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MINING RECORD

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E. JACOBS.....Manager and Editor

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NOTES AND COMMENTS.

Smelting operations were resumed in the latter part of March at the Tye Copper Company's smelter at Ladysmith, Vancouver Island.

It is reported that a body of rich carbonate ore has recently been discovered in the North Star mine, at Kimberley, East Kootenay.

The prospects are that a great number of miners and labourers will be working around Granite Creek and Otter Flat this summer, states the Similkameen Star.

The Nootka Marble Company has engaged an expert from Vermont, to take charge of work at its marble quarry at Nootka, west coast of Vancouver Island.

A recent despatch from Rossland stated that the Consolidated Company's War Eagle mine in one week shipped 850 tons of ore having an average gross value of \$42 per ton.

An article on "Electro-cyanide Processes," by Douglas Lay, mining engineer, of Silverton, Sloean District of British Columbia, appears in the *Engineering and Mining Journal*, of New York, for April 11, instant.

A report has been received at Greenwood to the effect that the Providence Mining Company has raised \$50,000 and will shortly proceed with the deepening to the 1,000-ft. level of the shaft at its mine at Greenwood.

On March 28 the Grand Forks Gazette said: The ore shipments from the Granby mines for the past week amounted to 27,288 tons. This is another record. The quantity treated at the smelter amounted to 23,595 tons. The shipments for the year total 246,796 tons, and the treatment 239,586 tons.

The Canada Zinc Company is erecting a transmission line to supply its works at Nelson with elec-

tricity for power and ore-reduction purposes. It is expected zinc and lead smelting on a commercial scale will be inaugurated at these works within three months from the present time.

In its Mining Market comments the London *Mining Journal* said on March 14: "Le Rois have not moved, though a cable announces the striking of an important body of ore at the lowest (1,650-ft.) level of the mine. The orebody is reported to vary from 10 to 16 ft. in width, and the grade from \$5 to \$79 per ton, values mostly gold.

We have to acknowledge with thanks the courtesy of the *Engineering and Mining Journal*, of New York, in permitting us to reprint from its columns the article, by Mr. Walter Harvey Weed, entitled "Notes on the Tyee Copper Mine," appearing on pp. 135-7 of this issue, and in supplying us with three of the electros used to illustrate it.

In the suit of the Hawkeye Investment Co. vs. the Voigts and J. W. Cook, Chief Justice Hunter has given judgment in favour of the plaintiffs on their claim for the amount sued on, \$9,000 in two promissory notes, with 10 per cent. interest, according to the agreement, but the claim for foreclosure of certain mineral claims in the Similkameen was dismissed.

The *Phoenix Pioneer* states that: The Granby mines at Phoenix shipped in March 110,223 tons of ore, just 23,512 tons more than in any single month last year. So large a shipment has never been made before in any single month. Last year the Granby shipped only 613,567 tons while in three months this year, it has made 264,581 tons or nearly one-half of last year's total.

The liquidator of The James Cooper Manufacturing Company, Limited, formerly a well-known manufacturer of mining machinery, has announced the intention to pay, after April 15, a third and final dividend, at the rate of four per cent. This will make a total of 41½ cents on the dollar realized for the creditors. The total amount of the ordinary claims was \$243,403.45.

The facetious editor of the *Greenwood Ledger* says: John Houston has given fair notice to the Grand Trunk Pacific not to monkey with his mineral claim in the town of Prince Rupert. That claim is liable to become the most notorious one on the continent. John has already allowed thirty of his friends to squat on it rent free. The surface of the claim already assays high in tin cans, bottles, egg-shells and the tail ends of halibut.

The Daly Reduction Company and Yale Mining Company are reported to have instituted legal proceedings against M. K. Rodgers, formerly their gen-

eral manager at Hedley, Similkameen, to compel him to convey certain mineral claims held for the latter company in his name. Mr. Rodgers makes a counter-claim for a large stock interest in the Yale Mining Company.

The mines of Rossland are steadily improving, says the *Miner*, and conditions on the "hill" were never better than they are at present, owing to the favourable manner in which the lower levels of the leading mines are developing. The ore is of a much better grade than was found on the middle levels. The recent discoveries in the south belt promise to make that section a large producer of ore in the future. The payroll here is larger than in any town in Canada of similar population.

The note published last month in the *MINING RECORD* concerning the Guggenheim Exploration Company's investment in its Yukon enterprises was incomplete. Information has since been received to the following effect: The report of the company for the year ended December 31, 1907, shows assets of a total value of \$39,897,762. Included in this total is the item Yukon Gold Company, \$8,222,106. Pacific Gold Dredging Company, Atlin Consolidated Mining Company, Yukon Consolidated Gold Fields Company, Bullion Hydraulic Mining Company, and Cariboo Gold Mining Company, shown in the last annual statement, have all been merged into the Yukon Gold Company.

A movement having for its object the organization in New York of a mining society to be strictly professional, imposing substantial qualifications for membership, similar to those of the American Society of Civil Engineers and the Institution of Mining and Metallurgy, is not meeting with the approval of all distinguished members of the profession, a number of whom have declined to join such a society unless quite satisfied that it will not interfere with the continued expansion and success of the American Institute of Mining Engineers which, though not so restrictive as to qualifications for membership, has for years done much very useful work over the wide area its operations have spread.

The *Phoenix Pioneer* asks: "Why is it that writers in describing the mineral resources of British Columbia, are so inaccurate? Nine out of ten of them, unless trained newspaper men, get any old figures that occur to them in their stories—and apparently make no effort to verify from anyone in authority. The straight, plain, unvarnished truth, if properly handled, makes a good story any time." Our experience is that very few even of the "trained newspaper men" know much about the figures of the mining industry of British Columbia, else if they did they would not print so much unreliable news relating to mining, or rather what purports to be mining news, but isn't.

The Belleville correspondent of the *Toronto Globe* on 3rd inst. informed the public through that journal that: "The smelter at Deloro, which has been running steadily on Cobalt silver ores, made on Thursday last a big shipment to London, England, of silver bullion, which weighed two and one-quarter long tons, and was valued at between \$25,000 and \$30,000. The bricks weighed sixty pounds each, and were shipped by express." Last month the *MINING RECORD* had the pleasure of chronicling the fact that a shipment of nearly five tons of silver, consigned to China, had been made by the Consolidated Mining and Smelting Company of Canada from its works at Trail, British Columbia, and that the value was about \$80,000. Further, that it is usual to make from Trail, about fortnightly, a shipment of from 70,000 to 80,000 oz. of silver.

In New Zealand last month, in connection with the strike of the Blackball Company's miners, the government labour department having failed in its efforts at mediation, the government inspector of factories took proceedings in the arbitration court against the miners' union for creating a strike, and the court imposed a fine of £75 (\$375). Counter-charges of the union against the company were dismissed. The union afterwards decided not to pay the fine, thereupon the government issued instructions that if the union does not pay, the men are to be proceeded against individually, each man being liable to a fine of £10. Meanwhile the strike has been ended, a compromise having been arranged independently of the arbitration court.

From special correspondence from Ontario, published by the *Mining and Scientific Press*, of San Francisco, California, the following news item has been taken: "Even the low grade ore in the Cobalt camp is now being shipped at a profit. The Nancy Helen has just shipped 40 tons of low-grade ore across the continent to the Consolidated Mining and Smelting Company's smelter at Trail, British Columbia." Cobalt correspondence in the *Toronto Globe*, shows that during the month ending March 28 there were included in the ore shipments from Cobalt the following to the Trail smelter: Nancy Helen, one car containing 80,420 lb.; City of Cobalt, two cars containing 127,970 lb. This was, though, but a very small proportion of the total of the shipments during the period mentioned, which was 54 cars containing 2,904,510 lb.

The following information for publication has been sent to a number of newspaper and mining journals from Spokane, Washington, in which city is the head office of the Sullivan company: "Reports from Cranbrook, British Columbia, that the Sullivan smelter and mines are to resume operations immediately, are not confirmed by former United States Senator George Turner, of Spokane, director of the company and now trustee for the bondholders, who says:

'There is nothing certain about starting up. We have been considering re-opening the smelter for a short time, but the mines will not be re-opened. If we decide to start the smelter it will be merely to dispose of about 2,000 tons of ore now stored there in order to clean up entirely before closing for an indefinite time. We can not profitably operate at the present price of lead, so after the supply of ores now on hand shall be disposed of we will close down.'

On March 28 the *Engineering and Mining Journal*, of New York, said editorially: "It is cheerful to hear the mine managers at Butte talking about producing copper at 10 to 11c per lb. According to the Anaconda report for 1905, its cost in that year fell between those figures, and there is no good reason why it should not be repeated. The high cost in 1906 and 1907 was due largely to a falling off in the efficiency of labour, which of course was well known not only to the Butte managers, but also to every mining engineer who inspected the mines. This drawback appears now to have been corrected." The *MINING RECORD* in its January issue stated that at Greenwood, in the Boundary District, "from reliable sources it was learned that local labour conditions became intolerable," and expressed the opinion that one of the local copper companies would resume operations "were it assured of a 'square deal' at the hands of the local labour unions." It is to be hoped that when work shall be resumed at mines and smelters now idle, a similar experience to that of Butte will be recorded at Greenwood.

The following statement concerning the recent reported finding on the 1,650-ft. level of the Le Roi mine, Rosslund, of ore carrying high values, has been attributed to the managing director, A. J. McMillan, by the *Rosslund Miner*: "Several large shipments of ore of good values have been made from the 1,650-ft. level. The values are somewhat erratic, sometimes very high, sometimes low, but the ore is very desirable for smelting purposes. From a public point of view the chief interest lies in the fact that ore of good grade has been found in the big Rosslund mines at depth. So far as the Le Roi is concerned, we have shipped ore from every level in the mine, sometimes from one vein, sometimes from another; though on certain of the lower levels the quantities have been small compared with shipments from the big stopes in the upper levels, they have demonstrated nevertheless that the ore continues downward. Further development can alone prove what the lowest levels will yield, but the outlook is encouraging." Replying to inquiries as to whether Mr. Carlyle had made a report for publication, and if so when it would be issued, Mr. McMillan said that Mr. Carlyle did not come to Rosslund for the purpose of making a public report. As consulting engineer of the company he came here for conference with the officials and to advise, particularly in regard to development work in the mine. Asked if

he could say anything regarding Mr. Carlyle's views, Mr. McMillan said that Mr. Carlyle had expressed himself as well pleased with the outlook for the future of the Le Roi, and of Rossland generally.

Mr. J. J. Campbell, of Nelson, manager of the Hall Mining and Smelting Company, Limited, has written to the editor of the *MIXING RECORD* intimating that "it has not been necessary for the company to go into liquidation as was stated had been done in your journal." We find that we published in January the following paragraph: "The business and property of the Hall Mining and Smelting Company, Limited, are in the hands of a receiver. It is probable the company's Silver King mine will shortly be operated by M. S. Davys and associates, under an arrangement with those now in charge of affairs." We also published, in the same issue, a statement of the actual position, as we understood it from a letter received by the *MIXING RECORD* as a small creditor of the Hall Company, and this with the object of showing the desirability of "giving the company ample time in which to raise money to discharge its pressing liabilities." So far as we have been able to find we did not, though, state that the company had gone into liquidation. As we now understand the position, the representative of the debenture trustees took possession of the "property" of the company but not of its "business." We note that in the report of the directors of the company, reprinted from an exchange on page 150-1 of this issue, it is stated that "the only alternative has been for the trustees to act and take possession of the properties. Subject to the approval of the debenture trustees, negotiations are pending to lease the mine and smelter, with the option of purchase, on terms that it is hoped may conserve the shareholders' interest in the property." If the foregoing does not meet Mr. Campbell's views of what he informs us he thinks "desirable and right" in the matter we will be pleased to print any further reasonable explanation that shall be supplied to us.

Because the *MIXING RECORD* challenged the accuracy of a statement of the Rossland *Miner* to the effect that the largest copper furnace in the Dominion has lately been completed at the Consolidated Mining and Smelting Company's smelter at Trail, and, as well, poked fun at the *Miner's* repeated announcements regarding an intended stamp mill for the Inland Empire mineral claim, that newspaper on April 15 occupied about a column of its limited reading-matter space to what purported to be replies, in which it charged that the *MIXING RECORD* occasionally goes out of its way to slur the mines of Rossland and its vicinity, and "has it in" for Rossland camp; further, that the editor of the *MIXING RECORD* is "foolish and ignorant," "saturnine and dyspeptic." The *Miner* was received too late to admit of its comments being replied to this month, other than to assert (1) that the charge that the *MIXING*

RECORD "has it in" for Rossland camp is untrue, its widely conceded reputation for fairness as well as general accuracy embracing its attitude towards Rossland as well as all other mining camps in the West; and (2) to admit, if the statement now made by the *Miner* as to the relative measurements of the larger furnaces at Trail and Boundary Falls, respectively, is correct, that those at Trail are, as regards dimensions, certainly larger than that at Boundary Falls. The *Miner's* assertion that because two furnaces at Trail are 13½ per cent. longer than the largest at Boundary Falls their capacity when running on similar ore is 13½ per cent. greater involves, though, a question for metallurgists to determine from actual trial, and is not one to be debated by non-technical journalists, whether "foolish and ignorant" as the editor of the *MIXING RECORD* is alleged to be, or as wise and learned (and probably specially coached for this occasion) as the editor of the *Miner* would make it appear that he is.

The information relative to the copper deposit at Mount Sicker, Vancouver Island, given by Mr. Walter Harvey Weed in his "Notes on the Tyece Copper Mine," printed on pp. 135-8 of this number of the *MIXING RECORD*, is of unusual interest to mining engineers. As supplementary to Mr. Weed's notes it may be stated that later operations carried on in the Richard III mine, adjoining the Tyece on its eastern side, have shown that the fault referred to by Mr. Weed completely cuts through the orebody and accompanying graphitic schists. Traces of the ore and graphitic schists were found in the selvage of the fault for some distance beyond the actual point of cut-off, but up to the present time no semblance of the continuation of the orebody or graphitic schists has been discovered on the other side of the fault. Further notes giving the output of ore made from the Tyece, Richard III and Lenora mines since that recorded by Mr. Weed, and showing the total quantity of ore obtained from this unique orebody to date, would be of much interest, and it is hoped these particulars will yet be published. At present no work is being done on any of the properties in which this deposit of copper ore occurred. It may be added that to Mr. J. W. Bryant, the Tyece Copper Company's mine superintendent, should be given credit for having determined, to use Mr. Weed's words, "the relation of the orebody to the synclinal or canoe-shaped fold of the inclosing rocks, and the post-mineral fault which cuts it." Mr. Bryant had not been long in charge of the property before he formed opinions concerning the Tyece ore deposit not in agreement with those which had previously determined the nature of development work undertaken in search of other ore shoots and which, unfortunately had been and continued to be practically unsuccessful. His theory having been proved correct, so far as followed out, work at the deeper levels was discontinued.

THE EDWARD MEDAL.

Presentation by the King.

BRAVERY OF MINERS is, under conditions stated in last month's *MINING RECORD*, when brought to the attention of the proper authorities, to have special recognition by the award of the Edward Medal. Particulars of the first presentation of the Medal were published in the *London Mining Journal* of February 29, as under:

His Majesty presented the new Edward Medal on Thursday, at Buckingham Palace, to two miners who had distinguished themselves by gallant conduct in saving life in mines. The recipients were Frank Chandler and Frank Everson.

Chandler, an elderly deputy at the Hoyland Silkstone collieries, Barnsley, after a fall of tons of earth, crept to where a comrade was lying, and, although badly scalded and in terrible pain, crawled with him on his back to safety. Afterwards Chandler crawled back again to the very centre of the danger zone to help his son Leonard and others, who were imprisoned by fallen rock and earth, and, finally making his way to the shaft, summoned the rescue party.

The other man, Everson, was a mechanic at the Penallta collieries, Wales. The accident in which he distinguished himself was caused by the fall of a water barrel, which upset some staging and precipitated two men into the shaft. The barrel was wedged into the pit, cutting off all chance of reaching the men by machinery, but Everson climbed down a 4-in. pipe to a depth of 340 ft. and saved one man, Barrett, who was clinging to a small signal wire.

His Majesty received the miners in the room in which he usually holds his Councils. He was attended by the Home Secretary, the Master and Deputy-Master of the Household, and the Lord Groom and Equerry-in-Waiting. The King received the two miners very cordially.

Mr. Gladstone read out the record of their respective deeds, and His Majesty then handed to each the Edward Medal, remarking:

"I am glad to receive two such brave men, and have great pleasure in handing to you each a medal in recognition of your gallant acts."

King Edward then shook hands with the miners, and before bidding them farewell displayed special interest in the Barnsley man, who belongs to a family of East Lynn, near Sandringham.

The *Ashcroft Journal* notes that: "R. J. Kirkwood has returned to the Fraser River to continue testing the gravels where he left off last year. He has still considerable of this to do before any decision will be reached as to the real gold values in these gravels. No mining will be attempted until the ground is thoroughly tested. The gold dredge at Lillooet has commenced work again and we understand it is the intention of the owners to shortly build a larger and more powerful machine."

AMENDMENTS TO YUKON PLACER ACT.

PROPOSED CHANGES in the act governing placer mining in Yukon Territory are indicated in the following press despatch dated Ottawa, April 7, which has been published in provincial newspapers:

"Some important amendments to the 'Yukon Placer Mining Act' are embodied in the bill which was presented to the House of Commons by Hon. Mr. Oliver yesterday.

"A creek is defined to be a water-course less than 150 ft. wide on the average.

"Caveats filed against a claim shall lapse at the end of the month unless proceedings are taken in court to establish the caveat's title.

"Provision is made for mining on a townsite known to contain gold.

"Boundary lines on claims of creeks or rivers are to be run in the same direction, that is, parallel or at right angles to the base line of the creek or river.

"In the case of two discoverers, claims of greater size than ordinary may be staked.

"Hereafter the full fee for the renewal of a claim is not to be paid for a fractional portion of a year.

"The fee for a five-year claim grant is reduced to \$50, while the annual fee is reduced to \$20."

In regard to the last paragraph, there would appear to be a lack of agreement between its statement concerning the annual fee and that contained in a Dominion advertisement now running in the *Yukon World*, published at Dawson, which states fees to be: "For a grant to a claim, for one year, \$10; for renewal of grant to a claim, \$15." For a grant to a claim for five years the fee, as now advertised, is \$70.

Included in its general summary of industrial and labour conditions in the Dominion during the month of February, the official *Labour Gazette* has the following regarding mining in the West: Conditions about the Alberta collieries were quiet owing to a marked falling off in trade resulting from the mild winter. At the Crow's Nest mines also there was a diminution in production, and the mines at Vancouver Island, British Columbia, were considerably less active than some months ago, additional men having been laid off during February. In the metalliferous mines of British Columbia conditions were more active than in January. Work at the Granby mines and smelter in the Boundary District was gradually increasing, full staffs and nearly all the furnaces being now employed. The Dominion Copper Company and other concerns, however, were still quiet. At Rossland, conditions in the mines were fairly active. A resolution was passed by the legislature of British Columbia favouring the appointment of a commission by the Dominion Government to investigate an alleged coal combine.

GOOD ADVICE ON MINING.

Excerpts from an Address Delivered at Spokane.

PROF. F. A. THOMSON, head of the Department of Mining Engineering at the State College of Washington, in the course of an address delivered last month before a large audience, including a number of prominent mining men, at Spokane, Washington, U.S.A., said:

"It is estimated that 95 per cent. of the mercantile ventures of the country meet with disaster, and that probably 90 per cent. of the mining enterprises result in loss of money. The latter are traceable in the majority of instances to some form of incompetence; frequently to errors in sampling, to reckless expenditure, or to ill-advised development schemes, such as long cross-cut tunnels to get under inadequate surface showings.

* * * * *

"Do not select the best-looking samples and expect the orebody to average up to the assays made. Many persons take a piece of ore and, breaking it in two, send the parts to different assayers, expecting them to check against each other. This is foolishness and gives no necessary indication of the ore values. In taking samples, a pick will break down the softest, and generally the most valuable, portions, thus giving a sample of too high grade; while a hammer will break off the projecting portions, usually the hardest, and, therefore, the most barren, thus giving a sample of too low grade. It is better to use a hammer and moil, cutting a channel across the face or back to be sampled, and breaking it down uniformly. In selecting samples for assays, do not leave it to guesswork, but discriminate, taking average pieces.

"The greatest mistakes made in mining are not in mining in the ground. A three-story bunkhouse and fancy offices, while they show well in photographs to exhibit to stockholders or prospective investors, do not get out ore.

"Cross-cutting, while adaptable to some sections, is not good for all districts. Any man who has followed a stringer and has had difficulty in finding it after every shot, knows that it is almighty foolishness to go some 5,000 ft. away and begin to tunnel in barren country rock.

"Stay with your ore till you know what you have, sinking winzes occasionally, and, if need be, driving short cross-cuts; but do not start development by an expensive cross-cut tunnel.

"Another mistake in calculations is the assumption that the ore increases in value with depth. There is no warrant for taking this as a general assumption upon which to work. Oftener the contrary is the case.

"After you have found a good property, do not erect expensive reduction works at once. Processes adapted to the oxidized ores of the surface may be wholly unfit for the ores of the sulphide zone, while,

if you build for the latter, you will surely be able to get the values from the oxide ores.

"Work out your treatment scheme on a small scale, adapting your plant as you proceed, and while it is small enough to be inexpensive, and after you are sure of your methods, extend it to any desired size.

"Beware of patent processes. The inspired farmer or clothing clerk who happens to think of a process is not the man to whom to give your ores for experiment. Before adopting any process have it examined by competent, experienced engineers. Concentrate your efforts. Do not try merely to get acreage, as was done in portions of the Goldfield district, where many properties had only territory and vicinity. A small fraction has room for large values beneath."

TROUBLE WITH WESTERN FEDERATION MEN ON TEXADA ISLAND.

AT MARBLE BAY, Texada Island, there is again trouble between the management of the Marble Bay mine and members of the Western Federation of Miners. The following statement, published in Vancouver, is fairly in accord with the information given by the manager of the mine when he was in Victoria recently:

Because they have allegedly been intimidated by members of the Western Federation of Miners working on Texada Island, eleven men employed at the Marble Bay mines have served notice on the management that they will have to quit work at the end of the present month. The men affected are all employed at surface work, such as hoisting, blacksmithing, carpentering and machine work.

Ever since the members of the Western Federation employed at the Marble Bay mines laid down their tools some months ago because the pay checks happened to miss the steamer from Vancouver, the mines have been practically on the non-union list. The surface men who have now declared that they will have to stop work are said to have withdrawn from the union, not approving of its methods. The men below ground who went out on strike were all replaced, and the new men are remaining loyal to the company.

Despairing of ever being able to bring the management to time by well-tried methods, it is now alleged that the strikers informed all the surface men that if they did not stop work they would be black-listed in every Federation camp on the continent. This alleged threat is said to have accomplished its end, and the men have given notice. A number of them are married and have had their homes at Van Anda for years.

The company operating the Marble Bay mines is determined to replace the men who are going to leave with others who do not owe allegiance to the Western Federation, and it is stated that mining operations will be carried on without any trouble. More miners are also being secured.

THE BEST ROUTE TO FINDLAY RIVER.

CONCERNING THE BEST ROUTE to Findlay River, different parties appear to have widely differing opinions. The *MINING RECORD* has no opinion, its editor having no personal knowledge and at present no thoroughly dependable informant other than the contributor of an article published in its issue of October, 1899—Mr. J. H. McGregor, P.L.S., of Victoria, who contributed to this journal an account of a trip up the Skeena and beyond he made in that year. Simply with the object of placing at the disposal of any of its readers who desire information relative to routes to the Findlay, the *MINING RECORD* here reprints part of Mr. McGregor's article and reproduces two of the views (see pp. 142 and 144) that were used to illustrate it in 1899. Similarly Mr. Gavin Hamilton's letter to the *Vancouver News-Advertiser* of quite recent date is reprinted. Those interested must, therefore, make further enquiries, so as to satisfy themselves which route it will be best to take should they determine to visit the locality of the reported gold find on the Ingenica.

Mr. McGregor wrote, in part: "There are two main routes to the Omineca—one by way of the Cariboo wagon road from Ashcroft to Quesnelle and then by trail to Stuart Lake and thence north to the diggings; the other by coast steamer to Port Simpson or Port Essington, thence by river steamer to Hazelton, and then by trail around the north end of Babine Lake, and eastward, crossing Tacla Lake by ferry. As to which is the better route opinions differ. Those of us who went in from the coast this year are all for the interior route, while those who travelled the latter are unanimously in favour of the Hazelton trail. It was a bad, backward season for travel. We left Port Simpson in a snowstorm, on April 26, on board the Hudson Bay Company's steamer 'Caledonia,' a handsome and comfortable river boat, with accommodation for about 40 passengers; and after visiting old Metlakahla, Inverness and Port Essington, in the wide tidal mouth of the Skeena, we started up stream on the 28th. We were three weeks on the river.

