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# MINING RECORD

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## BRITISH COLUMBIA MINING RECORD

E. JACOBS.....Managing Editor

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## NOTES AND COMMENTS.

A record run for a single day was made one day recently at the Granby Co's smelter, Grand Forks, where 2,850 tons of ore were treated in 24 hours.

Chicago men interested in several small high-grade mines near Greenwood are arranging a consolidation, to include the Helen, Preston, Strathmore and Barbara, all of which have been under development the past year or two.

The report of the president of the International Coal & Coke Co., Ltd., operating a colliery in the South-west Alberta section of the Crow's Nest Pass coal fields, shows that the profits for the calendar year 1905, after paying all operating expenses, were \$67,327.54.

A table printed on page 80 of this issue shows that the coining value of the Alaska and Yukon gold bullion received during 1905 at the U. S. Assay Office, Seattle, Washington, was \$17,321,163.34, of which total the Canadian Yukon Territory contributed \$7,862,916.71.

At the annual general meeting of the Crow's Nest Pass Coal Co., Ltd., held on the 9th inst., it was mentioned that the company was awarded the gold medal for coal and coke at the Lewis and Clark Centennial Exposition held at Portland, Oregon, last year, and a bronze medal at the St. Louis World's Fair in 1904.

In the opinion of the Revelstoke *Mail-Herald* the mining outlook has never been better or brighter than now, and North Kootenay can with confidence look forward to an active season. This is due to the high prices of the metals, the reduction of smelter charges and the fact that development is proving up extensive bodies of ore all over the country.

Ten years ago, observes the *Mining and Scientific Press*, the idea of smelting for a dollar per ton and mining for \$1.10 per ton would have been scouted as impossible. Yet this has been done at the Granby Mines, with an exceptionally well-applied skill. In Tennessee, with low-priced labour and fuel, they smelt a copper-bearing pyrrhotite for \$1.30 per ton. Such

results are enough to stimulate interest and to promote healthy rivalry.

Mr. Frank B. Smith, inspector of coal mines for Alberta, reports that there are now in that Province some 125 coal mines subject to government inspection as compared with only 30 in existence four years ago. Although the output of the mines has increased rapidly the market for coal has so extended that while this year's production will probably exceed 1,000,000 tons it is not expected there will be any difficulty in disposing of this larger output.

Mr. Geo. E. Winkler's comprehensive account of the Progress of Mining in the Similkameen District, commenced in the January number of the MINING RECORD, is completed this month. His efforts to give wide publicity to the number of mining properties in the big district of which he has written and the varied character of their ores are commendable and should be appreciated by all concerned in the advancement of the promising district to which he thus invites notice.

The directors of the Le Roi Mining Co. have declared a dividend, payable on February 28, of 1s. 6d. per share on its 200,000 £5 shares. This is the first dividend this company has paid since November, 1899, when 5s. per share was paid. This will make the aggregate of all dividends paid to the end of the current month \$1,380,000. It is stated that the company's profits for January of this year were \$39,000 and that February's profits would be about a similar amount.

The directors of the Ymir Gold Mines, Ltd., acting on the recommendation of their consulting engineer, Mr. R. Gilman Brown, of San Francisco, have shut down the company's 80-stamp mill and cyanide works near Ymir for three months to allow time for the connection between the 7th and 10th levels of the mine being made and a supply of ore of a grade that can be milled profitably being obtained from the mine, which the directors are advised it cannot be under existing conditions.

The Le Roi Mining Co., Ltd., and the Canadian Consolidated Mines, Ltd., have been proceeded against by the inspector of metalliferous mines on a charge of having induced and persuaded engineers in their employ, respectively, to work twelve hours instead of eight, the latter being the statutory number of hours that may be worked. Each of the defendant companies has been fined \$25 and costs, by the police magistrate at Rossland, whose decision has been appealed against.

The American Hydraulic Co. has been reorganized and the authorized capital increased from \$50,000 to \$500,000. It is stated that the whole of the increased capital is to be treasury stock and that much of it has been underwritten at Layfayette, Indiana. The company's property is described as the chief hydraulic property in the district known as the Big Bend lying

north of Revelstoke. Another monitor is to be added to the two already on the property and hydraulicking is to be commenced as early in the ensuing spring as shall be practicable. Mr. A. E. Bradley will be in charge of operations.

