux Lake, companies that were obliged to shut down when the air went off are preparing to resume operations. The Cobalt Gem, a Philadelphia flotation, will diamond drill from the bottom of their shaft when air is available.

Cobalt, May 3.—A contract has just been let whereby the Nova Scotia Mining Company agrees to treat at its mill 100 tons per day for five years, of ore from the Crown Reserve mine.

South Porcupine, Ont., May 6.—Favourable weather has done much in clearing the trail into camp. The usual spring weather is a rainy season following the long winter, causing everything to be covered with slush and mud. This year bright sunshine, almost summer weather, followed the breaking away of winter, and the snow went off with a rush.

BRITISH COLUMBIA.

Phoenix, B.C., May 5.—Negotiations are now under way for the bonding of the McKinley group of claims in Franklin camp to the British Columbia Copper Company.

The property is owned by the McKinley Mines Company, Limited, and a meeting of shareholders will require to be held before the deal is put through.

The ultimate consideration for the McKinley group is $100,000, with an initial payment of $1,000 on the signing of the bond. The option will extend over a period of 12 months, during which time the company will carry on vigorous development work and prove up on the property. Although provision is made for an extension in the time of the bond the company intends to have it sufficiently developed within the year to warrant full payment.

Nelson.—The various contracts in connection with the mill of the Mother Lode mine on Sheep Creek have been let, the machinery will shortly commence to arrive and work will start

immediately. These facts were admitted last night, May 2nd, by William Watson, general manager and consulting engineer of the Mother Lode Sheep Creek Mining Company, who has just returned from New York.

YUKON.

Dawson, Y.T., May 3.—The spring clean-up in the Klondike district has begun. Water is running everywhere and hydraulic plants are getting into action. All the large dredges have started and individual miners are washing out their filter dumps. It is believed that the gold output this year will be the largest in years, early estimates placing the yield in excess of $5,000,000.

COMPANY NOTES

Bell's Asbestos.

The directors of Bell's United Asbestos Company recommend the payment of a balance dividend of 1s. 6d. per share, making 12½ per cent. for the year. The amount to be carried forward is £16,122.

Northern Ontario Exploration Company.

The report of the statutory meeting of shareholders of the Northern Ontario Exploration Company, held in London on April 24th, has just been received. The Earl of Erroll presided, and in his address gave some interesting information. The company was formed in January, 1911, with a capital of £400,000. Of this, 100,000 shares, or £100,000, have been issued and freely called up. The company was formed to acquire properties and mining claims, and to carry on generally the business of an exploration and finance company, primarily in the Porcupine district of Northern Ontario.

Mr. C. A. Moreing and Mr. David Richards came to Canada and entered into negotiations with Messrs. Timmins, who owned a group of fifty mining claims, which claims are believed to occupy some of the most favourable positions on the Porcupine field. As a result of these negotiations a one-half share in the whole of the fifty claims was acquired by the company.

There is a group of four claims at the end of Gillies Lake, which is in a direct continuation of the Hollinger line of reefs, and on the south claim a big vein has been located showing gold. The claims known as the Miller claims are on the direct line of veins of the Rea Mines, Limited. Veins showing gold have been discovered on this property.

At the extreme north there is a group of five claims, on one of which a large vein showing gold has been discovered. There are three claims situated on the line of reef of the Dome extension. There is also a block of fourteen claims situated at what is known as the "Reserve." It is stated several very large veins have been located on this group. All the fifty claims have been selected because they have showings of gold and veins of some sort or other on them. These fifty claims thus jointly owned by Messrs. Timmins and this company have recently been acquired by the Ontario Porcupine Goldfields Development Company, Limited. This company has been formed with a capital of £600,000, in 600,000 shares of £1 each. Mr. Moreing and Mr. Richards, while in Canada, were also successful in acquiring, on behalf of the company, 50,000 shares in the Hollinger Gold Mines, Limited, owning the well known group of Hollinger claims.

STATISTICS AND RETURNS

DOMINION STEEL IN APRIL.

April was a good month at the Dominion Steel Works, although no records were broken. The output follows:

	Tons.
Coke	36,142
Pig	21,580
Ingots	24,875
Rails	11,570
Rods	8,390

The shipments totalled only 17,825 tons, but over 7,000 tons of rails are stocked awaiting the arrival of a steamer.

In the by-product department, there was a record output of sulphate ammonia, 380 tons being turned out.

The coal output for the four months ending the last of April totalled 1,165,000 tons, being an increase of 250,000 tons over the same period last year.

DOMINION AND N. S. COAL COMPANIES.

For the first three months the Dominion Coal Company's shipments showed a substantial increase, as follows:

Three months 1911	602,373
Three months 1910	510,082
Increase three months 1911	92,291

The coal shipments of the Nova Scotia Steel & Coal Company for the same period were under last year. The figures follow:

Three months 1911	83,455
Three months 1910	103,565
Decrease three months 1911	20,110

BULLION SHIPMENT.