* * * * *

"From Hazelton run three trails of some importance. One, up the main river to Kispiox and Kispiox, is travelled chiefly by Indians, and last year by Ashcroft pilgrims. A second follows the valley of the Bulkley to its head, and so on to Quesnelle. The third, which we followed, is the route over which the Hudson's Bay Company passes its supplies to Babine, Stuart Lake and interior points. As trails go it is a good one, but at the high-water season there is much mud and several hard streams to cross. Good bridges are needed at Nine-Mile and Twenty-Mile Creeks (from Hazelton), and again at Salmon Creek, nine miles beyond Babine Lake. The spring was very backward this year, and as late as June 25 there was heavy snow wading for our horses on the Babine summit, 3,600 ft. above the Forks. At Ba-

bine we were most kindly entertained by Mr. French, the chief of the Hudson's Bay fort at this point. Here we found vegetables and fruit growing in rich profusion, though the staple industry of the lake is fishing. The salmon catch is so rich that the company is able to ship dried salmon to the coast and compete with the Fraser River for the dog-food trade. The dried fish retail here at 5 cents, making a cheap food for man and beast.

"From Babine we drove our horses through a desolate series of hills, some 40 miles, to Tacla Lake, where a ferry (run by 'Bear Lake Tom') is always ready, weather permitting, to transport horses and packs to the trail on the other side, about one and a half miles. Our desires not lying in that direction we paid off our pack train and hired canoes—cottonwood dug-outs, not to be compared with the coast cedar canoe, but fairly well shaped and decidedly serviceable. Our Indian cook, Jimmy, came with us to captain one canoe, and 12 miles up the lake we hired two more guides, Teegu and Hansen. Hansen was a big, black, heavy stage-villain, with a chronic scowl, whose voice and general appearance reminded one of an angry bear. We called him Adam Zad for short, but before he left us we voted him a diamond of the first water and good stuff all through. Teegu, baptized Daniel, was slighter in build and in moral fibre, of an insinuating manner and a calculating habit of mind; he will probably acquire wealth and many blankets before his end comes, which will not be by drowning. As a canoe man, however, he was perfect, and I have no doubt that when he reaches the Styx he will make himself so useful to Charon that he will obtain a permanent billet on the ferry instead of going to his proper 'illahee.'

"We paddled across the placid lake, passing the ruins of the Buckley House, where one of the old Telegraph parties wintered their stock 30 years ago, and turned into the swollen Driftwood, 100 yd. wide at the mouth, and so wound our way northward, following the loops and curls of the river as it turned and corkscrewed between dense hedges of willow and wild grasses. Our paddling changed from the easy stroke of the lake traveller to a hard and harder struggle with the current. At night we camped, tired and wet, on a pleasant park-like flat, an old Hudson's Bay camping ground, and here we cut and prepared poles 'and bitterly thought of the morrow.' From this time on our voyage up the river was a long series of heart-breaking efforts with pole and paddle, to which we were relentlessly spurred by our pitiless hired men. Up the river lay our course, north and west in a general way, though the winding of the river directed us to every point of of the compass many times a day. Up and up till the current was only less steep than the Falls of Niagara. Then we ran into a little creek with no current and no hard work. The creek turned to a small stream, the stream to a ditch, and the ditch to a portage. Then through ponds covered with water lilies, and more streams and ditches, till we made

the big portage, 300 yd. long, and found ourselves on Bear Lake and once more on water, bound for the sea by way of Hazelton and Essington.

"From Tacla to Bear Lake, by canoe, is about 60 miles—the direct distance is not more than 25 miles. The Driftwood valley is wide and flat and suitable for agriculture, the timber being light and scattered.

"Through this pass lies the trail to the little-known Sestoot and Thutage Lakes, draining into the Omineca and Findlay and a wide expanse of territory, as yet untouched by explorer or prospector.

"A small settlement of Indians at the north end of the lake hunt and trap for 50 miles in all directions, and from Chief Ilywass we gathered the following: This district was once a portion of the territory of the Siceanics, who hunted it for many generations, until in the course of time some of the more thoughtless members of the tribe wandered westward, and coming upon a few Kiskagass hunters slew them with deadly slaughter. The surviving men of Kiskagass were very 'sulix' and prepared for war in big style. The Siceanics, repenting of their hasty action, proposed arbitration, which being acceded to resulted in a protocol, afterwards confirmed by a treaty conveying Bear Lake and its watersheds to the descendants of the slain and injured Kiskagass. Of which descendants the greatest was Ilywass, who was pleased to throw open his land to the 'Chicamon stone' hunters, on condition that we meddled not with beaver, moose or marten—and a small 'cultus potlach' of tobacco would greatly oblige."

Mr. Hamilton's letter to the *News-Advertiser* reads thus:

"THE BEST ROUTE TO THE FINDLAY.

"Sir,—In your valued issue of the 2nd inst., I observe an article under the above heading, presumably written by 'a local man who spent two years travelling in the north.' Well, I have spent 25 years and over in this self-same district, and travelled pretty well all over it from Hazelton to Babine, and to Bear Lake. I have also gone several times by the water route via Ashcroft, and I maintain that there is no route equal or fit to be compared as via Quesnel, up the Fraser, across Giscombe Portage, seven miles, where no doubt a tramway will be constructed, as it was during the Omineca excitement; thence down stream in Crooked River to McLeod Lake, thence down Puck River and Parsnip to the Findlay, up which five days ought to land you at Fort Grahame. Not a rapid from Giscombe to Ingenica River.

"I claim that the route via Bear Lake is the most misleading of all. Your correspondent says 'thence up Driftwood River to Fort Grahame.' Now the Driftwood River is a mountain torrent, which you leave after three or four days' canyon work, and portage from there into Bear Lake, where you will have to get Indians to pack your goods on their backs to the Findlay. I cannot see where your correspondent can imagine that the distance from Quesnel to Findlay has to be travelled on foot over trails,

and by water, when I most distinctly state that the only foot trail is seven miles across the Giscombe, and there are only two canyons, viz., the Cottonwood and the Fort George Canyons, besides one rapid below the portage. If your correspondent means to compare the dangers of the Skeena and the Fraser. I think last season's two disasters will amply serve to prove the safer. I have travelled the Fraser three times every year, with four, five or seven boats each trip, and never met with any accident in my long career in the Hudson's Bay Company's service. There will be no bones of dead horses in the 'All-Water Route' at all events. About running a canyon up the northern rivers, all I can say is that the Driftwood River is by long odds the worst stream I ever canoed in during my 25 years in the New Caledonia District.

"I simply insert this for the benefit of miners, as I have no practical interest in any route. It is my intention to go to the Ingenica myself, and a man of 75 years is not likely to try it if very difficult. Hoping this may assist some of my many old mining friends, I remain, yours,

"Gavin Hamilton.

"Formerly Factor Hudson's Bay Company, Savonas.
April 6, 1908."

The correspondent for Nelson and district of the Dominion of Canada *Labour Gazette* recently reported to that journal as follows: "The general condition of the labour market during February throughout the Kootenay District was very dull, the supply of both skilled and unskilled labour exceeding the demand by about 1,500 men. About 400 of these are residents of Nelson, of whom about 50 are without money. A considerable number are being kept by the different hotels, and in some isolated cases are receiving assistance from the Ladies' Auxiliaries of different religious denominations. The mines in the free milling district south of Nelson and adjacent to Salmo, are shipping freely, particularly the Arlington, Emerald and Nugget. The St. Eugene mine at Moyie, East Kootenay, is employing about 365 men making a large output. The payroll of the Crow's Nest Pass Company's collieries for February was about \$185,000, being a reduction of about \$20,000 as compared with the months of December or January. There are about 200 unemployed men around Fernie, about 50 of whom are receiving financial aid from the local union of the United Mine Workers of America, those working being assessed one per cent. of their wages to help the unemployed members."

Referring to a Cobalt, Ontario, mining suit, the *Toronto Globe* says editorially: "The Lawson mining suit has already cost \$35,000, and is nicely under way. These things show the necessity of a radical measure of law reform. Such results should be made impossible."

NOTES ON THE TYEE COPPER MINE.

By Walter Harvey Weed.

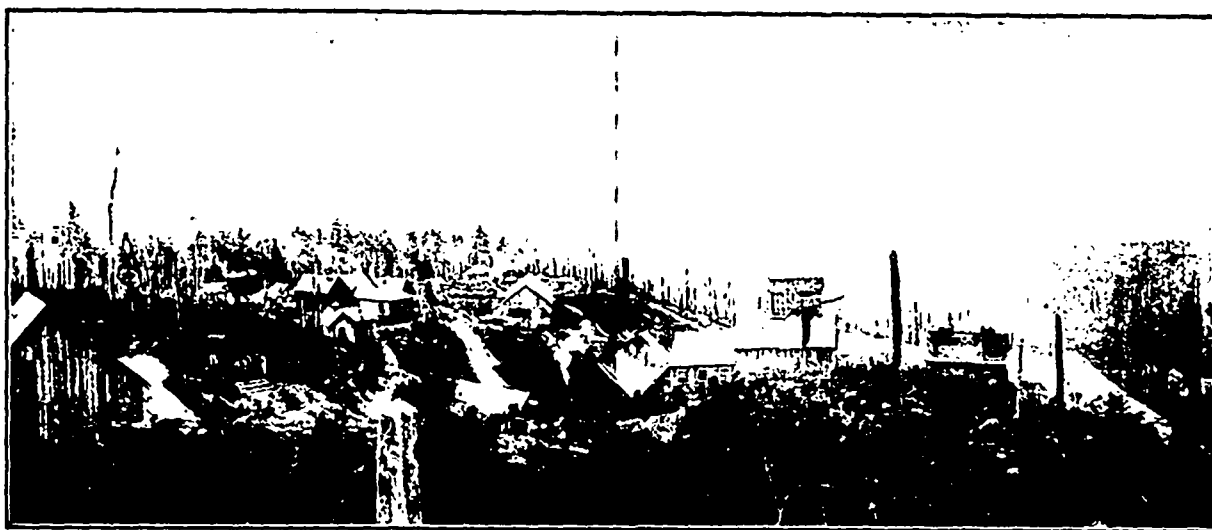
COPPER DEPOSITS in the coastal region of British Columbia, particularly those at Mt. Sicker, Vancouver Island, have for some time past been attracting the attention of Mr. Walter Harvey Weed, mining geologist, of New York, N.Y., U.S.A., formerly one of the leading geologists of the United States Geological Survey. Recently *The Engineering and Mining Journal*, of New York, published the following interesting article, contributed to that influential and widely-read journal:

Lenticular masses of pyrite and copper pyrite have

drilling and many thousands of feet of crosscutting and sinking have made known the detailed structural relation and have been recorded by the men in charge.

COPPER DEPOSITS OF THE COAST DISTRICT.

The coastal region of British Columbia contains numerous copper deposits, in the belts of altered rocks that border the great granite areas forming the mountain ranges. There are, however, only three productive districts, namely, Howe Sound (Britannia mine), Texada Island and Mount Sicker. The last-named is at present the only productive area on Vancouver Island, and in point of output is the most important copper producer of the coast area. It is situated about 45 miles north of Victoria, high up



Tyee Mine at Mount Sicker, Vancouver Island.—View of Surface Works.

for centuries furnished a large part of the world's supply of copper, and careful studies have been made of a number of such deposits. Yet neither the genesis of such orebodies nor any general law of occurrence to aid the prospectors in their discovery and development has as yet been definitely established.

CHARACTERISTICS OF LENTICULAR OREBODIES.

Practically all the larger bodies of this character, which are mirable, outcrop at the surface and are marked by the "iron hat" or gossan, mentioned in all our text books. The ore masses occur almost without exception in schistose rocks, and the layers of schist conform to the walls of the orebody. As, however, the foliation of the schist is a result of pressure and bears no necessary relation to sedimentary bedding, it does not prove a sedimentary origin for the ores, as claimed even nowadays by a few geologists. Others have maintained an origin through igneous waters, as suggested by the frequent association of igneous rocks.

The Tyee deposit on Vancouver Island offers a peculiarly good opportunity for the study of an orebody of this type, for not only is the orebody absolutely delimited by development work, but diamond

on the eastern slope of the mountainous backbone of the island. Duncan Station, the nearest railway point, is about six miles from the mine by wagon road, but the ore is handled by wire-rope tram and smelted at Ladysmith, a few miles distant, on the eastern shore of the island.

The entire production of the district has come from a single lens of ore extending through several adjacent claims owned by the Lenora, Tyee and Richard III companies. The first named mined out the southern end of the lens, extracting approximately 60,000 tons of ore. It had been closed down for some years, until recently a company was organized in England to rehabilitate the mining plant and railway line. The relative position of the three mines is shown in Fig. 1 herewith.

The Tyee is by far the most important of the three mines, and under the supervision of its able managing director, the late Clermont Livingston, has been successfully developed from an unproved prospect in an exceedingly rough, heavily forested, almost inaccessible situation, into a mine that has repaid its cost, and now—when remarkably extensive prospecting has failed to discover another orebody—has, it

is said, a comfortable balance in the treasury, wherewith to purchase another property.

THE TYEE OREBODIES.

Through the courtesy of Mr. Livingston I was permitted to visit and examine this property, accompanied by the superintendent, J. W. Bryant, to whom I am indebted for the sections given herewith. Fig. 3 represents a cross section through the orebody showing its relation to the synclinal or canoe-shaped fold of the inclosing rocks, and the post-mineral fault which cuts it. The other drawing, Fig. 2, is a longitudinal section through the orebody along its strike or course.

The deposit presents several features of unusual interest to mining engineers. In the first place the

part of the Vancouver Island series of Dawson. The rocks seen about the mine show considerable variation. The lignite-bearing series is exposed near the mine, though tuffaceous igneous rocks and granular igneous rocks, probably dioritic, cut through the prevailing green and gray schists. The latter rocks are well exposed but at the surface are altered by weathering. No detailed survey of the district has been made and the exact relations of the shear-zone to the rocks cannot be distinguished without it.

SURROUNDING ROCKS.

The rocks near the orebody are mainly green chloritic schists; pieces of this rock from the underground workings have the greasy look of a crushed and schistose serpentine. The gray schist of the ore

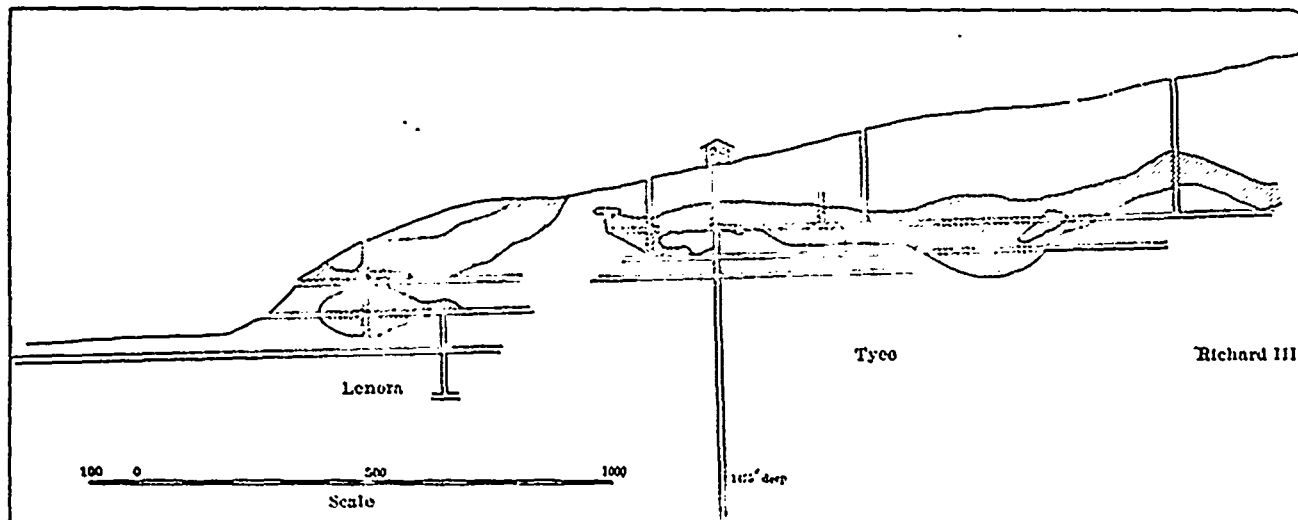


FIG. 1.

lenses, unlike most deposits of this so-called Rio Tinto or Kieslager type, do not come to the surface, or at any rate outcrop at only one small point, being covered by the enclosing rocks. There is nothing to distinguish the ridge, or so-called hog-back, in which this deposit lies, from any other on the slope of Mount Sicker. The small inconspicuous area exposed was only found after forest fires had swept the ground and burned the dense timber, brush and moss to ashes that were carried away by heavy rains. Elsewhere the ore lens tapers upward as it does downward, and is completely enclosed in the schists. It is certainly not a surface deposit.

The orebody is, moreover, peculiar in its structural relations and mineralogic character. The ore consists of chalcopyrite, with pyrite, in a barite gangue. It occurs in a shear-zone or fault-zone, definitely traceable for a mile or more down the mountain slopes and across the Chemainus River. Throughout its course it contains disseminated particles of copper pyrite, which at some points reaches a copper content of 0.5 to 1 per cent., though no other orebody has as yet been found. This shear-zone, marked by whitened and by iron-stained rocks, traverses crystalline schists usually considered to be

zone proper is hard, silicious, thinly foliated and devoid of any mineral recognizable to the eye. The rock immediately adjacent to the ore is mainly a dark gray schist, the colour being due to graphitic matter.

According to an examination under the microscope made by E. H. Adye, the result of which has been kindly supplied me by Mine Superintendent J. W. Bryant, "it is quite inconceivable that such a rock can have had an igneous origin. * * * The finely divided opaque black matter is, of course, graphite, attesting an early phase of thermal metamorphism in an originally highly carbonaceous, argillaceous deposit which contained some sand. The last is evidenced by the presence of anhedral (secondary) quartz. The rock also carries plenty of small scattered crystals of iron pyrite."

The diorite, which practically forms one wall of the orebody underground, is not schistose near the ore, but becomes so going northward, as shown by bands of schist varying from a foot to many yards in width that alternate with belts of solid diabase rock. To the unaided eye the schists generally seem to be altered greenstone formed from old tuffs, and sediment carrying lignitic matter, similar to the

tertiary breccias of the Yellowstone Park. By shearing and thermal metamorphism they have been altered to the schists of today. These rocks form distinct bands, and have been compressed into a series of narrow folds, alternating saddles and synclines, well exposed in the rounded rocky bosses about the mine.

While the ore appears to occur in a shear-zone traceable for a mile or more, observations underground show that the ore lens lies on the south side of a V-shaped trough and that it lies against graphitic

ore has the composition shown in the accompanying table.

COMPOSITION OF TYEE ORES.

	I	II	III
	Per Cent.	Per Cent.	Per Cent.
Copper	4.56	4.08	4.50
Iron	11.94	10.49	12.50
Zinc	6.60	7.36	7.00
Silica	13.50	13.48	12.50
Alumina	3.95	7.01	....
Baryta	37.30	37.63	38.00
Lime	2.20	2.04	....
Magnesia	trace	trace	....
Sulphur	16.62	15.65	....
Total	96.67	97.74	....
Silver, oz. per ton.	2.87	2.67	2.80
Gold, oz. per ton..	0.14	0.13	....

- I. Average of analyses made by company.
- II. Average composition of ore mined in 1905.
- III. Average of 150,000 tons shipped up to middle of 1905.

FAULTS IN THE OREBODY.

Throughout its course the orebody is battered, cracked and full of chips and slickensides. This is due to a strike fault, which cuts through the tip of the orebody, and has shattered the footwall rock along its course. This fault has been found in the workings to the deepest levels attained, and varies from 3 in. to 2 ft. in width. It is filled by stiff bluish mud and clay containing fragments, often well rounded, of the rock through which it cuts. A branch of this fault cuts through the ore but does not appreciably shift or dislocate it, though the frac-

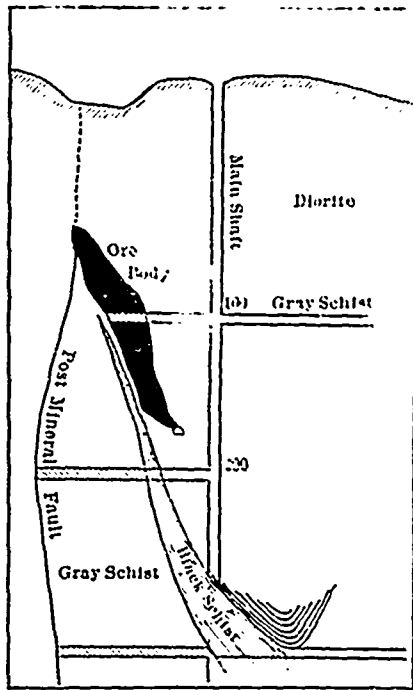


FIG. 2.

schist and within gray schists. The fault and the adjacent diorite mass show no genetic relation to the ore, the fault being post-mineral.

SIZE OF THE OREBODY.

The orebody is a large but irregular lens with a proved length of 2,500 ft., a mean width of 20 ft., and a depth of 150 ft. It is 40 to 50 ft. wide in many places. In the Lenora and Tyee mines, where its limits are known, it contains in all over 300,000 tons of ore. Extensive cross-cutting, drifting and diamond drilling from the various levels of a shaft 1,250 ft. deep show that the orebody does not go down, but that the shear-zone, with its peculiar barytic impregnation, extends through the folds, showing patches of low-grade copper-bearing rock at one or two points in other and lower saddles. The ore contains an average of nearly 38 per cent. barite, yet the rocks on either side of the ore do not contain even traces of that substance.

The ore is a dense, compact mass of chalcopyrite and barite, carrying a little zinc blende, and aluminous silicates. According to analyses made for the company and furnished me by Mr. Livingston the

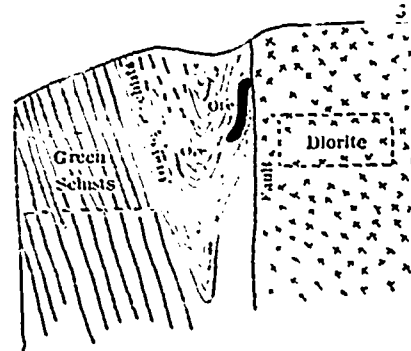


FIG. 3.

tures are filled with soft gouge matter. Later movement and slipping has made slickensides and grooves, showing that the ore has moved downward a short distance, but as a skin of ore remains on the opposite wall of the fault it is evident that the movement was post-mineral and that the shift was small. Both walls of the orebody show clay selvage throughout the en-

tire mine; pyrite mirrors and slickensides are common.

The new exploration work of 1907 developed a second, but smaller, orebody of low and very irregular grade in the north leg of the inverted saddle.

PRODUCTION AND COSTS.

With wages \$3.50 per day for miners, \$4 a day for shaft work and \$7 per foot for cross-cuts, mining costs have averaged \$2.40 per ton. Up to May, 1904, the company had produced 59,338,099 lb. copper. The production since has been approximately 20,000,000 lb. more. The mine water all comes from the surface and only extends downward 200 to 300 ft. The deep workings are dry—even dusty—except where the fault slips are channels for descending surface waters. The country is dry in summer and the mine boilers are supplied by water from the Chemainus River, pumped up against a 1,300-ft. head.

ORIGIN OF THE ORES.

The Tyece orebody resembles in features and occurrence the lenticular bodies of iron ore of the Lake Superior ranges, the origin of which has been so clearly disclosed by Van Hise, Leith and others. The hypothesis that the copper is a concentration by shallow ground-water circulations of material extracted from sparsely disseminated particles of chalcopyrite and pyrite of the schists, liberated during gradual erosion of the country, gathered in shear-zone cracks or trunk channels and precipitated by graphitic matter with coincident replacement of crushed material, appears at first sight to be an adequate explanation for this and many other deposits. The chief objection to this, and apparently an insuperable one, is the fact that the Tyece deposit consists largely of barium sulphate, while the surrounding rocks are entirely free from it; showing that lateral moving waters have not furnished the ore. It is, therefore, evident that we must look to deep-seated waters as the source of the ore in this deposit.

The Ottawa correspondent of the *London Mining Journal* lately wrote: "Mr. John W. Astley, the 63-year-old Yukon civil engineer, who this fall walked over 400 miles of the territory north and east of Lake Nipigon, Ontario, taking nearly the three months to tramp over a good section of that portion of the Transcontinental Railway survey, has returned to Ottawa, and in a conversation says that the American men who have had an eye on the north country of Canada for some years, freely admit that Canada contains to-day in the north country, in an undeveloped state, more wealth than they have ever had, among the principal being gold, with coal, oil, and timber in plenty. With an experience of more than 20 years in the North, through the Peace River country and the Yukon, Mr. Astley says that the Americans are pretty nearly right in their summary of the hidden wealth of Canada."