The Beaver Mining Co., an English organization owning mineral claims situated on the mountain divide between the Spillimacheen section of North-east Kootenay and the Duncan section of West Kootenay, is reported to have become interested in a method of locating ore bodies by magnetic indication and to be sending experts out from England to test this system on the company's claims. As the characteristic ores of the district in which the test is to be made carry, silver, lead, copper and gold, and are not iron ores, local mining men are somewhat sceptical as to the prospects for success.

The indefatigable managing director of the Oro Denoro Mines, Ltd., owning the Oro Denoro mine, Boundary district, in a circular letter to the shareholders of the company has given particulars of values of several lots of ore shipped and briefly reviewed the prospects of the mine. His conclusions appear to have been contained in the following words: "The outlook to-day for the mine appears to be brighter than ever before." We congratulate Mr. Smith Curtis on the favourable results that he shows he has achieved in his management of the affairs of this mine, which is operative to-day because of his energy and perseverance in its development and his persistent and successful endeavours to finance it.

Notice has been gazetted that on and after the first day of May, 1906, the territory embraced within the boundaries of the Teslin Lake mining division will be merged in the Atlin Lake mining division, and on and after said date Mr. James Porter, gold commissioner at Telegraph Creek, will act as a deputy mining recorder for that portion of the Atlin Lake mining division formerly known as the Teslin Lake mining division, with sub-recording office at Telegraph Creek, B. C.

A short time ago the B. C. MINING RECORD called attention to a misleading custom of the *Daily Mining Record*, of Denver, Colorado, in placing mining news of British Columbia and other parts of Canada under the heading of "Alaska-Northwest Territory," and asked that "Canada" be used by that journal as a heading when publishing mining news. This has been done, so that such sub-heads as "Rossland, B. C.," "Phoenix, B. C.," and other British Columbia mining sections now appear in the *Daily Mining Record* under the heading "Canada." This is the second instance of a like suggestion of the B. C. MINING RECORD having received courteous attention and the Province the resultant benefit of having it made quite clear that certain items of mining news appearing in widely-circulated mining journals are British Columbian and that British Columbia is in Canada.

The following reference to mining in the Kamloops district in 1905 was made in the recently issued annual report of the local Board of Trade: Development in our camp has continued without abatement during the year, and some carloads of ore were shipped as smelter tests by claims under development. The Iron Mask has maintained its reputation as an ore producer, shipments having been 343 cars, representing 6,847 tons of ore and 20 tons of copper matter. The operating plants of this mine were considerably augmented, and as the ore bodies show no diminution the management looks forward to a prosperous future.

"Coal is growing scarce and an advance in prices is predicted by the local dealers," says the *Puget Sound American*, published at Bellingham, Washington. "Nothing but Wellington coal from Vancouver Island is now to be had, and that at the rate of \$7 per ton. The Black Diamond and other coal mines in the Puget Sound country are all owned by the railroad companies and the bulk of the coal is now being shipped to Eastern points. About 1,200 tons of the British Columbian coal was consumed in Bellingham last month and as much more will be sold this month. The usual quantity is an average of 200 tons a week, but owing to the scarcity of Washington coal the demand for Wellington coal has increased."

In reply to our enquiry concerning the intentions of the holders of vendors' stock in the Similkameen Mining & Smelting Co., Ltd., recently organised in Vancouver, in regard to pooling such stock, we have received from the secretary of the company the following assurance: "Purchasers of treasury shares are amply protected by a document deposited in the Canadian Bank of Commerce, Vancouver, with the whole of the vendors' shares which cannot be released until one-half of the treasury stock has been sold and proceeds expended on the property, or until such time as the directors shall consider it advisable to release the shares. The vendors are compelled to elect the present directors or their nominees until agreement terminates."

Included in a table appearing in the *Kamloops Inland Sentinel* and purporting to show the commercial progress of Kamloops during 1905 are the following items: "Ore shipped, 12,000 tons; matte shipped, 20 tons; concentrates 200 tons." Since the annual report of the Kamloops Board of Trade, as published recently in the same newspaper, mentions only the shipment of 6,847 tons of ore and 20 tons of matte by the Iron Mask mine and makes no specific reference to the remaining 5,153 tons of ore and the concentrates, the position appears to be that either the Board of Trade report was incomplete or the newspaper statement as to the larger tonnage of ore shipped is misleading.