The Crown Reserve sent out 23,128 ounces of silver in 25 bars to London, England, on Tuesday, May 2nd. The shipment was valued at nearly $12,000. To date, this year, nearly half a million of bullion has left the camp, the bulk of it going across the water.

COBALT ORE SHIPMENTS.

The shipments for the week ended April 28th were:

La Rose, 3 high, 1 low	272,200
McKinley-Darragh, 3 high	186,320
O'Brien, 1 high	64,060
Chambers-Ferland, 1 low	64,000
Cobalt Lake, 2 low	124,620
Trethewey, 1 high	63,100
Nipissing, 1 low	61,800
Buffalo, 1 high	61,450
Provincial, 1 high	40,510
Total	938,060

Pounds.

GRANBY.

During the first quarter of the current year, Granby produced 5,380,159 pounds of copper, 107,311 ounces of silver and 13,551 ounces of gold. There was produced during March 1,988,341 pounds of copper—the largest output for many months —40,400 ounces of silver, and 4,912 ounces of gold.

SILVER IN APRIL.

Average prices of bar silver in London during April were one-eighth of a penny better than during March. There has

been little change in average monthly quotations this year. The highest was 24⅞ in January, followed by 23¾d. in February, to 24 15/16 in March and a slight recovery to 24 7/16d. for April. A year ago the April average was 24½d., against 23¾d. in 1909, 25⅛d. in 1908, and 30¼d. in 1907.

BRITISH COLUMBIA ORE SHIPMENTS.

The following are the returns of the ore production and movement for the past week, ended April 28, and for the year to date:

Boundary Shipments.

Granby	22,261	386,624
Mother Lode	6,090	107,803
Rawhide	4,412	57,833
Athlestan	254	406
Wellington	1,017	1,017
Other mines		40,041
Total	34,034	593,924

Rossland Shipments.

Centre Star	4,450	64,673
Le Roi No. 2	520	8,728
Le Roi No. 2, milled	300	5,100
Le Roi	280	4,340
I. X. L.	15	36
Other mines		271
Total	5,565	83,148

Slocan-Kootenay Shipments.

Sullivan	766	11,865
St. Eugene, milled	2,775	47,175
Richmond-Eureka	60	880
Hope	29	298
Queen, milled	420	6,930
Granite-Poorman, milled	250	4,250
Nugget, milled	110	1,870
Wilcox, milled	75	1,275
Beatrice	68	319
Yankee Girl	71	1,383
Knob Hill	42	655
Van Roi	33	33
Ethel	5	5
Other mines		3,872
Total	4,728	80,843

The total shipments for the week, including the estimated milling, were 44,327 tons, and for the year to date, 757,915 tons.

B. C. COPPER COMPANY'S RECEIPTS.

Greenwood, B.C.

Mother Lode	6,090	107,803
Rawhide	4,412	57,833
Athlestan	254	406
Wellington	1,017	1,017
Insurgent	166	166
Other mines		10,304
Total	11,939	177,529

GRANBY SMELTER RECEIPTS.

Grand Forks, B.C.

Granby	22,261	386,624

CONSOLIDATED COMPANY'S RECEIPTS.

Trail, B.C.

Centre Star	4,450	64,673
Sullivan	766	11,865
Le Roi No. 2	520	8,728
Le Roi	280	4,340
Richmond-Eureka	60	880
St. Eugene	136	2,278
I. X. L.	15	36
Hope	29	298
Beatrice	68	319
Yankee Girl	71	1,383
Knob Hill	42	655
Van Roi	33	33
Ethel	5	5
Hayward & Simpson	33	33
Other mines		35,258
Total	6,508	131,784

The total receipts at the smelters for the week, including concentrates, were 40,708 tons, and for the year to date, 693,940 tons.

COBALT ORE SHIPMENTS.

Following are the shipments from the Cobalt camp for the week ending May 5th, and those from Jan. 1st, 1911, to date:

	May 5. Ore in lbs.	Since Jan. 1. Ore in lbs.
Badger		55,200
Bailey		40,000
Barber		6,000
Beaver		595,243
Buffalo	57,520	1,006,980
Chambers-Ferland		448,900
City of Cobalt	65,500	427,780
Cobalt Lake	124,340	1,687,850
Cobalt Townsite		351,840
Colonial		42,000
Coniagas	116,120	1,526,180
Crown Reserve	168,830	946,960
Hargraves		41,100
Hudson Bay	60,170	246,120
Kerr Lake		1,081,898
King Edward		40,000
La Rose	210,790	2,154,620
McKinley-Darragh	70,310	2,080,080
Nipissing	74,900	2,183,290
O'Brien	78,000	543,770
Peterson Lake (Little Nip)		58,430
Provincial		40,510
Right-of-Way		318,260
Silver Cliff		106,680
Standard Cobalt		44,813
Temiskaming	83,130	651,832
Trethewey	139,500	528,630
Wettlaufer		117,232

The shipments for the week were 1,249,110 pounds, or 624 tons.