ANNUAL MEETING OF THE CANADIAN MINING INSTITUTE.

A Numerously Attended and Successful Gathering.

AT OTTAWA, ONTARIO, on Wednesday, March 4, and two following days, was held the tenth annual meeting of the Canadian Mining Institute. The gathering of members was large and the proceedings were interesting and decidedly successful. The following report of the meeting, with the exception of the Report of the Council, which latter was kindly supplied by the secretary of the institute, has been taken from the *Engineering and Mining Journal*, of New York, represented at the meeting, as has for years been its custom, by Frederick Hobart, one of its associate editors and a highly esteemed member of the institute. The *Journal's* account of the meeting and the report of the council follow:

The attendance at the opening meeting was large, and was increased considerably the second day. As a number of members were reported as delayed in reaching Ottawa by the heavy snowstorm of the preceding day, it was decided to postpone the business meeting until Thursday morning.

THE FIRST DAY'S MEETING.

The president, Frederic Keffer, of Greenwood, British Columbia, opened the meeting with a few well chosen words. Hon. W. Templeman, Dominion Minister of Mines and Inland Revenue, then made an address welcoming the members of the institute and showing the work which his department had begun, its new organization and what it hoped to accomplish. He spoke of the importance of the institute, complimented it on the good work it was accomplishing, and assured it that it had the support of the department of which he was the representative.

After appropriate responses had been made, the reading of papers was begun, and was continued, with only a brief recess, during the afternoon. The principal papers read were: "The Classification of Coal," by D. B. Dowling, Ottawa; "The Carbon Minerals of New Brunswick," Dr. R. W. Ells, Ottawa; "Secondary Mining Education," H. H. Stock, Scranton, Penn.; and "Compilation of Mining Statistics," J. McLeish, Ottawa.

Mr. Dowling's paper called out a long and interesting discussion, in the course of which Prof. J. B. Porter described the tests of Canadian coals which had recently been begun at the mining laboratory of McGill University under the auspices of the Dominion Government. The discussion turned largely to the best methods of coal analysis, and the value of such determinations. Dr. Ells' paper was also discussed at length. In the discussion on mining statistics several plans were suggested for securing better co-operation among the Dominion and provincial mining departments in the collection and statement of statistics.

J. Obalski, chief of the Department of Mines of Quebec, presented the mineral statistics of that province, and T. W. Gibson, deputy minister of mines, presented those of Ontario. Mr. Obalski also presented a paper on "Gold in the Eastern Townships of Quebec."

The Evening Session.—At the evening session Dr. W. Campbell, of Columbia University, New York, presented a paper on "Metallography Applied to Engineering." This was illustrated by a number of lantern slides, showing methods of using apparatus and many sections of metals and alloys. D. B. Dowling read a paper on "Prospecting for Coal in the Rockies," illustrated by some beautifully coloured lantern slides taken on the eastern slopes of the Rocky Mountains in Alberta and Saskatchewan. Dr. Campbell's paper was discussed at some length by Messrs. Porter, Wilmott, Gwillim, and others; Mr. Dowling's paper by Messrs. Adams and Hobart.

Elfrie Drew Ingall, Ottawa, read a paper on a "System of Conventional Signs for Showing Mineral Occurrences on Maps." This was also illustrated by lantern slides.

THE BUSINESS MEETING.

The business meeting was held on Thursday morning. The president, in his brief annual address, referred to the intended visit to Canada of the London Institute of Mining and Metallurgy, which is coming next autumn on the invitation of the Canadian Institute. The London institute delegates, if possible, will visit all the mining centres, including British Columbia. Mr. Keffer expressed gratification at the increase in membership from 500 to 700 during the year, but deprecated the dissension which seemed developing between members in Ontario and Quebec. Such dissension, he said, endangered the life of the institute and some of the members in British Columbia favoured forming an independent institute of Western mining men. Personally, he strongly favoured the preservation of the national character and scope of the institute, as independent provincial institutes would be suicidal. He also referred in appreciative terms to the move by the institute to have branch libraries in various mining centres.

REPORT OF THE COUNCIL FOR THE YEAR, 1907-08.

The secretary, H. Mortimer Lamb, read the report of the council for the year, 1907-8, as follows:

Meetings.—The ninth annual meeting of the institute was held in the city of Toronto on March 6, 7 and 8, 1907. The attendance was the largest in the history of the institute and the occasion was also noteworthy in that the members were afforded the privilege of entertaining a number of distinguished guests from the United States, who took an active interest and part in the proceedings. Other meetings have been held during the year under the auspices of the local branches of Cobalt and Toronto; whilst an important meeting of Western members, for the purpose of organizing a Western section and for the

reading of papers, was held at Nelson, British Columbia, on January 15 and 16, 1908.

Five regular meetings of the council have been held at headquarters, Montreal, and the attendance was generally above the average of former years.

Publications.—Thirty-five papers were presented at the annual meeting, and these with the discussions thereon, and a report of the proceedings of the meeting, now constitute Vol. X. of the "Journal of the Institute," which has been issued to members in good standing.

At a meeting of the council in October last, it was decided to publish thereafter advance proofs of papers contributed by members, reports of branches and affiliated societies and other matter of general interest to the membership, in the form of a quarterly bulletin. The first number of this bulletin has been placed before you.

Membership.—The increase in the membership during the year is exceptionally gratifying, there having been elected since the last annual meeting, 147 members, 38 associate members, 13 corresponding members, and four student members, a total of 202, representing an increase in membership for the year of more than 45 per cent.

Branches.—The above-mentioned large increase in membership is mainly attributable to the interest that has been awakened in the work of the institute in the provinces of British Columbia and Alberta, and in the Cobalt district of Ontario. In the latter district, a branch was successfully organized on April 15 last, Arthur A. Cole having been elected chairman and G. R. Hardy, secretary. The branch holds regular monthly meetings for the reading of papers and the discussion of questions of local interest. The Western section or branch, to which allusion has already been made, was organized at Nelson, British Columbia, on January 15, 1908, with a membership in round figures of a hundred and fifty, including members residing in British Columbia, Alberta and the adjacent United States territory. A vote having been taken, A. B. W. Hodges, manager of the Granby Consolidated Mining, Smelting and Power Company, Limited, of Grand Forks, British Columbia, was elected chairman, and E. Jacobs, of Victoria, British Columbia, secretary of the Western branch. The council desires to record its appreciation and to express its grateful acknowledgment of the valuable services rendered in connection with the organization of the Western branch, by the president of the institute, Frederic Keffer, who undertook and carried out all the arrangements for the meeting, the success of which may be almost entirely credited to his personal efforts and zeal.

On February 13, 1908, a Montreal branch of the institute was organized with George E. Drummond as chairman, and J. W. Bell, secretary. This branch contemplates holding monthly meetings during the winter months.

Deaths and Resignations.—The council records with profound regret the deaths of the following

members: John Blue, Eustis, Quebec; Dr. W. H. Drummond, Montreal; Dr. E. Gilpin, Jun., Halifax, Nova Scotia; T. R. Gue, Halifax, Nova Scotia; Geo. T. Marks, Port Arthur, Ontario; and Tyndall Phipps, Reno, Nevada, U.S.A.

The following gentlemen have resigned their membership: F. Bacon, T. P. Bacon, Thos. Barnes, W. Caldwell, W. J. Chalmers, H. E. Coll, D. Ford, H. W. Hixon, H. W. MacInnes, H. Montgomery, Robt Murray, and F. N. Speller.

Library and Reading-Room.—The library and reading-room at headquarters have been freely used by members and visitors during the year. Upwards of 200 volumes have been added to the library shelves, including transactions of technical and learned societies, official reports and periodicals, and exchanges. The secretary is now engaged in arranging for the establishment of libraries, for the convenience of members residing elsewhere than at headquarters, at all the principal mining and industrial centres of the Dominion: and it is hoped that this proposal, which has already met with much encouragement, will be carried into effect within the next few months.

Deputations.—Acting under instructions of the council, Dr. Adams, Dr. Porter and the secretary, last November, waited on the Hon. the Minister of Mines and the Hon. the Minister of Finance, at Ottawa, and urged that the grant voted annually to the institute by the Federal Parliament be increased from \$3,000 to \$5,000. This additional assistance was asked for in consideration of the extension of the institute's field of usefulness, and of further proposals looking to that end. The council has much pleasure in stating that the larger sum has in consequence been included in this year's estimates.

Deputations have also waited on the Hon. the Minister of Mines for the Dominion, Hon. Wm. Templeman, and on the Hon. the Minister of Mines of Ontario, Hon. F. Cochrane, to ask for financial assistance in connection with a proposal to invite representatives of the leading mining and engineering societies of Great Britain and the Continent of Europe to visit Canada during the ensuing summer as the guests of the institute and take part in a general excursion of members to all the important mining regions of the Dominion, from ocean to ocean. The council has every reason to believe that substantial financial assistance will be given the institute in carrying out this programme.

Federal Department of Mines.—The creation by Act of Parliament last spring of a Federal Department of Mines, the desirability and need of which had been persistently urged by the institute on frequent occasions in the past, is worthy of special remark. This department has been placed under the ministerial control of Hon. Wm. Templeman, who as is well known, has keenly at heart the welfare of the mining industry of the Dominion and is earnestly desirous of promoting its growth and prosperity. In this desire he has the loyal support and active co-

operation of Dr. A. P. Low, the deputy minister (whose present disability in consequence of long and severe illness, the council notes with profound regret); and of the director of mines, Dr. Eugene Haanel; and the acting director of the Geological Survey, R. W. Brock, the executive heads of the two branches of, respectively, Mines and Geology. The good service the department has rendered the country in general, and the mining industry, in particular, is already evidenced in the publication of the several valuable monographs and other reports of an economic nature issued during the past twelve months.

Students' Competition and Awards.—After receiving the report of the judges, Charles B. Going and Frederick Hobart, the council awarded the president's gold medal, for the best paper submitted by a student member during the year, to Frank E. Lathe, of McGill University, Montreal, Quebec, in addition to a cash prize of \$25. Cash prizes of \$20 each were also awarded to the following gentlemen; G. R. McLaren, of the School of Mining, Kingston; W. J. Dick and C. V. Brennan, both of McGill University, Montreal.

The following extract from the report of the judges may be of interest to members: "The undersigned, appointed by you to be judges of the student papers submitted to the latest annual meeting of the institute, would respectfully report as follows: The first place should be accorded to the paper on 'Basic Open-Hearth Steel Manufacture as Carried out by the Dominion Iron and Steel Company at Sydney, Cape Breton,' by Frank E. Lathe. This is an excellent monograph, carefully written, with full attention to details, and especially to the costs and expenses of manufacture; a point in which many technical papers are deficient. It shows also a fair sense of proportion; that is, of the relative importance of the various parts. This paper unquestionably takes the first place. It is to be regretted that it cannot be published in full, as some of the details of cost, etc., were given to the writer on condition that they should not be made generally public. The two papers, 'The Cariboo Consolidated Hydraulic Plant, Bullion, British Columbia,' by W. J. Dick, and 'Underground Mining Methods at the Quincy Copper Mine, Michigan, U.S.A.,' by G. R. McLaren, appear to be of nearly equal excellence. The former should, perhaps, have the preference, as relating to a Canadian topic. The Quincy paper has a number of sketches which serve to illustrate the its text, but which might have been more carefully executed. The paper on 'The Oldham Sterling Gold Mine, Nova Scotia,' by C. V. Brennan, has merit, and only falls a little below the two mentioned in the preceding paragraph. The paper by G. D. Drummond on 'The Use of Chemical Analysis in Iron Blast Furnace Practice and Some Notes on Laboratory Methods,' is a monograph constituting a record of practice and experience of considerable value."

REPORT OF THE TREASURER.

The report of the treasurer, J. Stevenson Brown,

Montreal, showed the gross receipts for the year, including a balance of \$1,354 from 1906, of \$11,396. The disbursements amounted to \$7,923, leaving a balance on hand of \$3,472. The receipts included a Dominion Government grant of \$3,000, a Provincial grant of \$1,500, and membership fees, \$4,362.

OTHER BUSINESS.

The appointment of scrutineers called out some sharp debate between the two parties who favoured different candidates. It was ended by the election of Frederick Hobart, New York—whose name was presented by both parties—R. W. Brock, of Ottawa, and A. W. G. Wilson, of Montreal.

The proposed amendments to the by-laws were then taken up and discussed at length by Messrs. Porter, Miller, Haultain, Goodwin, Hobart, Coste and others. Of the two more important amendments, one relating to the appointment of a nominating committee by the council was defeated. The other, transferring the election of secretary and treasurer from the members at large to the council, was carried. This will not take effect until next year.

A motion, of which notice had previously been given, was brought up to remove the headquarters of the institute from Montreal to Ottawa. This was also discussed at length, the relative advantages of the political capital and a commercial centre being presented. It was finally ordered that the question be referred to a letter-ballot of all the members.

The Afternoon Session.—The afternoon session was especially devoted to the iron industries, being opened by a valuable paper on the "Iron Ores of Canada," by Prof. C. K. Leith, of Madison, Wisconsin, U.S.A., which was discussed at length by Messrs. Coste, Barlow, Hedley, Obalski and others. Other papers read were, the "Iron Ores of Ontario," A. B. Wilmott, Sault Ste. Marie; "Electric Smelting in Ontario," R. Turnbull, St. Catharines; and "Possibilities of Electric Smelting," Dr. A. Stansfield, McGill University, Montreal. All these papers called out interesting discussions.

The secretary was directed to send appropriate messages of sympathy to Dr. Albert P. Low, deputy minister of mines and head of the Geological Survey, who is at present disabled by severe illness.

MINING LAW.

The Friday session was largely devoted to the discussion of the mining laws of the Dominion and the provinces. It was opened by a careful and elaborate paper by Dr. W. G. Miller, in which he said that people had not yet got away from the idea that Canada is an agricultural country first and a mineral country secondarily. He advocated briefly that mining rights should be retained when surface rights were disposed of, which would tend to avert such legal troubles as now tied up much available property around Lake Superior, and that, further, an acreage tax should be levied on all mineral rights to clear up these titles. He pointed out that few in Ontario had taken advantage of the opportunity af-

forded to make tests for six months on mineral lands and then, if thought profitable, take these over in the regular way.

Messrs. Tyrrell, Willmott, Clark and others discussed mining titles and taxation at length. Finally the following was adopted without objection:

"In view of the increasing importance of mines and mineral lands subject to the jurisdiction of the Dominion Parliament, it is resolved that the Canadian Mining Institute memorialize the Dominion Government to inquire into the whole matter and to draft mining laws to be submitted for the consideration of the Dominion Government, and that as one of the arguments in support of the appointment of such a Royal Commission that it be urged that when a statute to be enacted by the Dominion Parliament declares with clearness, conciseness and certainty the law relating to mines and mining under Federal control, such a statute would, as far as local conditions would permit, be followed by the various provinces, thus insuring as far as practicable, uniformity in laws throughout the Dominion."

A short paper on the Moose Mountain iron-ore deposits, prepared by N. E. Leech, Sudbury, Ontario, was read.

Resolutions were passed memorializing the Dominion Government and Parliament in favour of the continuance of the bounty on lead produced from Canadian ores, and raising the limit of price above which no bounties are now paid.

THE ELECTION.

Frederick Hobart, as chairman, reported that the scrutineers had had an unusually difficult task, partly on account of the large vote and the number of candidates, but chiefly on account of the obscure and inconvenient form of the ballot used. Recommendations for the improvement of this ballot were presented. The scrutineers had received 316 ballots, of which 24 were rejected as irregular in form, unsigned, etc. The following candidates had received a majority of votes and were declared elected:

President—W. G. Miller, Toronto, Ontario (unanimously).

Vice-presidents—W. Fleet Robertson, Victoria, British Columbia, and G. R. Drummond, Montreal, Quebec.

Secretary—H. Mortimer Lamb, Montreal.

Treasurer—J. Stevenson Brown, Montreal.

Members of Council—Nova Scotia: Charles Fergie, Glace Bay; R. W. Robb, Amherst; W. F. C. Parson, Londonderry. Quebec: J. E. Hardman, R. H. Drury and R. T. Hopper, Montreal. Ontario: Arthur A. Cole, Cobalt; J. B. Tyrrell, Toronto. British Columbia: R. H. Stewart, Rossland; W. M. Brewer, Victoria; A. J. McNab, Trail; O. B. Smith, Jun., Phoenix.

On motion, Dr. A. E. Barlow, Ottawa, was chosen a vice-president to fill the unexpired term of Dr. Miller, elected president.

The meeting then adjourned until next year, after passing the usual votes of thanks.

ENTERTAINMENTS.

The business of the meeting was so engrossing that little time was left for entertainments. On Thursday evening a smoking concert was given, which was much enjoyed. On Friday, during the recess, many members visited the Geological Survey museum, which is the nucleus of the proposed national museum.

The annual dinner was held on Friday evening. Among the speakers in answer to the toasts were Hon. Wm. Templeman, minister of mines; Senator Bostock; W. F. Cockshutt, Duncan Ross and E. M.

REPORTED NEW PLACER GOLD FIND IN
NORTHERN BRITISH COLUMBIA.

Hudson's Bay Company Man's Account of Find.

FINDLAY RIVER and its tributaries have long been known to prospectors in the district to contain some placer gold, but no considerable quantity has yet been found on them so far as has been made public. Among a number of statements concerning the reported recent finding of gold on the Ingenica, or Ingenika, is the following, which is re-



Indian Guides and Canoes on Driftwood River between Babine and Bear Lakes.

McDonald, members of the Dominion House of Commons; Frederic Keffer, retiring president; Dr. E. Haanel, Dr. R. M. Coulter, J. Obalski, R. W. Brock, A. E. Willmott, Frederick Hobart, R. G. Leekie, H. Mortimer Lamb and J. C. Murray.

PAPERS PRESENTED.

The number of papers presented for this meeting was so large that the greater number were read by title only. The list was published in the February number of the *MINING RECORD*, pp. 76-78.

In March the mines at Butte, Montana, produced 18,127,250 lb. of copper from 584,750 tons of ore.

The Dominion Coal Company, with mines in Nova Scotia, made an output in 1907 of 3,541,253 tons of coal as compared with 3,522,746 tons in 1906—a decrease of 11,493 tons, due to the non-resumption of mining operations in its No. 7 mine since the fire there in December, 1906.

printed from the Prince Rupert *Empire* of March 28:

H. W. Sharpe, employed by the Hudson's Bay Company at Hazelton, arrived at Prince Rupert on Saturday, March 21. Mr. Sharpe, owing to the illness of the manager of the company's store at that place, was at the Indian village of Babine on Babine Lake for several weeks before starting out, and made the trip from the village to Hazelton in two days, and was 7½ days in covering the distance between Hazelton and Kitimat, a total distance of 210 miles; which isn't bad "mushing" with snowshoes and a dog-team.

He knows something of the reported gold find on a creek that flows into Ingenica River, which is a tributary of Findlay River, and told *The Empire* the following story, which the reader will see is a fair statement:

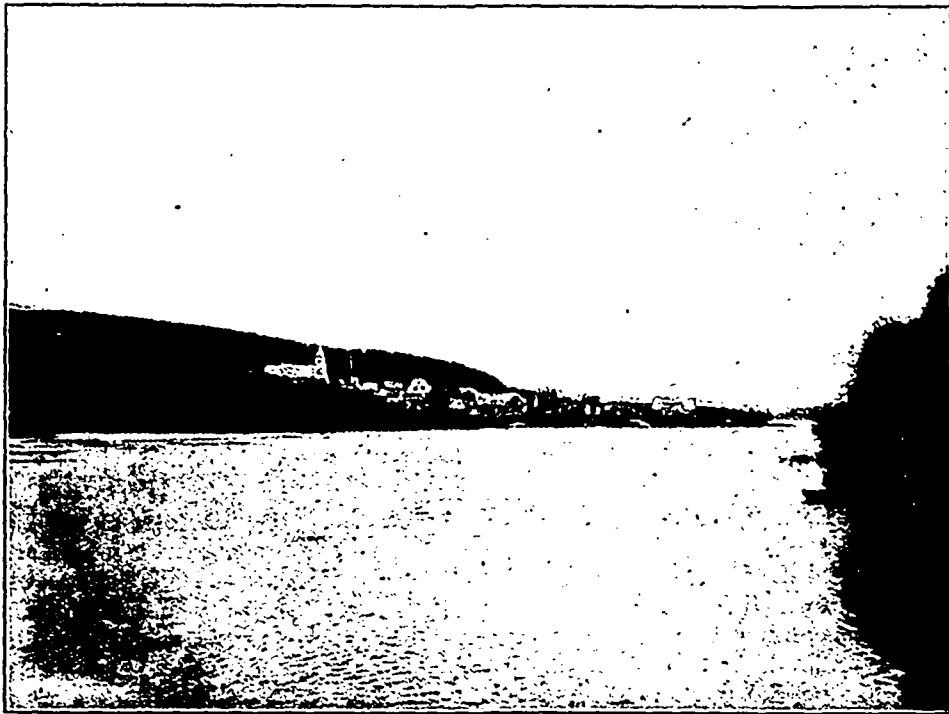
The creeks and rivers that form the Findlay have been prospected for several years, and while wages

may have been made by some of the prospectors, none of them that live in Hazelton District have reported striking anything rich. Last fall the two Jensen brothers found likely looking ground on one of the creeks that flow into the Ingenica, and did some work, but not enough to prove the ground. They did not reach bedrock, but found coarse gold and cube iron, which old placer prospectors say are good indications. Not having either grub or mining supplies to carry them through the winter, they started for Hazelton to get an outfit. Other prospectors had been in the same section of country, which is represented to be on the divide between Bear Lake and the Ingenica,

to Bear Lake 60 miles, thence to the diggings 80 to 90 miles. Pack animals, as soon as there is grass in the spring, can make the trip with ease.

Mr. Sharpe did not venture an opinion as to the probable richness of the new gold field; but said, knowing the country as he did, the best way to reach the diggings was by the way of Hazelton, Babine Village, and Bear Lake.

At Babine Village there is plenty of flour, sugar and rice, and the Indians are all well fixed, as are the Indians around Hazelton, none being short of needed supplies, last summer being an unusually good one for them. At Babine Village the Indians sell 20



Babine Village, on Babine Lake, on the route from Hazelton to Bear Lake.

and pretty high up, some of them holding ground on the different creeks. On hearing what the Jensens had found, they concluded to also take a try at the new field.

Several parties outfitted at Hazelton, the following named among the number: Jensen brothers; Condit brothers; Purvis and Carr; Follansbee, Johnson, Nelson and King; Wood and his partner; Glassey and Olson; old man Perry and his partner; Bates and Charles; and Gus Rosenthal and "Dutch" Kline. While the above named did not go in individually, each partnership was represented. They had no trouble in getting supplies at Hazelton, although some lines of goods are short, and got their outfits packed to the new find at a cost of 18½ cents a pound, which goes to show that the distance from Hazelton is not great and the trail not a difficult one.

Mr. Sharpe estimates the distance from Hazelton at 200 miles, and that the best route is over the trail from Hazelton to Babine Village 60 miles, thence

smoked salmon for \$1. The winter has been mild at both Babine Village and Hazelton. The coldest weather reported was 35 deg. below, and there was about 4 ft. of snow at Babine Village when Mr. Sharpe left. The snow would be deeper at the new discovery, as the Bear Lake-Ingenica divide is higher than the Babine Lake country.

At Hazelton there are seven stores, two hotels, and a third being fitted up. The old Dunlevy store building is being fitted up for a hotel, and is to have such modern conveniences as bath rooms.

The Hudson's Bay Company expect to do a big business the coming year, and have sent out exceptionally large orders to be filled. There is a good general hospital at Hazelton and Government Agent Valleau has his office in the town.

Hazelton is the head of steamboat navigation on Skeena River, and is 200 miles from Prince Rupert.

The large pack-train men, who make headquarters at Hazelton, winter their animals in the Chilcotin country.



Bridge built by Indians over stream near Bear Lake, Upper Skeena District.

THE SWEDE GROUP, MORESBY ISLAND.

FROM MORESBY ISLAND, of the Queen Charlotte group, information has come to the *MINING RECORD* concerning the Swede group of mineral claims. These are situated at Klunkwoi Bay, which is about 45 miles distant from Ikeda Bay. The correspondent, writing from Jedway on March 15, said:

"A number of men are at work on the Swede group under the supervision of Mr. O. Gerle.

"The ore in the main drift looks better as depth is gained.