Work has been commenced on the excavations for the power house and engine room for the 1,500-ton

smelter the British Columbia Copper Co. has arranged to erect at Greenwood in place of the smaller smelting works it has been operating there since February, 1901. Some particulars of the machinery and plant ordered for the new smelter were printed in the December number of the *MINING RECORD*. Recently contracts were let for excavations and masonry, respectively. There will be about 20,000 cu. yd. of excavations (including both earth and rock) and 2,000 yd. of masonry in retaining walls, foundations, etc. Something like 1,200,000 ft. of timber will be required for ore bins, trestles, buildings, etc., and there will be about 1,000 tons of machinery, plant and structural steel. Construction and installation will be under the direction of the company's manager, Mr. J. E. McAllister, formerly with the Tennessee Copper Co., at Copperhill, Tennessee, and it is expected that the new works will be in running order by September next.

The steadily extending commercial interest of Vancouver Island in the development of the mineral resources of Southern Alaska, shown more particularly in the receipt by local smelting works of ore, concentrates and matte for treatment, and the supply to mines and smelters of Prince of Wales Island and other parts of coal and coke by local collieries, has suggested that Mr. Wm. M. Brewer's account of mining conditions and developments in Southern Alaska will be perused with pleasure by many readers of the *B. C. MINING RECORD*, hence its reproduction in our columns. Mr. Brewer's knowledge of the subject under notice has been derived from personal observation and enquiry, so he is doubtless well informed thereon. We acknowledge our obligation and express our thanks to *The Engineering Magazine*, of New York, for its kind permission, readily granted, to reprint this timely and interesting article, and for the loan of the blocks used to illustrate it.

The Canadian-American Coal & Coke Co. intends to shortly install a new operating plant at its coal mine at Frank, South-west Alberta. The company's general manager, Capt. F. A. Hill, recently informed the *Frank Paper* that the new works will include a permanent tipple equal to handling 2,000 tons of coal per diem, car haul, box car loader, machinery and equipment for power house, and an extension of the existing rope-haulage system. The tipple is to be provided with two dumps—one for run-of-mine coal and the other to be equipped with shaking screens, picking belt, etc. The machinery for the tipple has been ordered and should reach the mine within the next three months. The work of construction is to be commenced about April 1, next. The cost of the intended additions and improvements is estimated at nearly \$60,000. The output of the company's mine is at present about 600 tons per day, but there is an available market for 1,000 tons, which quantity will be shipped daily after the new plant shall be in running order. The company now has 175 men on its payroll. The Canadian Pacific Railway Co. is increasing its trackage at this mine and intends to have facilities

here for 120 cars by the time the new plant shall be ready for operation.

Managers and other representatives of smelters have again succeeded in inducing the Provincial Legislature to reject a proposed act to make an 8-hour day compulsory at all smelters in British Columbia. The proposed act, which it was intended should come into operation on March 1, 1907, if passed, was to the following effect: No person shall be employed in or about any smelter, sorting, hauling, removing or smelting ores or matte in any stage of preparation, for a longer period than eight hours in any twenty-four hours. Any owner, agent, or manager, or anyone acting on their behalf, employing any workman or person in contravention of this act, shall be liable to a penalty not exceeding \$100 nor less than \$20 for each workman or person so employed, and any workman or person so working for a longer period than specified in this act shall be liable to similar penalties. The socialist and labour members of the Legislature made a most persistent fight, but a majority of the members of the House declined to make compulsory an 8-hour day when this concession had already been granted at most if not all of the smelters of the province.

The *Vernon News* published on 1st inst. a *pot-pourri* of stuff purporting to be information concerning the British Empire Mines but which is characteristic of the notorious fake promoter to whom it gives credit for it in the following words: "The above information was secured from D. R. Young, the man to whom much credit is due for undertaking the task given up by so many, of bringing a paying mine to the very doors of Vernon." If the *Vernon News* earnestly desires to do the Okanagan Valley a service in the direction of preventing its chances of developing whatever mineral resources the district has from being retarded it will publish full particulars of the Similkameen coal scheme Mr. "Windy" Young worked (certain of the public) so hard for a few years since and in connection with which he obtained for his money-getting purposes a report or reports from Mr. Wm. Blakemore, coal expert of Nelson. A detailed account of results of the "prospecting" for coal, both in the Similkameen and at Trout Creek, Okanagan, and of the "Ashnola Smelter" which was never built, would quickly convince the Okanagan people that the chances of their obtaining any benefit from money put into supposed mining enterprises engineered by parasites of the "Windy" Young type are extremely slim. On the other hand they will do well to leave severely alone any mining scheme in such hands, for neither they nor their district may reasonably expect to see permanent good results from the operations of schemers with such a discreditable record as that of "Windy" Young and his Similkameen coal and Ashnola smelter frauds above-mentioned.