The shipments from Jan. 1 to May 5 were 17,372,198 pounds, or 8,686 tons.

In 1910 the shipments amounted to 34,420 tons.

SHARE MARKET.

(Courtesy of Warren, Gzowski & Co.)

Miscellaneous.

	May 9th, 1911. Bid.	Ask.
Dominion Steel Corporation	.55¼	...
Nova Scotia Steel	...	...
Crow's Nest Pass	...	...
Granby	.33½	...
Consolidated Mining & Smelting	.40	.45
Amalgamated Asbestos	...	...
Black Lake Asbestos	...	.16

Porcupine Stocks.

Foley	1.50	1.52
Detroit New Ontario	.50½	.51
Rea	6.60	6.68
Apex	.19	.21
Porc. Canada	1.10	1.20
Porc. Central	.73	.80
Dobie	3.55	3.75
Dome Extension	.54½	.55
Hollinger	12.65	12.90
Monita	.25 sellers	
Preston	.38½	.39½
Pearl Lake	.53	.57
Tisdale	.14	.14½
Swastika	.53	.54
United Porcupine	.06	.08
Porcupine Gold	.60¾	.61⅜
Standard	.24	.26
West Dome	2.50	2.55
Coronation	.37½	.40

Cobalt Stocks.

Bailey	.05¾	.06
Beaver Consolidated	.37½	.37¾
Buffalo	2.20	2.25
Chambers-Ferland	.13	.14
City of Cobalt	.19	.20
Cobalt Central	.05	.07
Cobalt Lake	.23	.24
Coniagas	7.50	8.00
Crown Reserve	3.50	3.60
Foster	.05	.06
Gifford	.05	.05¾
Great Northern	.20½	.21
Green Meehan	.03¾	.03⅞
Hargraves	.19	.20
Hudson Bay	93.	105.
La Rose	4.60	4.70
Little Nipissing	.04½	.05
McKinley	1.70	1.71
Nancy Helen	.02	.03½
Nipissing	10.60	10.70
Nova Scotia	.15	.18
Ophir	.14	.18
Otisse	.01½	.02
Peterson Lake	.12½	.13¼
Right of Way	.13½	.15
Rochester	.06¼	.06⅝
Silver Leaf	.04½	.05
Silver Queen	.05	.07
Temiskaming	.70¾	.71¾
Trethewey	1.07	1.12
Wettlaufer	.95	1.00

New York Curb.

Brit. Col. Copper	4	4½
Butte Coalition	17	18
Davis-Daly Copper	1⅜	1 7/16
Ely Consolidated	⅜	½
Giroux Mining	6	6⅛
Goldfield Consolidated	6⅛	6¼
Greene-Canadian	6	6⅛
Harcuvar Copper	..	..
Inspiration Copper	7⅜	7½
Miami Copper	20	20¼
New Baltic Copper	6	6½
Nevada Con. Copper	18⅝	18⅞
Ohio Copper	1 9/16	1 11/16
Rawhide Coalition	.5½	.6
Ray Central	1⅝	1 11/16
Ray Consolidated	17¼	18
Union Mines	¼	5/16
Yukon Gold	3⅞	3 15/16

Silver Prices.

		New York. cents.	London. pence.
April	22	53⅞	24 13/16
"	24	54⅛	24 15/16
"	25	54⅛	24 15/16
"	26	53⅞	24 13/16
"	27	54	24⅞
"	28	54⅝	24 11/16
"	29	53¼	24 9/16
May	1	53⅜	24 9/16
"	2	53½	24⅝
"	3	53¼	24 9/16
"	4	53	24 7/16
"	5	53¼	24 9/16
"	6	53¼	24 9/16
"	8	53¼	24 9/16

GENERAL MARKETS.

Coal, anthracite, $5.50 to $6.75.
Coal, bituminous, $3.50 to $4.50 for 1¼-inch lump.

Coke.

May 8.—Connellsville Coke.
Foundry coke, prompt, $1.90 to $2 per ton.
Furnace coke, prompt, $1.50 to $1.60 per ton.
May 8.—Tin, Straits, 42.20 cents.
Copper, prime lake, 12.30 cents.
Electrolytic copper, 12.10 cents.
Copper wire, 13.75 cents.
Lead, 4.47½ cents.
Spelter, 5.55 cents.
Sheet zinc, (f.o.b. smelter), 7.25 cents.
Antimony, Cookson's, 9.45 cents.
Aluminium, 21.00 to 21.50 cents.
Nickel, 40.00 to 45.00 cents.
Platinum, ordinary, $41.50 per ounce.
Platinum, hard, $43.50 per ounce.
Bismuth, $2 to $2.10 per lb.
Quicksilver, $46.50 per 75-lb. flask.