"Last week a discovery of bornite ore was made about 100 ft. east of the main drift. This drift will have about 1,500 ft. of ore overhead when in about 900 ft. Two shifts are working in the main drift, and one is drifting on the new discovery.

"A few men are working on the ore bunkers and building a floating wharf. As soon as the ore bunkers shall be completed it is intended to ship about 1,500 tons of ore to the smelter.

"Ore bunker No. 1, now under construction, with 1,000 tons capacity, is situated about 100 ft. from salt water, at 75 ft. altitude and in front of the main drift. The loading of the ore will be done by gravity, shooting the ore direct from bunker into the hull.

"A property more favourably located for economical mining is difficult to find, as the orebody runs through the mountain from tide-water on the west

side of the bay to tide-water on the east side, where any size ocean-going vessel can load almost alongside the orebody in a practically land-locked harbour.

"Within 2,000 ft. distance from the beach any reasonable water-power required for mining or domestic purposes can be obtained."

The provincial mineralogist who visited Klunkwoi Bay at the end of last August, described this property with others in Bulletin No. 1, 1908, "Mineral Locations on Moresby Island," which bulletin was reprinted in the *MINING RECORD* last month (for account of Swede group see p. 74). It will be noted that the official estimate of the height of hill on which the claims are situated at 1,000 ft. The report said: "The claims are so located as to cover a small peninsula projecting into Klunkwoi Bay and separating two smaller bays or fiords. This peninsula is not more than 2,500 ft. across and rises to a height above the water of about 1,000 ft., the average slope of the hillside being about 46 deg., and this steep slope continues under the sea level, giving deep water at which any vessel can lie almost along the shore line." Summarizing the situation in regard to this group, the provincial mineralogist observed: "These claims are still only prospects, but the success attending the development done commands attention and gives promise of an exceedingly large but low-grade deposit of ore. The location of the properties is ideal for the cheapest kind of mining, and the facilities for cheap transportation by vessel could scarcely be improved

upon. The grade of the ore is low, probably not higher than 2 or 3 per cent. copper, with little or no gold and silver values, but the fact is that the values have increased with depth, so far as development has proceeded. The unknown factors are, how deep will this improvement continue, and how deep will the ore be found, which can only be determined by development work."

It would seem that recent developments are favourable, and the earlier promise of the property proving an important one is being realized.

THE COMMODORE MINE, TEXADA ISLAND

ON TEXADA ISLAND mining operations are in progress on several properties, but not much information regarding them is made public through the medium of the press. Recently the Vancouver *Province* published some particulars of the Commodore mine obtained from W. Thomas Newman, engineer in charge of that property. Mr. Newman some time ago supplied the gold commissioner for the Nanaimo mining division, in whose district Texada Island is situated, with the following account, which was published in the last-issued "Annual Report of the Minister of Mines": A plant, consisting of a 40-h.p. wood-burning, locomotive-type boiler; 16-h.p. double-cylinder hoisting engine; Cameron sinking pump; duplex Morris station pump; with full complement of blacksmith shop and essential machine tools, was installed, and has been constantly worked throughout the year. A bunk-house and cook-house to accommodate about 40 men, with boiler- and engine-house (the former containing bath-room and drying room), were also built, and a substantial gallow's frame, and tramways therefrom, complete the surface plant.

"With the above-mentioned outfit 180 ft. of sinking has been done during the year. The main shaft is a two-compartment incline, 5x8 ft. in the clear. From the bottom of this shaft a level has been run north and south for 725 ft., and 128 ft. of cross-cutting has been done. On an average 12 men have been employed during the year, in two shifts. The Commodore mine has three veins capable of being operated from the same set of openings. The main or contact vein is to be the first explored and tested, and is situated directly in the main contact crossing Texada Island between several miles of limestone on the southeastern side, and about the same extent of eruptives on the northwestern side. These operations have demonstrated the vein to be a true fissure, as three dykes have been encountered coming in from the lime-wall side, and the vein has gone straight on without being faulted, even the strong clay parting on this wall being unbroken. The only effect of these dykes has been increased mineralization on the vein in their proximity. The shaft was sunk between two large exposures a distance of 1,140 ft. apart, the drift being pushed either way. To the north the values on the surface are in silver, lead, zinc and

copper, in the order named, while the exposures on the south consist of gold and copper. To the south, at a depth of 180 ft., the ore carries a satisfactory amount of gold, and the gangue is mainly quartz. When driven 1,500 ft. this level is expected to intercept both the lateral veins which run into the limestone a known distance of over 2,000 ft. in the Commodore ground."

The additional and more recent information published by the *Province* is as under:

"The Commodore property is located midway between the Marble Bay and the Iron Mine holdings, and the strike of some of the veins is so true that they can be traced in a right line not only through the group but away on the outside. These veins criss-cross like a network, and all carry what will probably prove to be shipping ore.

"We have some 2,000 ft. of work done on the Commodore property," Mr. Newman said, "and we have demonstrated that the claims are a network of veins, all apparently containing good working values. On some of these the work has been confined to the outcrops, and it is impossible at this time to say just what the ultimate results will be, but the present indications are of a most encouraging nature. The value of these outcrops runs sufficiently high to indicate clearly that the shoots of ore will prove to be high grade. Assays have been satisfactory and some of them run into the hundreds. We know that there are 10,000 ft. of these veins on the property. In some of them we had chalcopyrite and other forms of copper; in others are zinc blende and galena.

"In the main works we are down 200 ft. in the shaft. We have to go some 200 to 300 ft. yet in order to get under the outcrop of the main contact vein, at which point we expect to strike our heavy ore body. We have been meeting indications of ore shoots all along this drift, and I have no doubt that when the drifting is carried on a lower level we will cut a number of these ore bodies. The run to cut the main vein will take about 90 days more. We have two shifts at work at the present time, and should be able to go the distance named, by the middle of June. It would be hard to find a property in which such a showing has been made for the money expended, and it was only the fact that the company is not asking anything at the hands of the public that has kept our progress so quiet."

Thirty-nine years ago—on February 5, 1869—the "Welcome Stranger" nugget of gold, weighing 2,268 oz., was discovered in Victoria, Australia.

The Toronto correspondent of the *Engineering and Mining Journal*, New York, lately attributed to E. L. Englehart, chairman of the Temiskaming & Northern Ontario Railway commission, the statement that Cobalt low-grade ores are likely, in the future, to be extensively shipped to British Columbia smelters, for treatment with the ores of that Province.

THE ELECTRIC SMELTING OF IRON ORES.

By Alfred Stansfield, D.Sc., Professor of Metallurgy in McGill University, Montreal, Quebec.

ELECTRIC SMELTING is a subject to which Dr. Stansfield has for years given earnest attention. As mentioned last month in the *MINING RECORD* in a review of his book on "The Electric Furnace, Its Evolution, Theory and Practice," on his first visit to Canada, in 1897, he constructed an electric furnace and showed it in operation at a lecture on Canada's metals, delivered by the late Sir William Roberts-Austen. Recently he prepared, for the annual meeting of the Canadian Mining Institute held at Ottawa last month, a paper on "Possibilities in the Electric Smelting of Iron Ores," as follows:

In view of the many recent attempts that have been made to employ electrical energy instead of fuel for the smelting of iron ores, it appears worth while to indicate, in a short paper, what can probably be accomplished in this direction, the manner in which the successful results can be obtained, and the advantages and drawbacks of the electrical process.

In the ordinary metallurgy of iron the ore is smelted in a blast-furnace with coke, producing pig-iron. This is an alloy of iron with some 2 to 4 per cent. of carbon, $\frac{1}{2}$ to 4 per cent. of silicon and small quantities of other elements. It is decidedly more fusible than wrought iron or steel, and on this account is very suitable for foundry purposes. Bessemer steel and open-hearth steel are made from pig-iron by removing from it in the Bessemer converter, or the open-hearth furnace, a considerable proportion of the carbon, silicon, etc., which it contains, the product being nearly pure iron retaining a little carbon and some manganese.

Crucible steel is used for tools. It contains about 1 per cent. of carbon, and is made by adding the necessary amount of this element to pure varieties of iron or steel, and melting the material in crucibles so as to obtain a perfectly sound product.

Electrical energy has recently been employed to replace, in such operations, the heat which is ordinarily obtained by burning fuel. Electrical energy is somewhat expensive, and it was naturally employed at first for the production of the more valuable products, such as crucible steel, where the cost is of less importance. The electrical production of cast steel for tools and similar purposes may be accomplished in two ways—(1) by melting down pure varieties of iron and steel with suitable additions of carbon and other ingredients, just as in the crucible process, but using electrical energy for heating instead of coke or gas; (2) by melting a mixture of pig-iron and scrap steel as in the open-hearth process, and removing the impurities, such as sulphur and phosphorus so thoroughly by repeated washing with basic slags that a pure molten iron is at last obtained. This can then be recarburised and poured into moulds. Both of these methods are now employed

commercially for the production of good qualities of tool steel. The larger sizes of electrical furnace that have already been constructed hold 5 or 10 tons, while the crucible will only hold about 80 lb., and the high efficiency of the electrical method of heating more than compensates for the greater initial cost of electrical energy as compared with heat derived from fuel. The resulting steel is found to be even better than crucible steel, and can be produced at less cost. It is, therefore, only a question of time until the crucible process shall be entirely replaced by the electrical process in all localities where electrical energy can be produced at a moderate figure.

Two forms of electrical furnace have been used for making cast steel: (1) the Heroult steel furnace, which resembles an open-hearth furnace, through the roof of which hang two large carbon electrodes. Electrical connection is made to these carbon electrodes and electric arcs are maintained between the lower end of each electrode and the molten slag in the furnace, thus producing the necessary heat. This form of furnace has been found to be very suitable for the second of the above processes, that is, the one in which pig-iron and scrap steel are melted together and refined until pure enough to convert into cast steel.

(2) An entirely different form of furnace has been devised in which no electrodes are required. This furnace consists of an annular shaped trough containing the steel. This ring of steel acts as the secondary of an electrical transformer. An alternating current is supplied to a primary winding, and the primary winding and the ring of steel both encircle an iron core, as in the ordinary transformer. The alternating current in the primary circuit induces a very large alternating current in the secondary circuit, that is, in the ring of steel, and in this way enough heat is produced to melt the steel. This type of furnace has been constructed lately in somewhat large sizes, holding as much as 8 tons of steel and consuming 1,000 electrical h.p. It is apparently well suited for the first-mentioned process, that of melting down pure varieties of iron and steel just as in the crucible process.

The amount of energy needed in these furnaces amounts to about 800 or 900 kw. hours per ton of steel, using cold stock, or 600 or 700 kw. hours when the pig-iron, which usually forms part of the charge, is supplied molten. This amount of electrical energy would cost more than the coal used in producing the same amount of steel in the open-hearth furnace, but the resulting steel is far more valuable than the open-hearth steel.

The above short account of the production of crucible steel in the electric furnace has been introduced, as this is the only commercial process for the production of iron or steel which is at present in operation. The present paper deals rather, however, with the electrical smelting of iron ores.

In reducing iron ore to a metal, iron can be obtained in a relatively pure state, such as wrought iron, and

this was the method adopted by the ancient metallurgists in their small furnaces or hearths; but in the modern blast furnace, with its higher temperature, the coke which is needed for the production of heat carburises the resulting iron, producing pig-iron. In the electric furnace, however, fuel is not used for the production of heat, since this is obtained electrically. Some carbonaceous material must be added to the charge in order to eliminate the oxygen of the ore yielding metallic iron, but the amount of this carbonaceous material can be regulated so as to yield either pure iron, steel or pig-iron at will.

Although this has been realized by the pioneers in the electric smelting of iron ores, certain difficulties in the operation have led them to smelt the ore for the production of pig-iron instead of for the production of steel, although the difference in price of these materials would be sufficient to pay for all the electrical energy needed for the direct production of steel from iron ore, and it is surprising that this more attractive proposition has not gained more attention from metallurgists.

A number of experiments have been made on the direct reduction of steel from iron ore in the electric furnace, but the most satisfactory work that has been accomplished relates to the production of pig iron from the ore, and this will be described first. This work has been carried out by Heroult, Keller and others. The furnaces they have adopted are similar to the one employed by Heroult recently in the experiments at Sault Ste. Marie. This consisted of a vertical shaft similar to a small blast-furnace, in which hung a central carbon electrode. The crucible of the furnace was lined with carbon and served as the other electrode, the electric current passing between the hanging electrode and the molten metal in the crucible of the furnace. The ore, with fluxes and carbon sufficient for its chemical requirements, was fed in around the vertical electrode, and became heated and melted by the heat produced by the passage of the current. The electric current in this furnace produces enough heat to carry out the chemical reactions involved in the reduction of the ore to metal, and the fusion of the resulting pig-iron and slag. The carbon is required for the reduction of iron oxide to metal and for the carburisation of the metal to form pig-iron.

The Keller furnace is practically the same as the Heroult furnace, except that it consists of two shafts instead of one and that these two shafts are worked in conjunction with one another, the current entering through the vertical electrode in one shaft and leaving by the vertical electrode in the other shaft. A connecting trough or passage enables the electric current to flow from one part of the furnace to the other, and serves to collect the resulting pig-iron and slag from both of the shafts. This furnace has the advantage of using a higher voltage than the single shaft furnace of Heroult. The results of operating furnaces of this class show a consumption of electrical energy of about 0.3 h.p. year, and about 800 or 900 lb. of

coke or good charcoal per long ton of pig-iron. Supposing that the general costs of operating this furnace and the blast-furnace were equal, these figures would indicate that the electrical furnace would need to obtain energy at a cost per h.p. year of less than that of two tons of coke in order to compete with the blast-furnace. Thus, if coke costs \$3 a ton and electrical energy \$5 per h.p. year the cost would be about the same by the two processes, and with power at \$12 per h.p. year, the electric furnace could not compete with the blast-furnace unless the price of coke were as high as \$7 per ton. In considering these figures it should be remembered that the heating power of one electrical h.p. year is about the same as that of three-quarters of a ton of good coal or coke, assuming that the latter is completely burned. Looked at from this point of view, it will be obvious that even these small and admittedly imperfect electric furnaces are more economical, that is to say, they use the heat better than the large blast-furnaces.

The electrical furnace possesses certain advantages over the blast-furnace, which in some cases may override the high cost of electrical power. One is its ability to use without much trouble ores of a sandy or powdery character. This ability depends upon the absence of a blast in the electrical furnace. In the blast-furnace powdery ores are liable to be blown out of the furnace by the blast, or it obstructs the passage of the blast through the furnace. In the electric furnace there is no blast introduced, and these difficulties are less serious. Another advantage of the electric furnace is in regard to the smelting of titaniferous and other difficultly fusible ores. In the blast-furnace these ores are liable to give trouble on account of the slag becoming pasty, but in the electric furnace it is possible to obtain a higher temperature and thus to overcome any difficulty of this kind. The high temperature which can be obtained in the electric furnace is advantageous in regard to the treatment of sulphurous ores. In the iron blast-furnace, the sulphur contained in the coke or the ore is prevented from entering the pig-iron by the presence of lime and by maintaining strongly reducing conditions in the furnace; the lime then forms calcium sulphide, which passes into the slag. In the electric furnace it is possible to obtain higher temperatures, thus enabling a larger proportion of lime to be used, and even more strongly reducing conditions to be obtained than in the blast-furnace, as has been shown in the experiments at Sault Ste. Marie.

Another point in favour of the electric furnace is that it does not require, as the blast furnace does, a very high quality of coke for fuel. In the blast-furnace a soft or powdery coke becomes crushed and obstructs the action of the furnace, and is less efficient than a harder variety; but in the electric furnace, where the coke or charcoal is needed merely as a chemical re-agent, any convenient form of carbon can be employed—coke, charcoal or small anthracite—and probably in improved furnaces even such fuel as peat, sawdust or soft coal could be utilized for reduction.

Looked at from a commercial point of view the electric furnace producing pig-iron has many difficulties to overcome before it can compete successfully with the blast-furnace. One very important difficulty is the small scale on which the electric furnace has so far been constructed. It will be seen from the account of the Heroult furnace that the height of the shaft of this furnace is limited by the length of the electrode which is introduced into it. More recent furnaces have been designed by Dr. Haanel and by Mr. Turnbull, in which this difficulty has been overcome by a system of inclined or lateral shafts down which the ore passes, so that the electrode does not hang down the whole height of the ore column. Another weak point in the construction of the electric furnace is that no provision has been made for utilizing the carbonaceous gases which escape at the top of the furnace. In the Turnbull furnace already referred to, it is proposed to utilize the gas by burning it in a rotating tube furnace down which the ore passes before it enters the electric furnace and is mixed with the charcoal. In this way the heat available in this gas will be utilized, and an economy in the working of the furnace may be expected.

In view of the importance of reducing the consumption of fuel and electrical energy to the lowest possible point, the writer has calculated what could be expected in this way if the gases arising from the reaction between the charcoal and the ore were used partly for the reduction of the ore and partly for pre-heating the ore. Such a result could be attained in a furnace consisting essentially of three parts. In the upper part the otherwise waste gases are burned by air introduced there and communicate their heat to the incoming ore to which the fluxes but not the charcoal have been added. In the middle portion of the furnace the gases arising from the lowest portion, which may be considered to be wholly carbon monoxide react on the heated ferric oxide, if that be the variety of ore to be treated, and reduces it to ferrous oxide. The charcoal is introduced in the lowest section of the furnace and completes the reduction of the ore to metal. Electrical energy is introduced into this section of the furnace and serves to melt the resulting pig-iron and slag, and to supply the heat necessary for the preceding chemical reactions. The details of the construction of such a furnace have not been worked out at present. In a furnace of this kind it can be calculated that one ton of pig-iron can be obtained from an average ore by the use of 0.2 h.p. year of electrical energy and about 600 to 800 lb. of coke or good charcoal. This includes a reasonable allowance for loss of heat. A further allowance should be made for irregularity in the use of the electrical power and, taking this into account, we may consider that one-quarter of a h.p. year and 600 to 800 lb. of coke or charcoal would be required for one long ton of pig-iron from the ore.

Considering these figures, it will be seen that the use of $\frac{1}{4}$ electrical h.p. year will save about 2-3 of a ton of coke, or that 1 electrical h.p. year should not

cost more than 2 2-3 tons of coke if the electric furnace is to compete with the blast-furnace. Thus an electrical h.p. year at \$12 would correspond to coke at \$4.50 a ton. The considerations previously mentioned in regard to the use of cheaper fuel and cheaper ore in the electric furnace would also apply in this case, and with improved design and construction the size of the electric furnace may be increased so as to admit of a large and economical output of pig-iron.

Electric smelting plants on a small commercial scale have been put up at Welland, Ontario, and Baird, California. While very little has been heard of these, the writer understands that at Baird considerable difficulties have been met with in the operation of the furnace. No doubt these difficulties will ultimately be overcome. No attempt has been made at present to utilize the waste gases, but this point will be attended to later.

The direct reduction of steel from the ore has been carried out by Stassano and others, but no economical scheme for this purpose has ever been put into operation on a large scale. The Stassano furnace consists of a chamber, about one metre cube, lined with magnesite bricks. The ore, mixed with the necessary fluxes and charcoal for its reduction and made up into briquettes, is placed in this chamber, and is heated by an electric arc which is maintained above the ore. In this furnace it is possible to reduce the ore to metal and to remove any impurities, such as sulphur and phosphorus, although Stassano did not actually demonstrate this, as the ores he employed were very pure. The method of heating the ore is, however, uneconomical, and it was not to be expected that commercial results could be obtained. Stassano still experiments with his furnace, but no longer uses it for the direct reduction of the ore.

Steel has also been obtained directly from the ore by Dr. Heroult in his electric steel furnace mentioned in the early part of this paper, but he found the process uneconomical and preferred to use pig and scrap as the materials for making steel in his furnace. Experiments in the laboratory have been made at different times with a view to the direct reduction of iron ore to steel. In this connection may be mentioned the experiments of Messrs. Brown and Lathe in the Metallurgical Laboratory at McGill, which were described in the last number of the Canadian Mining Institute Journal. The experiments are being continued this year and the writer hopes to be able to communicate some interesting results at a later date.

In any operation for the direct reduction of iron ore to steel the following difficulties should be borne in mind:

1. The difficulty of eliminating sulphur when this is present in the ore, the blast-furnace producing pig-iron being far more efficient in this particular than a steel furnace such as the open-hearth. It may possibly be necessary on this account only to use ores that are relatively free from sulphur in the direct production of steel.

2. Another difficulty lies in the different conditions required for the reduction of the ore and the final refining treatment to which the resulting steel must be subjected. Thus the operation of making steel must always be intermittent in character, while the reduction of ore in the blast-furnace is a continuous operation.

Until these and other difficulties have been overcome, it is not likely that we shall have any success-

HALL MINING AND SMELTING CO., LTD.

Report of Directors Submitted to Annual Meeting.

CONSIDERABLE LOSS has resulted from the operations of the Hall Mining and Smelting Company, Limited, at its lead smelting works at Nelson, B. C., during the period of 18 months to December 31, 1907. The following report was sub-



Hall Mining and Smelting Company's Smelter at Nelson, B. C.—General View of Works Looking Eastward. New Building (Since Completed) for Huntington-Heberlein Process Plant in the Foreground.

ful production of steel directly from iron ore on a commercial scale. Nevertheless, the high price of steel as compared with pig-iron renders this proposition particularly attractive to the electro-metallurgist. At present the most satisfactory method appears to be that of reducing the ore to pig-iron in one furnace, and turning this into steel in a separate furnace as in ordinary metallurgical practice.

A correspondent of the *Mining and Scientific Press* thus defines a promoter: "A promoter is a well-dressed individual who wants to sell nothing for something to someone who wants to buy something for nothing."

mitted to the annual meeting of shareholders held in London, England, on March 12, ulto.:

"Smelting.—At the last annual general meeting, shareholders were informed that it had been decided to adopt the Huntington-Heberlein process. The new plant was finally completed, and operations were commenced on the accumulated lead ores in November, 1906. The result of the first month's operations was most disappointing, the cost of working having been about \$3 per ton in excess of that under the old conditions. In December, the smelter manager, Mr. R. R. Hedley, having entirely failed to justify his estimates of working costs, tendered his resignation, which was accepted.

"The Huntington-Heberlein process having been

a success at other smelters in the same district, and considerable stocks of ore remaining to be treated, the services of Mr. S. G. Blaylock, who was familiar with the new process, were secured. The costs were at once reduced by about \$4 per ton, but as the accumulated ores were being gradually worked up, it became evident that a grave error had been made by the late smelter manager in largely overestimating the metallurgical contents, the values and quantities of the stock on hand. Subsequent enquiries showed that the furnaces had been fed with far larger charges of ore than had been reported.

"The board had relied upon the figures supplied by Mr. Hedley, more especially as the company's bankers had made large advances on the strength of them. When these circumstances were disclosed, all further advances by the bank were stopped, and instructions were given by the board to treat and sell every available ton of ore, so that the actual amount of the deficit might be ascertained. Seeing that without further advances from the bank it was impossible for the company to carry on smelting operations, negotiations were opened and were progressing favourably for leasing the smelter, when the financial crisis in America, the influence of which extended to Canada, put an end to any dealings of the kind.

"The realization of all metallurgical material was proceeded with as rapidly as possible, but, chiefly owing to insufficient roasting power, it was not until October that the work was completed; meantime the continued fall in the value of metals had materially increased the company's losses.

"Mining.—The Silver King mine, under the arrangement with Mr. M. S. Davys, yielded a profit of \$17,382 to December 31, 1906, when the agreement was ended by mutual consent; the company continued mining operations on its own account and, up to June 30, 1907, realized a profit of \$12,296. The mine manager estimated that about 300 tons of good ore could be relied upon monthly if a certain amount of development were undertaken, and this was done, with the result that shipments were resumed in the month of September, and the manager was instructed to continue shipping so long as there was a margin of profit. Several adverse circumstances occurred about this time, amongst others which could not be foreseen, the Trail smelter raised its rate for treating Silver King ores, the price of metals still further declined, and the crude ore fell off in quality. In November the manager reported an excess of liabilities, chiefly for wages, over assets of \$10,000, so he was at once instructed to suspend all further operations. The board having no funds to meet this liability, called a meeting of the debenture holders with a view to obtaining their sanction to the issue of £4,000 prior lien bonds.

"Had the resolution sanctioning this proposal been passed at the meeting, sufficient funds would have been provided to pay out the miners' liens for wages, to meet the interest on the debentures up to the end of September, and to provide a sum for necessary up-

keep, pending an agreement in process of arrangement for leasing the mine on tribute with an option of purchase, in which the shareholders would have had an opportunity to take part.

"Time, during which the financial depression in America and Canada might reasonably be expected to pass away, would have been given to enable the company to deal on more favourable terms for the disposal by sale or lease of its smelting property.

"The debenture holders not having seen fit to meet the view of the board, and liens for wages having been placed upon the mine, the only alternative has been for the trustees to act and to take possession of the properties.

"Subject to the approval of the debenture trustees, negotiations are pending to lease the mine and smelter, with the option of purchase, on terms that it is hoped may conserve the shareholders' interest in the property."

General.—The directors are: Lord Ernest Hamilton, George Freeman and Stratten Boulnois. The above report was signed by the two first named.

The profit and loss account and the balance sheet submitted to the shareholders shows that smelting working expenses for the year amounted to £65,798 18s. 11d., while the earnings were placed at £44,537, a loss of \$21,261. The total loss for the preceding 18 months, ending December 31, 1907, was shown as having been £24,171. The mining profits were: Silver King and American Flag, £2,243; Emma, £3,874; total, £6,117.

STANDARD GROUP IN SLOCAN DISTRICT.

A Producing Property Near Slocan Lake.

THE STANDARD MINE is situated on Four-mile Creek, about two miles from the town of Silvertown and midway between the Emily Edith and Alpha properties. A few weeks ago the editor of the *Slocan Mining Review*, of New Denver, visited the mine, of which G. H. Aylard is manager. The following description was afterwards published in the *Review*:

This property was staked in 1893 by Mike Grady and his partner Briggs. After shipping the outcropping ore they drove a cross-cut to tap the ledge lower, but after driving about 40 ft. they ceased altogether, and the future big producer was left in a dormant state until some two and a half years ago, when G. H. Aylard and J. A. Finch secured control. Continuing the cross-cut they at last struck the ledge, and drifting, shortly afterwards found the ore. Then No. 2 tunnel was started below, and the vein was encountered at 400 ft. in. The paystreak was found to be as good as above, and 150 ft. of work was done on the dip of the lead, and several cars of ore were extracted. The values holding out and the vein going down, No. 3 tunnel was begun and driven 500 ft.; then after striking the lead a drift was run 70 ft. Here it was seen that the property gave promise of

developing into a mine, there being 3 to 4 ft. of solid ore, with indications of proving better down further.

No. 4 tunnel was next driven for 300 ft. and a raise was made in ore for 150 ft. and connection established with No. 3. A cross-cut 60 ft. long was driven to the foot-wall, and two other cross-cuts of 50 and 70 ft. were made in No. 4 to the footwall. Stopping was meanwhile going on extensively between Nos. 3 and 4.

The value of the development thus far is shown in the fact that there is a virgin stoping area of 100 ft. vertical and 150 ft. on the dip, with all indications of the values continuing down the hill.

play an important part in the future of the camp. Above the third level there are thousands of tons of concentrating ore left standing, the body of it running from 2 to 4 ft. wide. Several thousands of tons of this ore are also lying on the dumps.

Last year, despite the fact that a programme of development was pursued, 650 tons of ore, averaging 80 oz. silver to the ton and 65 per cent. lead, were sent to the smelter, and in January 85 tons more have been treated.

Above the Standard, on the same lead, is located the Alpha claim, but owing to a disagreement among the partners, the property has been unworked for 10



View of Mine in Neighbourhood of Standard, Showing Physical Character of Country.

Operations to determine the continuity of the lead are being proceeded with. No. 5 level is in 400 ft. and a cross-cut for the lead is in about 17 ft. It is estimated that 50 ft. further will reach the ore body. So confident are the owners that the values go down that a sixth level is being pushed simultaneously with No. 5, and that is in 300 ft. also. Two cross-cuts, one 25 and the other 50 ft. in, are now being headed for the ledge.

When the ore shall be tapped at this depth it will be 1,000 ft. vertically below the outcrop, and then it will be reasonable to consider the Standard in the front rank of Slocan mines.

Other work done consists of a parallel tunnel on the foot-wall of No. 4, which is in 100 ft., and a cross-cut not already mentioned in No. 4. There are also two intermediate tunnels between the second and third levels, aggregating 170 ft. In No. 3 there is a cross-cut in zinc and quartz for 45 ft.

The Standard is a silver-lead property which will

years. Prior to this dispute about 900 tons of high-grade ore were shipped from the property, and nearly \$1,000 worth of ore was taken from just below the surface, the extraction of which required little or no mining. The owners of the Alpha are N. F. McNaught, Senator Hansborough, and Alex. Mackenzie.

The Pend d'Oreille Dredging Company has been organized in Spokane, Washington, to dredge for gold at the confluence of the Pend d'Oreille and Columbia Rivers.

The Snowstorm mine, in Shoshone County, Idaho, is reported to have increased its working force from 60 to about 100 men and its output of ore from 100 to 250 tons per day. This change is stated to be the result of an arrangement with the Consolidated Mining and Smelting Company's smelting works at Trail, British Columbia, to take considerably more Snowstorm ore than it was taking previously.

INDUSTRIAL DISPUTES INVESTIGATION ACT, 1907.

Act Reviewed in Court of Appeal in Ontario.

THE LEMIEUX ACT, as the "Industrial Disputes Investigation Act, 1907," is sometimes also designated, has been received in a superior court in Ontario. In view of the fact that the provisions of the act have already been taken advantage of in a number of instances by mining companies and their employees in the West, and of the probability of their being used in the future whenever occasion shall arise, information regarding the actual operation of the act will doubtless be read with interest, especially when it relates to breaches of the act and the findings of the courts in connection therewith. Happily there have been few prosecutions under the act in the West, the general desire having been rather to apply its provisions to purposes of investigation and conciliation rather than the imposition of penalties for infractions of them; yet since it may at any time be deemed advisable to institute prosecutions under the act, particulars of the result of an appeal against a conviction for having incited miners to strike may prove instructive. The Dominion of Canada *Labour Gazette* lately published particulars of proceedings in an Ontario case, showing that in a court of appeal a Cobalt conviction was sustained in amended form. The report of the *Gazette* follows:

An interesting appeal case, arising out of proceedings under the "Industrial Disputes Investigation Act" was decided in the Divisional Court at Osgoode Hall, Toronto, on February 13, when Mr. Justice Magee rendered judgment in the case of Rex vs. McGuire.

The case will be remembered as that in which one James McGuire, president of the Cobalt Miners' Union, No. 146, of the Western Federation of Miners, was sentenced to pay a fine of \$500, or in default of payment, to submit to six months' imprisonment. The case was heard at Cobalt, September 6 and 7, 1907, before Mr. R. H. C. Brown, local police magistrate, and was reported in the October issue of the *Labour Gazette* in an official communication to the Registrar of Boards of Conciliation and Investigation, in accordance with section 67 of the "Industrial Disputes Investigation Act." In this communication, prepared and forwarded by the police magistrate himself, it was stated that McGuire was charged with inciting the employees of the Nipissing Mining Company to go on strike, contrary to section 60 of the "Industrial Disputes Investigation Act." The official statement of the case proceeded as follows: "McGuire was found guilty and fined \$500, and in default of payment, six months with hard labour. The proceedings before me were conducted by Crown Attorney Browning of North Bay. There was another charge against the said McGuire for inciting the employees of the Cobalt Lake Mining Company to go on strike; eleven charges against Robert

Roadhouse for inciting employees of the different mines to go on strike, and two charges against William Hewitt for going on strike. In all these cases I have reserved decision pending the appeal to the High Court in the McGuire case."

The conviction was appealed, and was argued on appeal by E. E. A. DuVernet for the defendant, J. R. Cartwright, K.C., Deputy Attorney General for Ontario, for the Crown, and J. Lorne McDougall, Haileybury, for the informant. The motion to quash the conviction was made on the grounds, (1) that the magistrate had no jurisdiction; (2) that the only remedy was to recover the penalty by civil action; (3) that the defendant should have been allowed the right of trial by jury; (4) want of evidence, etc. The principal objection argued was that the magistrate had no jurisdiction to try the case under the "Industrial Disputes Investigation Act, 1907," as the act was not invoked by either the mine owners or the workmen, and was not therefore in force at the time when the offence was alleged to have been committed. The Divisional Court, after hearing argument, reserved judgment, and on February 13, as stated, the conviction was amended as to the term of imprisonment in default of payment of fine, the sentence being reduced from six months to three months, and since the conviction was thus held to be defective, the court decreed there should be no costs. The conviction was also amended as to the manner of statement of the offence charged, the conviction being held to be invalid in this respect also.

TEXT OF JUDGMENT.

In view of the fact that this is the first occasion on which a case under the "Industrial Disputes Investigation Act, 1907," has been the subject of a judgment in the superior courts, it will be of interest to examine the grounds advanced by the court for its decision, and the text of the judgment is therefore printed in full, being as follows:—

"The conviction which it is sought to quash states the offence to be that of 'having unlawfully incited the employees of the Nipissing Mining Company to go on strike.' No reference is made in it to any statute, and it is conceded that unless it is warranted by 'The Industrial Disputes Investigation Act, 1907,' there is no authority for it.

"Section 60 of that act declares that any one who incites 'any employee to go or continue on strike contrary to the provisions of the act' is guilty of an offence and liable to a fine. Then to find what is meant by going on strike we turn (in this case) to Sec. 56, which makes it unlawful for any employer to declare or cause a lockout, or for any employee to go on strike on account of any dispute, prior to or during a reference of such dispute to a Board of Conciliation and Investigation under the provisions of the act. For the meaning of these words, 'employer,' 'employee,' 'dispute,' 'lockout' and 'strike,' we must turn to Sec. 2.

"Except in the single case of an agreement mentioned in Sec. 63, that act is limited in its operation to certain specified

industries. In case of dispute between an employer and one or more of his employees which they are unable to adjust, the act (Sec. 5 and 21) provides that either party may make application to the Minister of Labour for the appointment of a board to which the dispute may be referred. It becomes the duty of such board (Sec. 23) to endeavour to bring about a settlement, and to that end make enquiries and suggestions. If the parties agree to a settlement (Sec. 24) or agree to be bound by the board's recommendation (Sec. 62) then such settlement or recommendation may be made a rule of court with whatever effect that may have. But if the parties do not do either, then the board have no compulsory powers and can only report (under Sec. 25) the result of their investigations and efforts with their suggestions and recommendations to the Minister, who makes it public (under Sec. 29). Thereafter the parties are left to public opinion and their own good sense or obstinacy, and the act declares (in Sec. 56) that nothing therein shall be held to restrain a lockout or strike in respect of any dispute which has been duly referred to a board and dealt with under Sec. 24 or 25, that is by agreement of settlement or by a report. As it is 'going on strike contrary to the act,' which under Sec. 60 must not be incited, it is argued for the defendant that if the strike would not be contrary to the act, that section could not apply. It is therefore upon Sec. 56 that the broadest question raised in this case turns in order to see if the strike is within it. It is said that in other pending cases the same point is involved. For the defendant, it is urged that although strikes are prohibited thereby prior to or during a reference, that only means provided either party has asked for a reference, and that this restrictive provision of the act is only intended to take effect if the machinery of the act is going to be used. On the other hand, it is said that Parliament manifestly intended that in these particular industries conciliative and investigatory machinery must be used before the extreme and disturbing expedient of a lockout or strike can be resorted to by either party. Leaving aside the possibility even under the defendant's contention of a man, before an application for a reference, inciting to a strike to be made after and in spite of either, let us look at the meaning of Sec. 56. It is not of moment to consider at what exact stage from the minister's decision to establish a board down to their first meeting, a reference may be said to begin. Prior to that stage, there must not in these industries be a lockout or strike 'on account of a dispute.' That seems plain enough, and to contemplate one and only one whole period of prohibition—extending from the dispute to the reference and to provide for peace during that interval. According to the argument of the defendant, that must be divided into two periods—one between the dispute and the application and the other between the application and the reference. I find nothing in the act requiring or authorizing such a construction. If it be asked how can anything be said to be prior to something which never occurs, the

answer is that the party himself can make it occur, and until he or some one does, his conduct is controlled.

"It is true that Sec. 56, even as interpreted by Sec. 2, cannot be taken literally. It would, so taken, prevent a strike where fewer than ten employees are effected by a dispute. But as Sec. 21 declares there cannot be a reference in such a case, it is manifest the prohibition before a reference cannot be intended.

"It is true also that prohibition of a strike before an application might seem to be an undue interference with personal right in some cases. The act does not declare all strikes to be illegal. On the contrary, it recognizes without reprobating their possibility, requires proof (Sec. 15) that 'the necessary authority' to declare one has been obtained before application for a reference, declares (Sec. 56) that it does not prevent them as a last resort, and imposes a penalty (Sec. 57) if the employer seeks under cover of its provisions delay which would postpone that ultimate right. Sec. 590 of the Criminal Code also prevents prosecution for conspiracy in refusing to work. And yet in the case of an employer reducing wages, and the men desiring to cease work and the employer being ready to get others to take their places, and neither party wishing to invoke the act, a strike would be prevented if Sec. 56 applied, and the men would be driven to make application for a reference, although they were not the parties disturbing the *status quo*, and although the act, (Sec. 5) only purports to be permissive in allowing the application. Whether in view of the definition of 'strike' in Sec. 2 as being 'done as a means of compelling their employer to accept terms of employment,' although its meaning is not limited, Sec. 56 would apply, and whether refusing to work on new terms not accepted would be a strike, are other questions. But at least the words of the section are broad enough not to make a distinction between the period preceding and that after the application. Then, too, under Sec. 16, an application for a reference, if the men are all members of a trade union, must be signed by two officers of the union duly authorized by a majority vote at a meeting called for that purpose. If the employees interested cannot persuade a majority, perhaps not interested though obstinate, to make an application, what are they to do? Are they to be deprived of a reference, and yet compelled to work on indefinitely on terms unsatisfactory to them, and from which there is no promise of relief? The construction asked by the defendants would obviate such a difficulty by making the application or notice of it the commencement of the restraint. Such a case may be unprovided for, and if it should arise, a solution would doubtless be found outside of legal construction. Discontinuance of work is not necessarily a strike, and membership in a union need not continue. The legislation is tentative, broad and beneficial, and it cannot be expected to cover at once all the little difficulties which may be imagined to arise.

"No doubt, where legislation is passed to obviate

or remedy some particular evil or bring about some particular result, courts have so construed the words of the enactment as to limit them to the purpose intended, although these words read literally as they stand, might have a wider effect, and if allowed to apply beyond the intendment, bring about results not contemplated and unjust. But here the question is, can it be said that the intent was to limit the sanction of the act to a period depending upon the will of one party to the dispute? There is nothing in the act to show that it is out of regard for the rights of the workmen that the employer is restrained from a lockout, or out of regard for the rights of the latter that the former are restrained from a strike. Neither may have broken any contract, and there may be no question of civil rights between them. Why then should the lawful conduct of either be restrained at the will of the other and only during the time that will is operative? We must look deeper to find the purpose of the legislature before we can say their words should be limited to that purpose.

"The prohibition in Sec. 60 against inciting to 'continue' on strike, which might seem to contemplate an existing one, is accounted for in Sec. 63, which directs a strike in other industries to cease upon notification of the minister's decision to refer. The title of the act which was sought to be invoked against the defendant sheds no light, for it refers to 'settlement' as well as 'prevention,' and in any view the act attempts both.

"I find nothing in the act to show that even the possibility of a strike in these industries before an application for reference was considered. On the other hand, an application before a strike is manifestly contemplated in Sec. 15, which requires the application to be accompanied by proof that strike will be declared. In the industries to which the act applies, the prohibition is against coming on strike—in the others (Sec. 63) the strike is to cease. To give time for reference and adjustment, Sec. 57 requires thirty days' notice of any change affecting conditions of employment, and although that section is only levelled against disturbance during the reference the words used are significant, 'the relationship of employer and employee shall continue uninterrupted by the dispute.'

"But outside of all this, the limited class of industries to which the act applies affords the strongest indication of the purpose of Parliament and the strongest reason why there should be no interruption of the work. They are 'mining properties' and 'agencies' of public service utility.' As regards the latter, upon which the community depends for daily and constant necessary service, the public interest in and need for their unbroken operation is manifest, and in the case of railways, Parliament set forth some of the evils resulting from lockouts and strikes in the preamble to the 'Railway and Labour Disputes Act, 1903.' The Criminal Code had previously made mere breaches of contract in the case of railways and other utilities criminal offences when to the public detriment. As regards coal mines, apart from dam-

age to the same, the loss and privation which may result to manufacturers and consumers at large through wide sections from a general interruption of production, is a matter of recent history and common knowledge. Parliament has seen fit, doubtless for good reasons, some of which readily occur to one, to include silver and other mines in the same category in this act, and they cannot be separated in interpreting it.

"The right of temporary interference with private liberty of action by the prohibition of lockouts and strikes during the period of actual investigation, as justified by the interest of the community being asserted by Parliament, there would be the less reason for non-interference before such investigation with a strike which, while it might be disastrous, could only be short-lived, inasmuch as it could be so soon ended by the opposite party invoking the aid of the act. In so far as the public interest is concerned in any restriction, it justifies even more the temporary prohibition *ab initio* than a mere interruption of the strike. The policy of the act therefore does not assist, but equally with its terms, is opposed to the defendant's contention.

"To come then to this particular conviction. As already mentioned, it makes no reference to the act. It is impossible to gather from it that the defendant has been guilty of any offence. Under some circumstances, it is by this act made unlawful to incite some employees of some employers to go on strike, but not all employees nor under all circumstances.

"Outside of the act, even where it may be unlawful in the sense of being actionable, it might not be a criminal offence or even if a criminal offence, it might not be the subject of summary conviction.

"There is nothing in this conviction to show that the Nipissing Mining Company is such an employer as the act applies to, nor that its employees who were incited were such as there referred, nor that the strike was to be as required by Sec. 56, 'on account of a dispute,' and that such a dispute as the act refers to, nor that the strike incited was to be 'prior to or during a reference.'

"All these are essential matters necessary to be proved in order to constitute the offence. None of them are matters of qualification, exception or proviso as to which questions might be raised upon whom the onus of assertion or proof would lie. Yet upon all of them the conviction is silent.

"I am leaving out of consideration any special meaning of the words 'go on strike,' assuming that the act does not limit the ordinary use of them to which the object of enforcing compliance with demands or redress of grievances seems to be attached. It was argued that as the conviction states that the defendant 'unlawfully' incited, that must mean that the strike would be unlawful, and therefore contrary to the act, but such an effect cannot be given to it. There might be lawful or unlawful means, or unlawful but not criminal means, used to incite to do a lawful or non-criminal act. See *R. V. Goodfellow*. C. A., 1906, 11 O. L. R., 359, and see *Paley on Cou-*

viction, 8th Edn., 196 and 200, as to the use of the word 'unlawfully' being insufficient to make up for the absence of the allegations to show that the act is unlawful.

"The information stated the charge in the same way as the conviction does, but has the added words, 'against the form of the statute in such case made and provided.' These words were in all probability inserted and intended to refer, as they usually do, to the offence charged against the defendant, that is, to the incitement, and not to that which the employee was incited to. But they would not as to the incitement supply the circumstances necessary to make it an offence. *R. v. James*, 1902, 1 K. B., 540; 2 Hale Pleas of the Crown 170, Paley 8th Edn. 196; *ex parte Hopkins* 66 L. T. N. S. 53; *Rex v. Jukes*, 8 T. R. 536. But as they stand, the prosecution would be entitled to the benefit of the argument that they immediately follow the words, 'to go on strike,' and therefore should be taken to refer to them. At the hearing before the Police Magistrate, before any evidence was taken, this construction was claimed in answer to the objection of defendant's counsel, so that the defendant had notice that it was intended thereby to charge that the strike which he incited was contrary to the act. I do not think that carries the matter any further against the defendant, for it should still have shown in what way the strike incited would be contrary to the act,—but at least it comes nearer stating his offence in the words of the statute creating it, and he was not misled in fact upon his trial.

"The word 'employees,' used in both the information and conviction, has, in Sec. 56 and 60 of the act, a precise and limited meaning given to it, as perhaps the word 'strike' has not under Sec. 2. This limited meaning of employees carries with it throughout the act the nature of the work and of the employer's business, and the number of his employees. But though its use in the act itself carries that precise meaning with it, the act does not give the word that precise meaning in other documents, or warrant its being taken in other than the ordinary acceptation. There might well be employees such as civil engineers or mining experts not doing either clerical or manual work, and therefore not within either Sec. 56 or 60.

"Even if we could apply Sec. 523 of the Criminal Code, 1906, which declares that the description of any offence in the words of the act creating the offence, or any similar words, shall be sufficient, this conviction does not do that, for it omits the essential assertion that the strike incited was contrary to the act.

"The conviction therefore on its face is bad, for not stating any offence. It cannot be said that what it alleged could not be an offence, but it might or might not be, and therefore it cannot be said that the defendant was convicted of one.

"It was also objected to it that the act did not authorize a summary conviction with imprisonment as a result of non-payment of the penalty, and that

Sec. 61 merely directed that the procedure for enforcing the penalty should be that prescribed by Part XV of the Criminal Code, 1906, relating to summary convictions. Sec. 60 does not merely impose a penalty, but declares the inciting to be an offence, and the Interpretation Act (Sec. 28) declares that every act shall be read as if an offence punishable on summary conviction were referred to as an offence and the Criminal Code shall apply. This objection cannot be given effect to.

"The conviction imposes a fine of \$500 and in default of payment, imprisonment for six months. It was conceded by the deputy attorney-general that this term of imprisonment was unauthorized, and should not be more than three months under Sec. 739 of the Criminal Code.

"The conviction thus being invalid in two respects as it stands, what should be done with it? Sec. 65 of the 'Industrial Disputes Investigation Act, 1907,' only cures defects of form or technical irregularity, even if this could be said to be a proceeding under the act. The Criminal Code, however, in Sec. 723, provides that no information or conviction under Part XV shall be deemed insufficient for not naming or describing with precision any person or thing, and in Sec. 724, that no objection shall be allowed to any information for any alleged defect therein in substance or in form. And by Sec. 1124 no conviction shall be held invalid for any irregularity, informality or insufficiency therein if the court, upon perusal of the depositions, is satisfied that an offence of the nature described in the conviction has been committed, over which the justice had jurisdiction, and that the punishment is not in excess of that which might be lawfully imposed, and even if the punishment be in excess, the court has the like powers as under Sec. 754 might be exercised by a court on an appeal from the conviction. Under Sec. 1125, the generality of this curative provision is not restricted, but is to include inter alia the omission to negative circumstances which would make the act complained of lawful. When we turn to Sec. 754 we find that the court to which an appeal is brought is enabled, notwithstanding that the punishment is in excess of what is lawful, to hear and determine the charge upon the merits, and to modify the decision of the justice, and to make such other conviction or order as the court thinks just, and may by such order exercise any powers which the justice might have exercised.

"Now, if under Sec. 1124 we turn to the depositions, it was conceded before us that there was sufficient evidence to warrant a conviction under Sec. 60 of the act of 1907, if there could be a conviction under Sec. 56 before an application for a reference—it being admitted on the deposition that there was no such application. That being so, should the amendment be made as regards the statement of the offence and the punishment? In *Rex vs. Hayes*, 1903, 5 O. L. R. 198, where the conviction did not allege, as was necessary, that the defendant 'knowingly' did what he was charged with, the court considered that was not an irregularity, informality, or insufficiency

within Sec. 1134 (then Sec. 889 of the Criminal Code of 1892) which could be amended, but in that case the depositions did not warrant the amendment, and so the conviction was quashed. In *Rex v. Boomer*, 10 O. W. R. 978; *Rex v. Crandall*, 27 O. R. 63; *Rex v. Smith*, 31 O. R. 224, and in other cases, the absence of evidence also prevented the necessity of deciding as to amending. In *Rex v. Meikleham*, 11 O. L. R. 366, an amendment was allowed in the statement of the offence in the conviction, the defendant having admitted facts making him guilty of the offence as amended. In that case the conviction as it stood did not necessarily charge an offence, neither does this conviction. That was the decision of a divisional court. The allegations omitted from this conviction are quite as essential as the scienter in *Rex v. Hayes* * * * which was also before a divisional court, but as the conviction in the latter case failed also upon the evidence, I think *Rex v. Meikleham* should be followed, and the conviction be amended, both as to the statement of offence and the term of imprisonment, which should be reduced to three months.

"As the conviction was defective, there should be no costs."

PACIFIC COAST COAL MINES, LIMITED.

Another Company to Mine Coal on Vancouver Island

COAL MINING on Vancouver Island is no longer to be restricted to the two companies—the Wellington Colliery Company and the Western Fuel Company—which of late years have been the only important producers of coal on Vancouver Island. Recently several small organizations—i. e., small as regards the extent of their coal-mining operations in comparison with those of the two companies just mentioned—have been getting out and shipping coal in small quantities. Now, though, a more ambitious attempt is to be made to mine coal, and to secure a share of the business in connection with the market demand for this fuel. Mr. Ephraim Hodgson, well known on Vancouver Island from his long association with its coal mining developments, has been telling the *Winnipeg Free Press* what one of the former prominent business men of that city and his associates are doing in the direction of opening up new coal properties on Vancouver Island. The *Free Press* says, in part:

Mr. Hodgson is associated with J. Arbuthnot, ex-mayor of Winnipeg, who went to the Coast several years ago; S. H. Reynolds, formerly assistant city engineer, and other gentlemen well known here, on the board of directors of the Pacific Coast Coal Company, of which Mr. Arbuthnot is president. Several properties in which Winnipeg's ex-mayor is heavily interested have been merged in this concern. One of these mines, Mr. Hodgson says, is producing about 200 tons a day. A view of the opening to this mine shows Mr. Arbuthnot and three men standing in front of the seam of coal, which is 16 ft. thick. The

point is five miles from Nanaimo, and 65 miles from Victoria, along the line of the E. & N. Railway. Some 65 men are now employed, but it is expected that the number will soon be increased to 300. The company proposes to build a railway about eight miles in length to connect the mine with salt water. It is now shipping coal to Victoria and Vancouver, but when this proposed road shall be built it will be able to ship from its own property. It also has 4,000 acres at the coast, where it will have wharves, docks, etc. This area is also coal land.

The company has also two diamond drills in operation on and near Malcolm Island, at the north end of Vancouver Island. This is the largest coal field, consisting of about 40,000 acres, embracing two adjoining properties. The coal extends under the water from the east coast of Vancouver Island to the shore of Malcolm Island. This property, Mr. Hodgson is confident, is going to be one of the best coal producers on the coast. A seam of coal 5 ft. thick is giving excellent results.

The amalgamation of interests referred to has been given the name of "Pacific Coast Coal Mines, Limited." The directors are: John Arbuthnot, Victoria; Luther D. Wishard, New York; James M. Savage, Winnipeg; Samuel H. Reynolds, Victoria; J. C. McGavin, Winnipeg, and Ephraim Hodgson, Victoria. The company is capitalized for \$3,000,000 in 30,000 shares of \$100 each. The property includes 50,000 acres, all on the east coast of Vancouver Island.

The property near Nanaimo was bought last October and operations were commenced on the 9th of that month. The block first mentioned, consisting of 480 acres, has the old Alexandra mines to the south, and the old Southfield mine belonging to the Vancouver Coal Company, to the north. The block at Oyster Harbour, fronting the town of Ladysmith, consists of about 4,500 acres; this will be the terminus of the company's coal road when constructed. The property at the north, consisting of 40,000 acres, is 240 miles distant from Victoria. It is on the line of steamers going to Alaska; all vessels going to Alaska pass within 300 yd. of where the company's shipping point will be. The company is busy getting the plant installed there. A special feature of the industry is that some of the largest bodies of coal are under the salt water.

At the present time, Mr. Hodgson says, the coal market is rather dull, but this dullness is only temporary. Many new industries are commencing which are going to consume a lot of coal. "We could," he adds, "readily dispose of 1,000 tons a day if we were in a position to deliver it at tide water; but we are somewhat hampered by having to ship over the C.P.R."

The quantity of pig lead produced at the Trail refinery during the latter half of 1907 is stated to have been 38 4-10 tons per day.

ANNUAL MEETING OF LE ROI NO. 2, LTD.

Consulting Engineers and Manager Think Outlook Favourable.

LE ROI NO. 2 MINE at Rossland has the advantage over other mines in Rossland camp that for years have been productive, in that its ores have proved of higher average value than have theirs during recent years. Now the Le Roi No. 2 Company has the further advantage of being largely interested in other mines—gold and silver-lead, respectively. As a consequence the outlook for the company is regarded as distinctly favourable, and those in active direction of its operations do not hesitate to assure shareholders to this effect.

The seventh annual general meeting of the shareholders was held on March 3 in London, England, Lord Ernest Hamilton (chairman) presiding. The proceedings were reported by the *Financial Times* as follows:

The chairman said: Gentlemen,—You will have seen by the report and balance sheet before you that the results for the past year's working are smaller than those we have had to record for several previous years. You will also have seen the reasons which have been responsible for these small results, and will doubtless have gathered from them that the small financial returns of the past year do not in any way reflect upon the intrinsic value of your property, but were due to causes which were beyond control and which could neither be foreseen nor avoided. What, however, is perhaps not made clear, neither in the directors' report nor in the figures on the balance sheet, is that advantage was taken of the coal and smelter troubles, which restricted your output, to push developments in the mine on a more extensive scale than in other years, and the results of these developments have been strikingly successful—so much so that against the poor return of the past financial year we have, on the other hand, a distinctly more favourable outlook with regard to the future than we have ever been able to record at any previous general meeting. During the year 2,533 ft. or nearly half-a-mile, have been driven and cross-cut and 5,000 ft. bored by diamond drill at a cost of £12,400. In addition to this the No. 1 mine was unwatered, which was a work of some expense.

You will see, as the result of this work, that Messrs. Hill & Stewart, who four years ago declined to guarantee more than 18 months' life for the mine, now after a lapse of four years, and for the first time in the history of their management of the property, give it as their opinion that we can with safety look forward to three years of continuous shipments at the rate of from 2,000 to 2,500 tons monthly. That this does not mean that the mine will come to an end in three years is fairly evident from the fact which I have just quoted—that four years ago they would guarantee no more than 18 months' life ahead—it merely means that those shipments are more or less a matter of certainty, and the extension of the ore

reserves must be dependent on future developments. This, as you know and has been explained to you on previous occasions, has always been, and always will be, the history of this particular mine, but the probable reason for Messrs. Hill & Stewart extending their usual 18 months' life on the present occasion to three years is that the "II" vein, which for some time past on the 500-ft. level has been our chief source of supply, has, during the past 12 months, been definitely located on both the 700- and 900-ft. levels; on both of which levels payable values occur. This discovery altogether knocks on the head the old theory which for some time was even shared by Messrs. Hill & Stewart, that below the 500-ft. level there was for several hundred feet a barren zone in which it was not likely that payable values would be found. Not only has this theory been exploded by the two discoveries just mentioned, but the diamond drill has located a payable orebody of considerable size at a depth of 1,350 ft., or 450 ft. below the bottom of our shaft. When it will become the policy of the board to sink in order to exploit that orebody is a question for the future, as the need for such a step will probably not make itself felt for some years, but it must be a matter of satisfaction for shareholders to know that such further orebodies do exist in that property if the necessity should arise for working them. With regard to the immediate future, we have reason to believe that we can look forward with tolerable certainty to a succession of good returns from the mine, though it must not be lost sight of that the return for January was abnormally high, and must not be looked upon as a sample of what we are to expect every month; still, returns considerably lower than that one will be sufficient to enable the company to pay dividends of a satisfactory nature. Some of you will have seen in this morning's newspaper that the return for February was \$48,000, or approximately £10,000, which cannot be looked upon as otherwise than satisfactory, especially in view of the fact, which many of you will remember, that this time last year we were getting no returns at all from the mine.

Last year at our general meeting our two outside interests were brought to your notice—namely, the company's interest in the Cloncurry Syndicate and in the Vancouver mine. It is very gratifying to the directors to be able to announce that in each case these interests are shaping most satisfactorily.

THE CLONCURRY SYNDICATE.

In the case of the Cloncurry Syndicate, a profit is at the present moment actually assured. What the extent of that profit may be naturally depends to a great extent on the development of the Queensland Exploration Company's property, in which this company, through the Cloncurry Syndicate, holds a number of shares, but altogether apart from the potential value of the Queensland Exploration shares the financial position of the Cloncurry Syndicate is such that the investment must in any case show a profit. If the Queensland Exploration Company turns out

as anticipated this will be a very considerable profit, but even if the Queensland Exploration property turns out a disappointment the investment will still show profit. I may, however, add for your information that recent developments on the Queensland property are very satisfactory, and there seems more than a reasonable prospect of the mine turning out extremely valuable. Before I turn to the Vancouver property I should like to forestall any criticism by making the following explanation: It has been said in some quarters in a perfectly friendly way and in a spirit of fair criticism, that we as a board have no business to break out in what has been described as "outside ventures." With this criticism the board thoroughly agrees; but both of the outside ventures in which the company has broken out have been of a peculiar and exceptional nature. In the case of the Cloncurry Syndicate a proposition was made over to the Le Roi No. 2 Company which was, on the face of it, so favourable that no loss could, humanly speaking, result, while, on the other hand, the profits might turn out very substantial. So far as that investment goes the board has been fully justified by the result.

THE VANCOUVER GROUP PROPERTY.

With regard to the Vancouver Group, in the Sloean District of British Columbia, I would remind you of what I mentioned at a former general meeting, viz., that there was a period when it looked as if the Le Roi No. 2 mine might possibly come to an end and leave the shareholders without a property. This possibility has happily entirely passed away at the present moment, but the very favourable developments of the last 18 months could not be foreseen, and it was with a view of preparing for some such eventuality that the Vancouver Group business was undertaken. In each case I would like you to understand that we were dependent on the advice of our consulting engineers, Messrs. Hill & Stewart, who throughout their connection with this company have proved such excellent friends to the shareholders. Acting, therefore, on their decidedly expressed opinion, we did what we would not have done on the recommendation of any other firm of mining engineers, and in each case the results have fully justified our confidence in their judgment. The Vancouver mine is beyond all doubt a property of exceptional value, and we feel quite confident that for many years to come it will prove a source of revenue to the shareholders. I do not wish at the moment to enter into any detailed description of that mine, because the manager, Mr. Couldrey, is present here to-day, whom I shall presently call upon to give you his views with regard both to the Josie mine and the Vancouver property, and when you have heard him I think you will agree with me that we are to be congratulated on having acquired such a very exceptional property. As you have seen in the directors' report, it is proposed with as little delay as possible to float the Vancouver mine as a separate company. In this case the Le Roi No. 2 will be in a position of the company promoter, and all the advantages attached to

the deal will be offered in the first place to the shareholders of this company.

When the formal part of the business has been disposed of I shall explain to you what we propose to do with regard to the Vancouver, but before this is done we must dispose of the report and balance sheet and the other formal matters on the agenda. Before I move the adoption of the report and the balance sheet, as I shall in a minute, I ask Mr. Couldrey to give you a few facts with regard to your property. You know it has been our custom at former general meetings to have Mr. Alexander Hill present. Mr. Hill is unfortunately away at present in Spain, but Mr. Couldrey is here as his representative. Mr. Couldrey, as you probably know, has been Messrs. Hill & Stewart's representative on your property from the very first moment when most happily for all concerned they took over the management of the mine. I think one might fairly say that it is almost entirely due to his personal enterprise, energy and ability and devotion to his work that your mine is at the present moment in the prosperous condition in which it finds itself. I do not want to embarrass Mr. Couldrey in his presence by heaping compliments upon him, which he is the last person to covet; but I will only tell you this, that two years ago I was out in Rossland, and it was the generally expressed opinion on all sides and from every class in the community that Mr. Couldrey was one of the most conscientious and hard-working mine managers ever known in the history of Rossland, and one who devotes his entire attention to the mine. I think I am right in saying there are very few days when he is not down in the mine himself. He does not leave it to his foreman, as is done in very many cases. He uses the funds of the company as economically as if they were his own money, and in addition to this I would like you to bear in mind that he is a gentleman of the most careful and conservative temperament, not in the least apt to exaggerate facts, and therefore anything he tells you with regard to your property you may look upon as beyond doubt. I will now ask Mr. Couldrey to give you certain information with regard to your property.

ADDRESS OF MANAGER.

Mr. Paul S. Couldrey said: "I have jotted down a few notes regarding the work in British Columbia. With regard to the Josie mine, you will be pleased to learn that we are now working the Hamilton vein on four levels—namely, the 300-, 500-, and 700-ft., and intermittently on the 900-ft. level. I do not think working has ever before been so distributed throughout the various levels of the mine as at the present time; certainly not in connection with any one vein. This must be looked upon as a healthy sign, for when all the ore is coming out of one stope on one level, no matter how good the grade and how wide the orebody, the future of the mine naturally depends upon that one stope only. We have now nine or ten stopes working on the Hamilton vein alone, of which the West H. stope on the 500-ft. level is at the present time about 500 ft. long itself. We feel that, having

now opened up at so many points and over such a large area, the most regular vein we are ever likely to find in our Rossland properties, the chances of sudden and simultaneous impoverishment everywhere are getting smaller every day. With regard to the ore reserves, we would now have no difficulty in estimating with tolerable exactness the quantity of ore which lies ahead of us in certain specified blocks of ground, but any such estimate would be totally inadequate if they conveyed to you the idea that this was all the ore the mine contained. In opening up the Hamilton vein we pushed the work on the 500-ft. level (having ore to follow) so far ahead of all the other levels that it is only now that we are getting to points vertically above and below the eastern end of our West II. 500 stope. Hence the impossibility as yet of estimating the ore which lies above or below the 500 West II., without which any estimate would be altogether valueless. The year ended September 30, 1907, was one of record prices so far as copper was concerned, but these record prices led to the complete demoralization of the labour market all over Western Canada, with the result that we were unable to avail ourselves of the seeming opportunities. Temporary high prices bring so many unthought-of evils in their train that they are by no means a blessing, and it is to be hoped that normal conditions with a genuine, healthy demand for copper, resulting in a moderately high price and a steadier market, will soon be the order of the day. The severity of last winter all over Canada and the United States impeded traffic and reduced the outputs of all the mines very considerably, as did also the labour disputes at the Crow's Nest collieries. It is unnecessary now to dwell on these things, but at the time they caused us considerable annoyance and inconvenience, principally by reason of the fact that we had no idea what was going to happen or how to arrange our work.

THE VANCOUVER MINE DEVELOPMENTS.

"In regard to the Vancouver mine, since we have had an option on this mine we have in 18 months shipped concentrates and ore of more than \$100,000 in value, most of which we have been compelled to dispose of when prices were lower than they had been for years previously. The difficulties which—as related above—proved such a hindrance to our work at the Josie mine caused us even more trouble at the Vancouver. The coal strike led to disorganized shipments, interfered with the running of the concentrator, and upset stoping operations in the mine itself. Following on this the exceptionally severe winter made the running and repairing of the mill very troublesome, and later the increase in the price of metals and wages drew away a large percentage of our men. Working as we were with hand steel, the labour shortage was felt even more than at the Josie. As indicated in the report, the work has resulted in the opening up of four very fine looking shoots of ore at the Vancouver or western end of the mine, and we have every reason to believe that very little further work at the Mountain Boomer claim will open up a fifth shoot. The length of vein between the faces of

the nearest workings advancing east and west is 1,500 ft. The vein is easy to follow, and the ore shoots met with are high grade in silver. The south vein, which we have had no time to prospect, looks promising at both ends of the property. It outcrops in the form of very fine looking galena on the hill south of the Mountain Boomer. The Vancouver mine now requires an air compressor to open up the vein quickly and systematically, and mention is made in the report of the water power available for this purpose. The vein can be opened up by tunnels for several hundred feet below the present lowest workings, and neither shaft sinking nor pumping will be necessary. During the past year we extracted more ore and made more high-grade concentrates than any other mine except one in the lead-silver belt of British Columbia, and this record can be maintained by the application of machinery to the work. Since the Vancouver report was made up, 5,000 tons more of ore have been exposed at the western end of the property, and there will be no difficulty in following the ore showing in the various faces and continuing to increase the ore reserves in a similar manner. In the report on the Vancouver property we have taken figures of the past 18 months as applying to the future, except that we consider that with the air compressor we can mine very much more cheaply than before, but so far as the values are concerned we have taken the figures of the past 18 months to apply to the future, because they are the best guide to the values. As a matter of fact, when we get started running by sorting our ore we will reduce the quantity of ore going through the mill and improve the quality, so that the profits per ton, which are here worked out at about \$3.50, can easily be improved. The quantity of ore is just a question of rapid development, and when we get an air compressor it will enable us to push things much more quickly than we have been able to do when using only hand drills."

The chairman then moved the adoption of the report and accounts, and Mr. W. H. Morrison seconded the resolution.

ENQUIRIES AND COMMENTS.

Mr. C. Bartlett wished to know how it was that the shipments had not been increased when the prices were high, and now that these had gone down shipments were being increased.

The chairman, in reply, said they were more or less in the hands of the smelters, and it did not suit the smelters to take more than a certain quantity of their ore at the then price of copper.

Mr. Bartlett pointed out that the shareholders had not received any pecuniary benefit by the increased price of copper. This was a most extraordinary state of things.

Mr. Couldrey stated that none of the neighbouring companies had reaped any benefit from the increased price of copper for the simple reason that when copper went up wages went up, and the Consolidated M. and S. Company could afford to pay these wages better than his company could, and they and other powerful companies immediately raised them. After

a great deal of heart searching his company raised the wages to \$4 a day. Almost immediately after they did that the copper slump occurred.

Mr. Lionel Harriss thought last year's working had been most satisfactory. They had heard with very great satisfaction from Mr. Couldrey and also the chairman that although they could not look forward to returns such as they had last January, they might continue to look forward to very satisfactory returns.

The resolution was carried unanimously.

The retiring director, Lord Ernest Hamilton, was re-elected, and also the auditors, Messrs. Ford, Rhodes & Ford, and Messrs. Clarkson, Cross & Helliwell, of British Columbia.

PROPOSED FLOTATION OF VANCOUVER COMPANY.

The chairman remarked with regard to the Vancouver property that Mr. Couldrey had said sufficient to convince the shareholders that they had an exceptional property in the Vancouver. There were certain things they knew by practical experiment, because for over a year they had been working this mine, and they knew how they could take the ore out, how they could treat it, how they could get it to the mill, how they could ship it to the smelter. What they did not know and could not perceive was the fluctuations in the price of metals and what ore was in the mine beyond what was at the moment exposed and in sight. However, there seemed to be no possible doubt that they had a very good property. What they proposed to do was to form a company with a capital of £100,000 in £1 shares, divided into 30,000 preference shares and 70,000 ordinary shares. The 30,000 preference shares would be the working capital, which would be offered for subscription. Those who subscribed for those 30,000 preference shares would get as a bonus 20,000 ordinary shares. With regard to the distribution of the profits, it was proposed that an annual dividend of 10 per cent. on the whole of the capital of the company would be first paid. This would absorb £10,000. Any surplus profit available for distribution after that 10 per cent. had been paid was to go to the holders of the 30,000 preference shares until they had been paid in full. From that moment the preference shares would cease to exist as preference shares, but they would rank as ordinary shares. That was an outline of the scheme they had in view, but it was not intended to take any formal vote on the matter at the meeting. He might add they proposed to offer these 30,000 preference shares to the shareholders of this company, so that the advantages accruing from this flotation will be divided amongst the shareholders either as shareholders pure and simple or as members of this company.

In answer to further questions, the chairman stated that it was the intention of the directors to send to the shareholders full details of the scheme and also to invite them to subscribe for the shares, and he had not the slightest doubt the money would be subscribed, because if the shareholders did not care to take them up there were others who were ready to

do so. The terms were very favourable and not those which would be offered to an outsider.

On the motion of Mr. Lionel Harriss, a cordial vote of thanks was passed to the chairman, directors and staff for the way in which they had conducted the affairs of the company.

ALASKA CONSOLIDATED MINES.

THE FOLLOWING REPORT has been made by Messrs. Pearse, Kingston and Browne, of Worcester House, Wallbrook, and New York, to the directors of the Alaska Perseverance Mining Company, a company registered in the United States, but the entire capital of which, except five shares, is owned by the Alaska Consolidated Mines, registered in England.

"Our Mr. Arthur L. Pearse revisited the Perseverance mine at the latter end of October last. We have pleasure in reporting as follows:

"The mine has been developed in the most satisfactory manner. The lode has been drifted on for 1,000 ft. from the point of its intersection by the Alexander (main) cross-cut tunnel. Above this stopes have been regularly opened out to 70 ft. in width of lode; upwards of 80,000 tons have already been broken in these stopes, and allowing for about 30,000 tons crushed, some 50,000 tons are ready for hauling. There are now upwards of 5,500,000 tons vertically above the main drifts; this, at present rates of drainage, is being added to by 400,000 tons per month. The mine will be able to outturn any tonnage of ore likely to be demanded of it. Mr. Pearse's original estimate of available tonnage above the Alexandra tunnel has been proved correct, and will eventually be found to have been under-estimated.

"During the months June to November, 32,400 tons of ore were sent to the mill, of an average value of \$2.59 per short ton. Better ore is likely to be found as developments proceed to the east, and already the values there are \$1 per ton better than to the west. The shoots are vertical, and the better values found on the outcrop of the lode are to the east of the present workings, in the Jumbo and Alta claims. A three-compartment upraise, 919 ft. high, connects the present workings with the surface, and the mine ventilation is now perfect. The plan for working as at present laid down should still be followed, as it has been found quite satisfactory. Better equipment for hauling the larger quantity of ore from the workings to the mill should be adopted for the increased output in the future, and mechanical hauling used instead of horses, as at present.

"The 50-stamp mill crushed 265 tons daily, or a duty of 5.25 tons per stamp. The next 50 stamps were almost completed when Mr. Pearse left the mine, and have since dropped. There still remains some amount of detail to properly finish and adjust the mill, when it will be capable of a larger stamp duty and a higher percentage of extraction. The details of the various fine points which are essential

to the highest standard of efficiency—such as, for instance, the exact determination between coarse and fine crushing, at which the best percentage of extraction is reached and a high stamp duty maintained—are being gradually determined on the most up-to-date lines, based on our experience of the fastest and best milling known to modern practice. There has not yet been time to thoroughly adjust and perfect the various methods step by step, but a general improvement metallurgically may be expected—that is to say, an increased stamp duty and a higher percentage of extraction, with, in consequence, lower residues.

“Notwithstanding the above room for improvement, the result, after treating 32,400 tons, is satisfactory, showing a recovery of 85 to 90 per cent. of the assay values for the last two months, and, although this is better than Mr. Pearse’s original estimate of 80 per cent., we now know that it can be improved. The present mill has been placed too low, and consequently some trouble has been entailed in handling the concentrates, especially in the winter, but this difficulty is being obviated. The mill is arranged to run by water power or electricity. In winter the water will be insufficient or intermittent, when electricity will supplement it. Arrangements have been made to obtain electric power from Juneau; the pole line is finished and is to be connected up this winter. With this installation completed, and arrangements for handling the concentrates and battery water in winter, it will be possible to run continuously.

“The monthly results of mining and milling are as follows:

	June	July	Aug.	Sept.	Oct.	Nov.	Total.
Milled, tons	3,300	4,000	6,700	7,300	6,900	*3,200	32,400
Bullion recovered, oz.	270	292	470	635	704	555	.....
Bullion	\$4,300	4,600	7,255	10,000	11,000	8,700	.....
Tons concentrate	60	100	123	160	170	50	.....
Concentrate	\$3,000	4,000	5,000	5,500	4,500	1,800	.....
Total value recovered	\$7,300	8,600	12,255	15,500	15,500	10,500	\$69,655

*Mill ran only half the month, on account of shortage of water from frost.

Crushed 32,400 tons for \$69,655. The value per ton recovered in October was \$2.24 and in November \$3.28. The previous months should not be taken as a true representation of ore values, as the mill was new and plates green. It has been demonstrated during the month of October that the ore can be mined and trammed to the mill for 37 cents per ton and that it can be milled for 31 cents per ton. These costs include development, administration and every expense in Alaska, apart from capital expenditure on new plant, etc. They have been obtained while running in the summer months and with water power costing practically nothing. The cost of power when using electricity will be 15 cents per ton more. On this basis, therefore, 90 cents per ton will cover all

ordinary contingencies when the present installation and connections are completed.

“The company should now proceed to erect another 100 stamps in the basin, being the second instalment of the 300 which we originally recommended. The mine is in a position to output all the ore required for these stamps. The present mill will be capable of crushing over 6 tons per stamp per day to 30 mesh, and, running full time, will crush 200,000 tons a year. Five and a half months’ milling shows a profit of \$1.25 per ton, which for 200,000 tons is \$250,000 per annum. Whilst it is correct to calculate on \$1.25 per ton, it is certain it will largely exceed this amount, judging from the November output and the higher grade ore now being blocked out, especially under the large quartz outcrop on the Alta and Jumbo claims, as we predicted would be the case when the underground workings reached that part of the mine. A reference to the surface samples and assays from these claims shows the great potentiality and higher values of the ore bodies occurring in these claims, through which the lode is continuous for 3,000 ft., and throughout a large portion of which it outcrops boldly.

“The cost of the second 100-stamp mill will approximate \$250,000, and should double the above-mentioned profits. The third 100 stamps will cost \$200,000 and treble the returns.

“It having been clearly demonstrated that the Perseverance mine can be worked at a satisfactory profit by milling in the Silver Bow Basin, we regard the present operation, or any augmentation of the mill, as a step in the direction of mining and treatment on a still more extended scale.

“We have proved that the Perseverance mine contains sufficient ore to supply a huge tonnage for several decades. We have proved by extended working tests that it can be worked at less than 90 cents per ton, whilst the average recoverable values have been \$2.25. It is now reduced to a matter of manufacturing capacity, under capable direction. The effectiveness of such a plant as we should instal would be greater for the capital outlay than any older plant, and by the employment of modern methods and machinery the saving and cost of operation will show better results.”

A resident of Toronto, Ontario, writing to the *Globe* says: “Our provincial government expects this year an income of \$100,000 from its Gillies mining property. Now, I think, sir, as this is a valuable property, whose value will increase as the mines are developed, and as the income from this source was never calculated on before, the same would be set aside to reduce, and perhaps ultimately extinguish, our provincial debt.” Now here is an object lesson for the opponents of government ownership. Won’t somebody please start an agitation, say on Slocan Lake, where may be found an ardent advocate of a government owned and operated smelter and other altogether impracticable schemes.

COMPANY MEETINGS AND REPORTS.

LE ROI NO. 2, LIMITED.

The annual meeting of shareholders of the Le Roi No. 2, Limited, was held in London, England, on March 3. A published report is here reprinted:

The directors' report shows that for the year ended September 30, 1907, the accounts showed a balance in favour of profit and loss of £13,806 5s. 1d, after writing off £11,944 12s. 8d. as depreciation on development, machinery, plant, buildings, etc. The balance brought forward from last year, with the present balance of £13,806 5s. 1d., gives a total of £37,060 4s. 6d. Out of this a dividend of 2s. per share, free of income tax, absorbing £12,600, has been paid, leaving £24,460 4s. 6d. to be carried forward.

Reference to Messrs. Alex. Hill and Stewart's report shows that 17,823 tons of ore were shipped during the year—a much smaller output than for the preceding year. This was due to several causes, the chief of which was the exceptionally severe winter and the prolonged strike of the coal miners at Fernie. The Vancouver mine has developed very satisfactorily during the year, and the directors feel that the time has now come for this property to be dealt with as a separate concern. The company's interest in the Cloncurry Syndicate has resulted advantageously, and since the date of the balance sheet a dividend amounting to £4,425 has been received from this holding.

The report of Messrs. Hill and Stewart, consulting engineers, on the development of the company's Rossland properties, says that in all a little more than 130 ft. of tunnelling had been done on the Poorman vein. This included work on the Mayday tunnel, and in a new tunnel high up the hill called the West Poorman. The work on the Mayday has disclosed a small quantity of easily broken payground, and the west Poorman tunnel latterly opened up a promising streak of ore from 2 to 3 ft. in width, assaying about \$20.

Towards the end of the year we were successful in locating the Hamilton vein on the 300-ft. level in the hitherto unexplored region between the tramway and the porphyry dykes. This discovery was the direct result of the appearance of stope 32 above the 500-ft. level. The ore here is of a good shipping grade, and during the next 12 months regular shipments will be forthcoming from the Hamilton vein on this level.

A considerable amount of drifting and raising has been carried on close to the shaft on the 400-ft. level with successful results. We are now underhand stoping an ore body 3 ft. wide and of excellent grade.

A large portion of the development work this year has been carried on at the 700-ft. level in accordance with the policy decided upon last year of developing and proving the Hamilton vein on every existing level of the mine. The result, while not as successful as the corresponding work on the 500-ft. level, has located portions of the Hamilton vein, which look promising. At the end of the year a drive toward the west had almost reached the property dyke, and had passed through the ground corresponding to stope 32 on the 500-ft. level. The ore met with on the 500-ft. level, beneath stope 32, was for the most part of very unfavourable character, and, as the whole of the Hamilton vein seems to have a western tendency with depth, we did not anticipate reaching continuous good ore on this level until we were at least as far west as the east Hamilton stope on the 500-ft. level. As mentioned above, at the end of the year the drive had only reached a point vertically below the 500-ft. level, but since September we have located excellent ore on this level.

On the 900-ft. level the Hamilton vein has been located west of the tramway dyke, and has shown good values for a distance of 90 ft., after which the ore became very scattered, and work was suspended. This work will be resumed just as soon as the necessary information regarding dip and strike is forthcoming, as a result of the work on the 700-ft. level.

Meanwhile, stoping operations on the short streak opened up are resulting very favourably. An average sample taken from this stope in October, 1907, went \$20 to the ton.

In addition to the work which has been prosecuted on the Hamilton vein, our southerly cross-cut was extended more than 300 ft. southward. The direct results of this work are negative, but diamond drilling here in a downward direction has shown the presence of pay ground some 320 ft. below. The depth of this ore below the collar of the Josie shaft is 1,150 ft., a fact which is very encouraging, as this is the deepest point on which ore has been found on the property. During the year 2,537.7 ft. of drifting and cross-cutting was done, and 255.4 ft. of raising. This work cost \$40,713.21, or \$14.57 per ft.

During the year 5,088 ft. has been bored by the diamond drill. Probably the most important result of this work has been the lining up of the Hamilton vein on the 300-ft. level, following upon the discovery of this same vein at a point half way between the 300- and 500-ft. levels. The diamond drilling cost \$13,272.20, or \$2.61 per ft., as compared with \$1.86 per ft. last year. The increase in cost is largely due to the increased cost of carbons, but higher wages have also added considerably.

Stoping operations on the Josie mine during the past year in connection with the Hamilton vein have more than fulfilled expectations, and at the present time we have on the 500-ft. level a length of 1,100 ft. of this vein on timbers. Not the least gratifying part of the year's work has been the remarkable manner in which stope 32, which lies toward the eastern end of the Hamilton vein, has developed. From a streak of not more than a foot in width it has suddenly widened to 9 and sometimes 10 ft., and at the eastern end particularly is of excellent grade. As this ore has been found on the 300-ft. level 7 ft. in width, it is evident that the year's work has resulted in substantial addition to the ore reserves of the mine. At an intermediate point this same shoot has been proved by diamond drill. It seems evident, therefore, that we may look for shipping ore at this part of the vein for a continuous 200 ft. in height. In fact, speaking of the Hamilton vein generally, we may say that the grade is not inferior to that met with during development, while the width of the ore in the stopes has increased appreciably. Attempts have been made during the year, with partial success, to discover the continuation of stope 20. On the 700-ft. level west of the above stope, and in a position which suggests its downward continuation, we have met pay ore for a distance of 60 ft., which is now being worked with encouraging results. This ore, however, seems to have a downward rather than an upward trend, and work on the 900-ft. level, with a view of its discovery, should be taken in hand as soon as possible.

The result of the unwatering and sampling of the No. 1 mine have not so far been satisfactory. The task of prospecting the No. 1 is being continued with diamond drills.

The production during the year was 17,829 tons of shipping ore and 11,840 tons of concentrating ore, and 3,400 tons left broken in stopes, making a total of 33,069 tons.

The total stoping costs for the year amount to \$123,787.48, showing an average on above tonnage of \$4.40 per ton, and diamond drilling has cost \$13,272.23, or \$0.48 per ton, in all \$4.88 per ton. There has been written off for depreciation \$53,849.52, averaging \$1.92 per ton. The total costs, therefore, per dry ton mined is \$6.80 per ton.

Of 17,828.6 tons of shipping ore sent to the smelter during the year, the gross value was \$21,902 per ton. The total smelting charges on the ore, direct and indirect, were \$6.12 per ton.

The properties of the King Solomon Mining Company on Woodbury Creek, Ainsworth mining division, have been sold by the sheriff at Nelson for \$2,500. D. J. Nellis, manager of the company, was the purchaser, and he also bought in the personal property for \$500.

COMPANY CABLES AND NOTES.

CABLES.

British Columbia—

Le Roi—February: Shipped from the mine to Northport during the past month 5,723 tons of ore, containing 1,869 oz. gold, 3,585 oz. silver, and 135,300 lb. copper. Expenditure on development work during the month, \$5,250. We have struck an important body of ore in the lowest level in the mine—1,650-ft. level, south vein—varies in width from 10 ft. to 16 ft.; length unknown. The grade of the ore varies between \$5 and \$79 per ton. Difficult to state at present what average assay of ore is. The value is mostly gold. Pushing development as quickly as possible.

U. S. A.—

Alaska Mexican—February: 120-stamp mill ran 30½ days, crushed 20,650 tons of ore; estimated realizable value of bullion, \$30,926. Saved 309 tons sulphurets; estimated realizable value, \$23,799. Working expenses, \$32,869.

Alaska Treadwell—February: 240-stamp mill ran 29½ days, crushed 30,072 tons of ore; estimated realizable value of bullion \$51,070. Saved 620 tons sulphurets; estimated realizable value of same \$35,267. Working expenses for month, \$76,628.

Alaska United—February: Ready Bullion claim 120-stamp mill ran 30½ days, 700 claim 100-stamp mill ran 29¼ days, crushed 36,186 tons of ore; estimated realizable value of bullion, \$46,925. Saved 600 tons of sulphurets; estimated realizable value, \$29,685. Working expenses, \$51,491.

The following is a copy of a cable received in London at the offices of the Alaska Treadwell, Mexican and United Gold Mining Companies, with reference to the labour strike: "Fifty per cent. labour out on strike, called by Western Federation. No demands made as yet, but probably want recognition. Superintendent wires:—Gaining back men and can keep running Treadwell, Ready Bullion and perhaps Mexican mills, Alaska."

DIVIDENDS.

The *Le Roi No. 2, Limited*, has received its first dividend, amounting to £4,425, on account of its interest in the Cloncurry Syndicate, Queensland, Australia.

A dividend (No. 6) of two per cent. has been declared by the International Coal and Coke Company, Limited, payable May 1; amount, \$56,000. This will bring the total of dividends paid by this company up to \$266,000.

NOTES.

The following notes have been taken from provincial and other newspapers:

The Yale Mining Company is starting its diamond drills again at its Nickel Plate mine, near Hedley, Similkameen, and more exploratory work will be carried on this season. This work will be done with its own diamond drills, and a diamond setter has been engaged by the company.

The assets of the Pioneer Mining Company, owning the Black Prince, Bank of England, and other mineral claims, near Slocan City, were sold at public auction at Nelson recently. They were purchased by a syndicate headed by Clements Bell, accountant of the Nelson branch of P. Burns and Company. The price obtained (\$6,543) is stated to be sufficient to cover all liabilities of the company.

Notice has been gazetted of the intention of the Perfection Cement Block Company, Limited, to after June 24, next, apply for an order-in-council changing its name to the Concrete Engineering and Construction Company, Limited.

John E. Jones, of Revelstoke, B.C., has been appointed official liquidator of The Elwood Tin Workers Gold Mining Company, of Lardeau, British Columbia. Creditors of the company are required to send particulars of their claims to said liquidator on or before June 1, 1908.

The water has been shut off from the Daly Reduction Company's flume at Hedley, to permit of repairs being made, and carpenters are busy getting it levelled up and tightened to carry the larger volume of water which may be expected

from this on for a few months. The mill-hands are also busy making repairs in the mill while the water is off.

YMIR GOLD MINES.

The report of the Ymir Gold Mines, Limited, submitted to the statutory meeting held in London on March 17, states that the total number of shares allotted is 136,088, all of which have been issued credited as paid up to the extent of four shillings per share, as part consideration for the purchase of the assets and undertaking of the Ymir Gold Mines, Limited, (Old Company), acquired by this company under agreement with the liquidator of the Ymir Gold Mines, Limited (Old Company), dated November 5, 1907, which agreement has been filed with the registrar of joint stock companies. The total amount received by the company in respect of the said shares is £5,957. Receipts amount to £5,957 (on account of shares allotted) and payments amount to £5,292 (preliminary expenses are estimated at £200).

Mr. Oliver Wethered stated that Mr. S. S. Fowler, who was the first manager of the property, was strongly of opinion that, sooner or later, the vein for which search was being made would be found. Any day a cable might arrive notifying that it had been struck. An appeal was made to the shareholders, before he left Canada, to provide additional funds in order to carry on diamond-drilling as well as cross-cutting. The response was not what was hoped, and today the liquidator had about 70,000 shares still to place.

A Canadian Associated Press cable states that the liquidator hopes to place the remaining 70,000 shares shortly.

CARIBOO MINING NEWS.

The Ashcroft *Journal* lately received the following news from its correspondent at Barkerville, Cariboo:

The Slocan Cariboo Mining and Development Company is pumping from both shafts, while the Robinson shaft is being sunk. Manager Jones expects to find in a short time whether or not the ground can be bottomed with the present plant.

The second shaft of the Venture Company, on Peters Creek, was sunk to a depth of 20 ft., and, as a considerable quantity of water was encountered and no clay, the company decided to discontinue sinking until a water-wheel and cornish pump shall have been installed. The preparatory work for the wheel is being done by a reduced force of men and the foreman.

The latest directors report to the shareholders of the Cariboo Consolidated, Limited, after recounting that Manager Bailey had been authorized by a general meeting last October to finance the property, and stating that he had been so far unsuccessful owing to the American financial crisis, makes the following statement: "The board however, are not without very good hope that, with the improved financial outlook, some satisfactory arrangement for the future will be arrived at."

SULLIVAN GROUP COMPANY'S FINANCIAL DIFFICULTIES.

A despatch from Cranbrook, East Kootenay, states that: The deputy sheriff has seized the Sullivan smelter at Marysville and the mine and mine equipment at Kimberley, under execution and judgments upon the suits of E. T. Mackay, formerly cashier of the smelter, for \$872 and H. W. Newton for \$785.

The amounts covered by the executions represent in both cases amalgamations of various debts due by the company to certain of its workmen who had received no pay for about two months previous to the closing down of the property. When the men were discharged at the mine they received no time checks but merely written acknowledgements for the time they had worked without wages.

A writ has been served for about \$7,000 at the suit of the Crow's Nest Pass Coal Company at Fernie for coal and coke supplied for the last five months or so. The sheriff has not yet appointed a date for the sale of chattels to cover the execution nor can he do so until five days after the levy.

Provincial constable Herchmer of Marysville is in charge as special bailiff or representative of the sheriff. The Canadian Pacific Railway ore cars formerly used between the mines and the smelter are standing on a siding here and

everything points to a protracted period of inactivity of the property. There is some talk of having a public investigation of the facts connected with the whole business management of the concern and the causes of the present condition of affairs.

COMPANIES INCORPORATED IN BRITISH COLUMBIA.

- Golden Giant Mines, Limited*, with a capital of \$100,000, divided into 100,000 shares of \$1 each.
- False Creek Coal Syndicate, Limited*, with a capital of \$20,000, divided into 20,000 shares of \$1 each.
- British Columbia Sand and Gravel Company, Limited*, with a capital of \$50,000, divided into 5,000 shares of \$10 each.
- Dominion Carbolicum Works, Limited*, with a capital of \$100,000, divided into 1,000 shares of \$100 each.
- Haddington Island Quarry Company, Limited*, with a capital of \$10,000, divided into 10,000 shares of \$1 each.
- Silver Cord Mining Company, Limited*, with a capital of \$200,000, divided into 200,000 shares of \$1 each.
- Pacific Coast Coal Mines, Limited*, with a capital of \$3,000,000, divided into 30,000 shares of \$100 each.
- Vancouver Briquette Coal Co., Limited*, with a capital of \$150,000, divided into 150,000 shares of \$1 each.

EXTRA-PROVINCIAL COMPANIES REGISTERED IN BRITISH COLUMBIA.

- Columbia Copper Company*.—Head office at Spokane, Washington, U.S.A. Capital, \$1,000,000, divided into 1,000,000 shares of \$1 each. Head office in British Columbia at Princeton, Similkameen. Attorney (not empowered to issue and transfer stock), E. P. Cook, merchant, Princeton.
- B. C. American Mining and Development Company, Limited*.—Head office at Phoenix, Arizona, U.S.A. Capital, \$200,000, divided into 200,000 shares of \$1 each. Head office in British Columbia at 314 Hastings Street, Vancouver. Attorney, George A. Weeks, real estate dealer, Vancouver.
- Dividend-Lakeview Consolidated Gold Mining Company, Limited*.—Head office at Carson City, Nevada, U.S.A. Capital, \$1,000,000, divided into 1,000,000 shares of \$1 each. Head office in British Columbia at Fairview. Attorney (not empowered to issue and transfer stock), Henry A. Bowerman, miner, Fairview.
- Ferro-Concrete Construction Company*.—Head office at Cincinnati, in Hamilton County, Ohio, U.S.A. Capital, \$500,000, divided into 5,000 shares of \$100 each. Head office in British Columbia at Victoria. Attorney (not empowered to issue and transfer stock), Henry Graham Lawson, solicitor, Victoria.

COMPANY REGISTERED IN ENGLAND.

West Canadian Deep Leads, Limited.—Registered February 18, by Cave & Co., 20 Eastcheap, E.C. Capital £75,000, in £1 shares. Objects: To acquire an option for the purchase of the Moxley mining lease, situate in Little Valley, Cariboo District, British Columbia; to adopt two agreements (1) with L. A. Bonner; and (2) with the Electric Conversion Syndicate, Limited; to acquire any gold, copper, coal, and other mines, mining rights, and properties of all kinds in British Columbia or elsewhere; and to carry on the business of gold and general miners, etc. No initial public issue. The first directors (to number not less than three nor more than seven) are: E. Bonner, A. G. Cresswell, and H. J. Hardy. Qualification, £100. Remuneration (except managing director), £100 each per annum (chairman £150) and 5 per cent. of the surplus remaining in any year after 20 per cent. has been paid, divisible.

MACHINERY AND CONSTRUCTION NEWS.

On another page of this issue the Crow's Nest Pass Coal Company advertises for sale air compressors, steam and electric locomotives, electric hoists and electric pump. This machinery is to be sold owing to its having been replaced by larger equipment.

A hoist and pump have been installed at the Little Bertha mine, in Grand Forks mining division.

From the *Hedley Gazette* it is learned that a stamp mill will be in operation at the Golden Zone mine, in Hedley camp, early in the ensuing summer. Also, that the new foundation for the concentrators in the Stenwinder mill, at Fairview, Osoyoos mining division, is about completed, and that some necessary alterations and extensions of the Stenwinder cyanide plant are to be made.

The *Boundary Creek Times* mentions the casting at the Greenwood foundry of the Nelson Iron Works of two mortars, each weighing 7,500 lb., for the stamp mill of the Queen mine at Salmo, Nelson mining division. Another casting in hand was a slag spoon—the swinging spoon that catches the stream of molten slag while the big slag pots are being changed—weighing 2,000 lb., for the British Columbia Copper Company's smelting works at Greenwood.

The *Moyie Leader* says that the new conveyors in connection with the ore sorting operations at the St. Eugene are working satisfactorily and their installation has led to the employment of six to eight more men.

At the Hewitt mine, near Silverton, Slocan Lake, a second aerial tramway has been constructed, preparatory to starting the Wakefield mill on Hewitt ore.

A six-drill air compressor has been purchased for the First Thought mine at Orient, Washington, which for some time past has been shipping part of its ore output to the Sullivan Company's smelter at Marysville, East Kootenay, and part to the Northport S. and R. Company's works at Northport, Washington.

The Fernie correspondent of the *Nelson Daily News* informed that newspaper, under date April 7, that the Crow's Nest Pass Coal Company has lately been making considerable improvement to its mine plants at both Coal Creek and Michel collieries, having installed new air compressors, haulage system and other necessary machinery and is now directing its attention to the erection of the large new steel tippie at Michel. It is taking advantage of the temporary slack time to rush through many improvements so as to be in a position to handle the largely increased tonnage of coal that will be required when business shall resume its normal condition.

TRADE NOTES AND CATALOGUES.

The Allis-Chalmers-Bullock Company's Nelson agency has been transferred to Calgary, Alberta. The Company will have a travelling representative who will look after its business in Kootenay and other districts in British Columbia.

Leading engineers claim that "Vancouver Brand" portland cement made by the Vancouver Portland Cement Company, Limited, of Victoria, B.C., will stand from 10 to 20 per cent. greater tensile strain than any other cement on the market.

The Ingersoll-Sergeant of Canada, Limited, Montreal, Quebec, has issued a 30-page catalogue giving particulars of Ingersoll-Sergeant rock drills and mountings, for mining, tunnelling, quarrying, and general rock excavation; also brief descriptions of Ingersoll air compressors, coal mining machines, etc. The advantages of the firm's manufactures are stated, and a number of excellent illustrations show drills and other machines as they appear when in use, as well as mountings and parts obtainable for renewals. This catalogue merits the attention of those using drills and other air-driven machinery and appliances.

A folder on Jeffrey Mine Equipment, received from the Jeffrey Manufacturing Company, of Columbus, Ohio, illustrates 14 Jeffrey specialties of interest to mining engineers and others connected with mining. The subjects of illustration include coal tippie with steel head frame, jigs and elevators

in coal washery, wire cable retarding conveyor, wire cable car haul, picking tables, bucket elevators and belt conveyors, dry placer-gold saving machine, electric hoist, drop rail cages, mine fan, electric rotary drill, coal cutting machines and electric mine locomotives.

Mr. George Westinghouse, president of The Westinghouse Machine Company, East Pittsburg, Pa., U.S.A., has issued the following circular, under date April 1, 1908: I have much pleasure in being able to notify the clients and other friends of The Westinghouse Machine Company that the Receivers appointed October 23, 1907, by the Circuit Court of the United States for the Western District of Pennsylvania, were on March 31, 1908, discharged by the same authority. All of the matters which made a temporary receivership expedient have been satisfactorily arranged, and the company's position greatly strengthened from every standpoint. All contracts made by the Receivers for the sale of the company's products, or for the purchase of materials or merchandize will be carried out as though made by the company's own officers. I take this occasion to announce the election of Mr. William H. Donner as the vice-president of the company in direct responsible charge of all of its activities, and to give the assurance of the continuance and accentuation under Mr. Donner's administration of that steadfast policy whereby the clients of The Westinghouse Machine Company have become friends as well as customers.

COAL MINING NEWS.

Archibald Dick, Provincial Government inspector of mines, has returned to Nanaimo from a visit to Nicola Valley.

The output of the Crow's Nest Pass Coal Company's collieries during five weeks ended April 3 was 95,048 tons, an average of 3,168 tons for each working day.

A despatch from Michel, dated March 20, intimated that the Crow's Nest Pass Company's No. 5 mine had that day been shut down, owing to a shortage of orders for coal.

A special meeting of shareholders in the Canadian-American Coal and Coke Company, Limited, has been called to be held at the company's head office, Frank, southwest Alberta.

The Pacific Coast Coal Mines, Limited, is having built at South Wellington, near Nanaimo, a 40x29-ft. two-storey building, to be used as a boarding house in connection with its Fiddick mine in that neighbourhood.

The houses the Crow's Nest Pass Coal Company has been erecting at Sitkum, half way between Fernie and Coal Creek, where some new coal mines have been opened, are ready for occupancy.

The Alberta provincial government will appoint an additional coal mine inspector. The province will then be divided into three divisions, with a chief inspector at Edmonton, and a deputy inspector at Lethbridge and another at Calgary.

Frank D. Little, general superintendent for the Wellington Colliery Company, who was injured by a powder explosion at one of the company's coal mines at Cumberland last month, has recovered sufficiently to allow of his returning to his home in Victoria.

The Fernie *Free Press* has published a report that H. L. Frank has sold out his interest in the Canadian-American Coal and Coke Company, operating at Frank, Alberta, and that S. W. Gebo will return and again take charge of the company's property.

When in Winnipeg lately, C. P. Hill, of the Hillcrest Coal mine, Frank, Alberta, told the *Tribune* that the general coal mining industry of the West is in a flourishing state, but that the output of the mines is now being reduced owing to the fact that the season for the shipment of coal for consumption in the prairie provinces is over.

Boring for coal has been commenced at False Creek, Vancouver. The *News-Advertiser* says: "The site has been examined by an expert coal prospector, who estimates that a 5-ft. seam of coal can be struck at a depth ranging from 300 to 500 ft., and it is expected that if all goes well that depth will be reached in two or three weeks' time.

The Nanaimo correspondent of the Dominion of Canada *Labour Gazette* reported for the month of February to that journal that "the Nanaimo coal mines are only working four days per week. At the other coal mines in the district there has been considerable slack time with the exception of Cumberland, which is working steadily, principally with Oriental labour."

A despatch from Ladysmith to the Nanaimo *Free Press* at the end of March stated that notwithstanding the late depression the Wellington Colliery Company's Extension coal mines were working at full force. No reduction had been made in the number of men employed. During February it was slack enough, but work had been steady all through March, and it was thought "the worst edge of the slump had been turned."

The International Coal and Coke Company is employing two shifts a day—about 600 men in all—at its mines at Coleman, Alberta, and producing 2,500 tons of coal per diem, all of which is taken by the Canadian Pacific Railway, with which the International Company has a contract with still two years to run. Arrangements are being made to increase the daily output to about 3,000 tons, which production will be reached, it is expected, next summer.

T. J. Smith has returned to Vancouver from a trip to Nicola Valley. He reports that work is going on rapidly on the Diamond Vale coal property, over 1,400 ft. of underground work being now completed. The output at present is 100 tons per day, and it is being gradually increased. While the first seam of coal is being developed, it is proposed to sink 150 ft further and tap a second seam, work to which end will be begun shortly.

State Mining Inspector D. C. Botting has completed his statistics of the coal production of the State of Washington for 1907, with the exception of the returns from a few small mines which under the state mining laws are not required to give information as to their output. The total production in 1907 was 3,713,824 tons, against 3,293,098 tons for 1906. By counties the production was as follows: Kittitas, 1,524,363; King, 1,446,602; Pierce, 616,120; Lewis, 100,985; Thurston, 25,752. With the exception of 5,000 tons, exported to Mexico from Tacoma, the coal was consumed in the state.

Concerning the operations of the Royal Collieries at Lethbridge, Alberta, the manager, George L. Fraser, said recently: "The ground, consisting of about 10 square miles, is being thoroughly prospected with diamond drills in order to determine the best location for the main shaft. This shaft should be placed at the deepest reach of the coal seam, in order to secure the grade from the laterals and economize in power. The main seam is found in a depth of about 300 ft. and is 4 ft. 6 in. thick. Several seams above are too thin to be worked. At the Alberta mine we are sinking a slope which is now down about 260 ft. This slope is cutting the seam, which is steeply pitched at about 25 deg. and while crossing the seam we are taking out some coal. This amounts to not more than a car a day and is wholly the result of development work. A spur is now constructed, which will make the mine conveniently accessible."

George L. Fraser, of Coleman, Alberta, manager of the Royal Collieries, Limited, Lethbridge, and the Alberta Coal and Coke Company, Lundbreck, was asked recently if the miners of Alberta, who belong to the United Mine Workers are now demanding contracts, or pushing forward the question of wages, as is being done in the East. "Each district makes contracts for itself," he said, "and we have contracts with them for a year to come. There is no question up for discussion at present. We have a very orderly class of workmen, perhaps one of the best mining communities in the province. Our employees consist principally of Scotch, English, Canadians, Slavonians and Italians in about equal numbers, and we keep them distributed in about this proportion, as we consider it has a tendency to insure good, orderly citizens and lessen the liability of strikes. The only effect the present suspension of coal operations in the East can have on us, will be to extend the eastward limit of our product,

in case the tie-up hangs on so long before the supply above ground there is exhausted."

Fernie has been particularly fortunate during the winter months in comparison with other centres, from the fact that its principal industry has continued employing the usual number of men without cessation and the payroll has remained at a substantial figure, says the *Daily News* correspondent. At present the depression in other industries upon which coal mining and coke production are dependent, is beginning to be felt, with the result that it has lately been found necessary to decrease the number of employees at the Coal Creek and Michel collieries. The consumption of coal by the railways which obtain here the greater portion of the coal they require, has considerably lessened owing to a falling off in traffic and it has been found difficult to secure a market to replace this shrinkage. Every effort is being made to increase sales in order that the mines may be run to their full capacity and it is hoped that everything will soon be in its normal condition again, and those miners who have been temporarily laid off will secure employment in their old places.

The grand aggregate of value of the gold output of the Transvaal from 1884 to 1907, inclusive, is £197,275,166.

To date the gold mining companies of the Rand, South Africa, have declared dividends totalling £47,607,726.

The gross value of the output of the mines of Idaho State, U.S.A., in 1907 was \$22,165,191. About 7,000 men were employed in mining.

The erection of an Elmore vacuum oil process concentration plant of 16 units, each of a capacity of 30 tons of ore per day, at Broken Hill, New South Wales, Australia, for the treatment of zinc tailings, is now practically complete.

The British Consul at Panama reports that the system for furnishing compressed air for power on the Panama Canal work has so far been limited to two compressor plants in operation at Culebra and Empire sections, but in a short time a giant 10-in. air line, extending from Pedro Miguel to Bas Obispo, a distance of 10 miles, will be ready for service. The line follows the line of the canal closely, and at convenient intervals gate-valves and tees are placed, from which branch lines will convey the air direct to the work, furnishing the motive power for operating the rock crusher plants, rock drills, well drills, testing of air brakes, driving pneumatic tools, and on various other purposes.

Dr. Victor S. Clark, of Washington, D.C., U.S.A., who has been commissioned to obtain information relative to the working of the Canadian "Industrial Disputes Investigation Act, 1907," for the United States government, was in Victoria lately.

Richard Merton, of Frankfort-on-Main, Germany, commercial agent and field representative of the Metalgesellschaft, has been visiting mines and smelters in the Boundary District. He went thence to Montana, U.S.A. After visiting Colorado, Utah and other mining states, he will probably go to Australia.

E. C. Musgrave is now at Ysabel, Sonora, Mexico, convalescent after a serious illness from typhoid fever, which came on shortly after his arrival in Montana from British Columbia. It is unlikely he will return to Montana to resume charge of the mine owned by the Deer Lodge Consolidated Mines, an English company for which he was several months ago appointed general manager, since he has advised the directors that the mine for which, on the report of their consulting engineer, they paid \$300,000 and spent some \$200,000 on a concentrating mill and other improvements, is in his opinion practically valueless.

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OFFICIAL NOTICES.

(From the *British Columbia Gazette*.)

James E. Kirby, of Hazelton, to be mining recorder for the Omineca mining division, from April 30, 1908, in the place of F. W. Valteau.

Elon Ezra Chipman, of Chipman, of Kaslo, to be gold commissioner for the Trout Lake mining division, from April 1, 1908, in the place of Robert Gordon.

Robert M. Stewart, of Bear River, Portland Canal District, to be a deputy mining recorder for the Skeena River mining division, from April 10, 1908, in the place of John Conway.

George L. Anderson, of Kitamaat, to be a deputy mining recorder for the Skeena River mining division, in the place of James L. Steele, resigned.

Gillespie E. Stephenson, of Quesnel Forks, to be a deputy mining recorder for the Quesnel mining division.

Constable Angus M. Ego, of Lillooet, to be deputy gold commissioner and mining recorder for the Lillooet mining division, during the absence on leave of Caspar Phair.

H. J. Baron, of Denver, Colorado, U.S.A., has resigned as associate editor of *Mining Science* of that city. Mr. Baron will be remembered in this Province as having several years ago visited a number of its mining camps in the interests of the *Mining Reporter*.

Courtenay De Kalb, mining engineer, who for 15 years has been in active professional practice, and for seven years served as professor of mining and metallurgy in the schools of mines of Missouri, U.S.A., and Kingston, Ontario, Canada, has become associate editor of the *Mining and Scientific Press*, of San Francisco, California, U.S.A. Mr. De Kalb will cease practice as an engineer and will devote himself entirely to his new duties.

MINING MEN AND AFFAIRS.

Roy H. Clarke, of Spokane, Washington, lately went to Camborne, northern Lardeau, to examine mining property.

Robert R. Hedley is now at Montreal, Quebec, where for the time being his address is "in care of Mussens Limited."

W. M. Brewer has returned to Victoria from a business visit to Goldfield, Nevada, U.S.A.

Fred. T. Congdon, formerly governor of Yukon Territory, recently went up to Dawson, Yukon, on legal business.

Otto Brenner has returned to Dawson, Yukon, after having spent the winter in the East.

Robert Turner is superintendent of the Bluebird mine, near Sandon, Slocan.

R. H. Hanauer passed through Ashcroft last month on his way to Barkerville, Cariboo District.

W. C. McDougall, of Princeton, Similkameen, has gone to Montreal and other eastern cities on a business trip.

E. M. Sandilands, formerly of Sandon, Slocan, is now mining recorder at Jedway, Moresby Island, Queen Charlotte group.

J. Laing Stocks, formerly connected with a British mining company operating near Nelson, was a recent visitor to Vancouver.

Bruce White has returned to Nelson from Ottawa, Ontario, where he attended the annual meeting of the Canadian Mining Institute, of which he is a member.

A. E. Hepburn, of Vancouver, left that city about April 6 on a trip to England. He will probably be absent about two months.

R. W. Coulthard, of Fernie, general sales agent for the

COPPER PROPERTIES WANTED

WANTED TO PURCHASE, good Copper properties. Must be handy to salt water for shipping ore. Give full particulars, stating position, analysis of ore, and terms of sale or bond. The undersigned are prepared to take up on reasonable terms. The Tyes Copper Co., Ltd., P. O. Box 665, Victoria, B.C.

EMPLOYMENT WANTED.

Mechanical Engineer desires immediate employment. Has had expert training in the fitting, repairing, and testing of Gasoline Engines. Late engineer to Messrs. J. I. Thornycroft & Co., Ltd., London, England. Good references. Address: Engineer, care Mining Record, Victoria, B. C.

Crow's Nest Pass Coal Company, was in Winnipeg early in April.

John B. Hobson has gone up to Quesnel Forks, Cariboo District, after having spent the greater part of the winter at his home in Victoria.

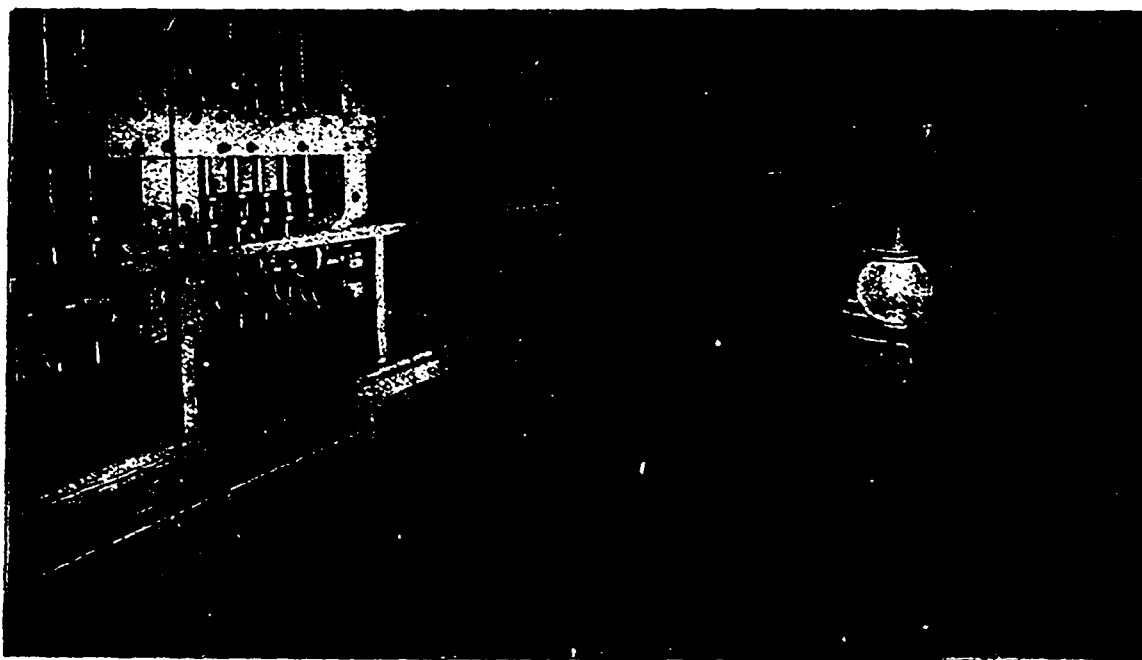
Alexander Grant, of Texada Island, manager of the Marble Bay mine, was in Victoria on a business visit during the early part of April.

James McEvoy, chief engineer and land commissioner for the Crow's Nest Pass Coal Company, is visiting Winnipeg, Manitoba, on his company's business.

R. H. Stewart, of Rossland, manager of the mines of the Consolidated Mining and Smelting Company of Canada, has returned from his honeymoon trip to Europe.

O. B. Smith, Jun., superintendent of the Granby Con. M. S. and P. Co.'s mines at Phoenix, Boundary District, was on a visit to Vancouver and Victoria cities early in April.

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James D. Hurd, general manager of the Crow's Nest Pass Coal Company, Limited, left Fernie, on March 27 on a three weeks' trip to St. Paul and other United States cities.

George T. Coffey, one of the pioneer mining men of the Klondike, now a superintendent for the Guggenheims, has returned north after having spent the winter in California.

C. P. Hill, manager of the Hillcrest coal mine, at Frank, southwest Alberta, recently left for Ottawa, Ontario, to attend the annual meeting of the Hillcrest Coal Mining Company.

John M. Ruffner, manager of the North Columbia Gold Mining Company, and the Pine Creek Power Company, both operating in Atlin camp, went north from Victoria early in April, after having spent the winter in the United States.

Capt. Harry Johns has recovered from his illness and has returned from southern California to the British Columbia Copper Company's Napoleon mine at Boyd's, Washington, U.S.A., of which he is superintendent.

J. Cleveland Haas, of Spokane, Washington, recently paid another visit, in the capacity of consulting engineer, to the mining property in New Westminster mining division the Swayne Copper Mining Syndicate is opening up.

Fred Rothschild, manager of the dredge which has been operating at the mouth of Bear Creek, Yukon, lately passed through Whitehorse on his way from Detroit, Michigan, to Dawson.

J. W. Bryant, the Tyee Copper Company's mine superintendent, returned from Mexico lately and after spending a week or two in Victoria, went up to southeast Alaska in the interests of his company.

A. C. Garde, of Nelson, manager of the La Plata Mines, Limited, recently looked over the Duck group of mineral claims, near Coody, Slocan. Mr. Garde was for several years manager of the Payne mine, situated near Sandon, Slocan.

Donald G. Forbes, of Victoria, has gone to Bear Creek, in the upper Similkameen country, to see a mining property there that is being opened up under his direction as consulting engineer.

Capt. John Hampson, late of Nelson, intends remaining in England for a while, but hopes to ere long obtain an appointment to a British Columbia mine. His present address in England is "Highfield, Hawarden."

J. W. Parker, of Seattle, Washington, formerly manager of the mines of the Brown Alaska Company in southeast Alaska and northern British Columbia, is examining mineral claims on Moresby Island of the Queen Charlotte group, stated to be under option to the Tyee Copper Company.

Lewis Stockett, manager of the Canadian Pacific Railway Company's coal mines in Alberta, has removed his headquarters from Bankhead, Banff, to Hosmer, Crow's Nest Pass, at which latter place the company is opening coal mines and building coke ovens.

A. J. McMillan, of Rossland, managing director of the Le Roi Mining Company, Limited, has gone East to meet the chairman of directors of his company who is visiting Chicago, Illinois, U.S.A., but will not on this occasion come to British Columbia.

John Rogers, formerly manager of the Pathfinder mine, in the Grand Forks section of the Boundary District, has returned to British Columbia after having spent nearly a year and a half in the western part of the United States. It is stated he contemplates shortly proceeding to northern British Columbia, possibly to the Findlay River country.

Dr. T. R. Marshall, of Glasgow, Scotland, at one time interested in mining in British Columbia, has gone to Argentina, South America, to take charge of some mining property for its Scottish owner. While in that country Dr. Marshall's address will be Buenos Ayres. It is the doctor's intention to shortly visit Chile and Peru.

J. Blick, manager of the Livingstone Creek Syndicate, last month arrived at Whitehorse, Yukon Territory, with his

EXAMINATION FOR ASSAYERS FOR LICENCE TO PRACTISE IN BRITISH COLUMBIA.

In accordance with section 12 of the Bureau of Mines Act, examinations for efficiency in the practice of assaying will be held at Victoria, B.C., on the 4th day of May, 1908, and on such following days as may be found necessary.

Examinations will cover the following subjects, and candidates must be prepared to be examined in all of these subjects:—

(a.) A knowledge of the principles of inorganic chemistry.

(b.) SAMPLING:

Sampling of ores or furnace products and the reduction and preparation of sample for assay, including also the melting of gold dust and sampling of bar for assay.

(c.) QUALITATIVE DETERMINATION:

The qualitative determination of the common elements in ores and furnace products.

(d.) QUANTITATIVE DETERMINATION—ASSAYING:

Bullion—Gold bullion, for gold and silver;

Copper bullion, for copper, gold and silver;

Lead-copper bullion, for lead, copper, gold and silver.

Coal:

Determination of moisture, volatile combustible matter, fixed carbon, ash and sulphur,

Ores and furnace products:

Fire assays—

Gold, silver and lead.

Wet, and combined wet and fire assays—

Gold and silver, by combined method.

Copper, by electrolytic, colorimetric and volumetric (cyanide or other approved) methods.

Nickel, by electrolytic method.

Iron, lead, lime, zinc, sulphur and silica, by any approved wet methods.

The mineralogical determination of a number of simple mineral substances.

ENTRANCE FOR EXAMINATION.

Entrance for an examination must be made in writing to the Secretary of the Board of Examiners, at least ten days before the date set for beginning of examination, and must be accompanied by the prescribed fee (\$15).

CERTIFICATE.

A certificate of efficiency in assaying will, upon payment of the prescribed fee (\$15), be issued to each successful candidate, which certificate shall be considered as a licence to practise assaying in British Columbia; and notice is hereby given that only those holding such certificate of proficiency or licence will be allowed to act as assayers in this Province, under penalty, as provided by the Act.

EXEMPTION FROM EXAMINATION.

In accordance with sub-section (2) of section 12 of the Act, graduates of certain Schools of Mines and Colleges may be exempt from examinations, and may, upon satisfying the examiners, as provided in the Act, receive such certificate of competency or licence, upon payment of the fee therefor (\$15).

The examination will consist chiefly of the practical assaying of samples, and while the Department of Mines will provide all the apparatus and chemicals usually necessary, it will not undertake to provide any special or unusual appliances or chemicals which might be called for, and if a candidate should require such he will have to provide them at his own expense.

Candidates must provide themselves with such platinum ware and sets of weights as they may require, as these will not be furnished at the examination.

The Department of Mines will make no charge for the use of chemicals or apparatus, but a candidate will be charged for all breakages or unnecessary loss caused by him.

Any additional information desired may be obtained from Herbert Carmichael, Secretary, Board of Examiners, Victoria.

RICHARD McBRIDE,

Minister of Mines.

Department of Mines,

Victoria, B.C. 24th March, 1908.

bride. The *Star* says he recently shipped in a lot of new mining machinery for installation on Livingstone, whence he was about to proceed to prepare for the season's operations.

Newspaper reports attribute to W. Thomas Newman, of Vancouver, manager of the Commodore mine on Texada Island, the statement that in his opinion some of the biggest mines in the Province will be developed on that island.

C. L. Rameau, of Blairmore, Alberta, general manager of the West Canadian Collieries, Limited, recently visited the Monitor and Bosun mines, and the concentrating mill at Rosebery, all in the Slocan district. He was accompanied by Raoul Green, mining engineer.

A. Fournier, of Kaslo, manager of the Cork mine, on the south fork of Kaslo Creek, has returned to France for the purpose, it is understood, of there discussing with the directors of the company owning that mine a proposed amalgamation of the Cork and Province properties and reorganization under the name of the Selkirk Mining Company.

E. H. Finch, of Rosslund, late superintendent of the Le Roi No. 2 company's mine there, has left that camp for Whittier, California, whence he intends shortly proceeding to one of the newer mining camps of Nevada. The *Miner* states that Amil Burnett has been named as his successor at the Le Roi No. 2.

R. R. Bruce, of Wilmer, northeast Kootenay, recently proceeded to Montreal, Quebec, where he urged upon the president of the Canadian Pacific Railway Company, the need that exists for railway facilities for the upper Columbia valley in which important mining and agricultural industries would be developed were it provided with suitable transportation facilities.

Albert I. Goodell, who last November resigned as manager of the Northport Smelting and Refining Company, Limited, at Northport, Washington, to accept the position of manager of the lead smelter of the Sullivan Group Mining Company, at Marysville, East Kootenay, is reported to have instituted proceedings to recover from the directors of the Sullivan Company the sum of \$10,000 as damages for breach of contract.

J. C. Dufresne has resigned as superintendent of the construction at the Canadian Metal Company's Blue Bell mine, on Kootenay Lake, British Columbia, at which the erection and equipment of a 200-ton concentrating mill is about completed. S. S. Fowler, of Nelson, is general manager of this company. Mr. Dufresne intends shortly going north, to Prince Rupert and the neighbouring district.

W. H. Trewartha James, who has been appointed general manager of the Tyce Copper Company, Limited, arrived in Victoria, from London, England, on April 3. The company's head office in British Columbia has been removed to Victoria, where Mr. James, who is accompanied by his family, will reside. Wm Gardner, secretary of the company, who had been in charge of the company's business in the Province since the death of the late Clermont Livingstone, left Victoria on 10th inst. on his return to London.

Frederic Keffer, of Greenwood, Boundary District, engineer and geologist for the British Columbia Copper Company, lately paid a visit to the State School of Mines at Pullman, Washington, where, on the invitation of Prof. F. A. Thomson, head of the Department of Mining Engineering there, he gave an address to the mining and engineering students. His son, Robert Keffer, has entered upon his studies at this school of mines.

Among recent visitors to Victoria were W. H. Aldridge, managing director of the Consolidated Mining and Smelting Company of Canada, Limited; Geo. L. Fraser, coal mine manager, of Coleman, Alberta; E. G. Warren, of Greenwood, Boundary District, manager of the Greenwood Electric Light Company; J. J. Campbell, of Nelson, manager of the Hall Mining and Smelting Company, Limited; James Cronin, of Spokane, Washington, formerly manager of the mines of the Consolidated Mining and Smelting Company of Canada; and L. M. Rice, of Seattle, Washington, consulting engineer.

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One VULCAN, four-wheel, saddle-tank STEAM LOCOMOTIVE, 42-inch gauge; cylinders 10 $\frac{1}{2}$ x16-inch. Built 1903. Immediate delivery.

One CANADIAN, four-wheel, saddle-tank STEAM LOCOMOTIVE, 42-inch gauge; cylinders 10x14 inch. Built 1902. Immediate delivery.

One PORTER, four-wheel, saddle-tank, STEAM LOCOMOTIVE, standard gauge 4 ft. 8 $\frac{1}{2}$ inch.; cylinders 7x12 inch. Purchased 1901. Immediate delivery.

Four JEFFREY, ten-ton ELECTRIC LOCOMOTIVES, 36-inch gauge, 220-volt; direct current. In good working order. Available about July, 1908.

Three LIDGERWOOD ELECTRIC HOISTS, 75 h.p. Equipped with duplicate JEFFREY M. H. 30 h.p. MOTORS, 220-volt, direct current. Available about May, 1908.

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The machinery listed above will all be available during present season, owing to its being replaced by larger equipment.

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SYNOPSIS OF CANADIAN HOMESTEAD REGULATIONS.

ANY available Dominion Lands within the Railway Belt in British Columbia, may be homesteaded by any person who is the sole head of a family, or any male over 18 years of age, to the extent of one-quarter section of 160 acres, more or less.

Entry must be made personally at the local land office for the district in which the land is situate. Entry by proxy may, however, be made on certain conditions by the father, mother, son, daughter, brother or sister of an intending homesteader.

The homesteader is required to perform the conditions connected therewith under one of the following plans:

(1) At least six months' residence upon and cultivation of the land in each year for three years.

(2) If the father (or mother, if the father is deceased), of the homesteader resides upon a farm in the vicinity of the land entered for, the requirements as to residence may be satisfied by such person residing with the father or mother.

(3) If the settler has his permanent residence upon farming land owned by him in the vicinity of his homestead, the requirements as to residence may be satisfied by residence upon the said land.

Six months' notice in writing should be given to the Commissioner of Dominion Lands at Ottawa of intention to apply for patent.

COAL.—Coal mining rights may be leased for a period of twenty-one years at an annual rental of \$1 per acre. Not more than 2,560 acres shall be leased to one individual or company. A royalty at the rate of five cents per ton shall be collected on the merchantable coal mined.

W. W. CORY,
Deputy of the Minister of the Interior.

N. B.—Unauthorized publication of this advertisement will not be paid for.

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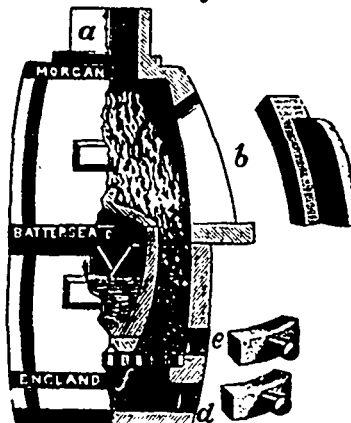
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