A despatch from Washington, D.C., is to the effect that negotiations are in progress between the U. S.

State Department and the British Foreign Office looking to joint action in the matter of marking the international boundary between Eastern Alaska and the Canadian Yukon, along the 141st meridian. The *Mining and Scientific Press*, San Francisco, thus refers to this question: "Mineral development has become so active in the extreme eastern part of Alaska, and in the western part of Yukon Territory, that an urgent demand for the marking of the international boundary has been made by mine owners and prospectors. Within the last few months it has been demonstrated to the satisfaction of several prominent mining operators that immense bodies of copper ore exist in eastern Alaska, especially in the White River region. The White River rises in eastern Alaska, but soon crosses the international boundary and empties into the Yukon south of Dawson. The part of the boundary involved is described in treaties between the United States and Great Britain as the one hundredth and forty-first meridian of longitude, but prospectors cannot readily determine longitude, and there is confusion as to whether certain claims are in American or Canadian territory. As the mining regulations of the two countries are radically different, it is necessary to have a determination of the matter. What is wanted is the erection of visible monuments to define the boundary, and negotiations looking to the prosecution of this work by an international survey party have been opened between the State Department and the British Foreign Office."

On February 24 the *Mining and Scientific Press*, San Francisco, California, published in its special correspondence from London, England, the following: "The total output of the mines in British Columbia for 1905—reported at about £4,000,000—is some £400,000 in excess of the previous year. There was less gold produced, but a larger proportion of the baser metals." The position was not correctly stated by our contemporary's London correspondent. The approximate estimate of the mineral production as cabled by the Provincial Government to the Agent General in London showed a total of \$21,403,000 (£4,280,600). As the total production in 1904 was \$18,977,359 (£3,795,472) it follows that the increase in 1905 over 1904, as shown by the published estimate, was \$2,425,641 (£485,128) which is a sufficiently larger sum to warrant this correction. Further, the total gold production in 1905 was not less than in 1904, as stated above, but more, the official figures as since revised showing an increase of nearly \$200,000, although this amount is less by about \$55,000 than the estimated increase. While we have official assurance that the revised figures of all minerals produced in the Province last year exhibit a higher total value and consequently a still larger increase we are not yet at liberty to state what they are. They will be made public, however, as soon as the printing—now in hand—of the Annual Report of the Minister of Mines for 1905 shall be completed, when it will be seen that the total value of last year's mineral production was between \$2,000,000 and \$2,500,000 higher than that of

1901—which was \$20,086,780—the year that prior to 1905 was the highest in mineral production in the history of mining in British Columbia.

Last month we took exception to certain mis-statements made by Mr. Wm. Blakemore in *The Week*. His excuse for having published a reference to “the stoppage of all development work in the mines of the Tye Copper Co.” is that that mis-statement was taken from the local newspaper. We insist that the misrepresentation we challenged is characteristic of this man. That some obscure local newspaper published an unfounded rumour does not justify the repetition of street gossip, especially when the fact that it was untrue could easily have been ascertained by telephoning to the company's office. Last September we denied point blank other assertions concerning the Tye Copper Co., made in the *Nelson Tribune*, that were similarly false. We said, in part, “the allegation in regard to payment of a dividend out of capital is a gross misrepresentation, as, too, is the implication that sinking to a considerable extent has not been carried out.” We gave ample proof of the correctness of the position we took, but Mr. Blakemore had not the common honesty or sense of fairness to admit in print that he had published what was not true of the Tye Copper Co. Again, last month we charged this same man with traducing the Crow's Nest Pass Coal Co. in publishing mis-statements to the effect that this company had “never earned a dividend out of operation,” and that it is “up against reorganisation or liquidation,” but, as in the case of the Tye Copper Co. when, last year, we showed the falsity of his assertions, he has passed over in silence our proof of what we regard as his mendacity. We do not care a fig for this man in his capacity of editor of *The Week* or any other newspaper that will permit him to have the unrestricted use of its columns, but since there are newspaper readers who, on the strength of his claim to be a mining engineer whose opinions and criticism are of value, may be misled into accepting what he writes, we do not intend to allow his mis-statements to pass unchallenged, for we have evidence to support our contention that he is utterly unreliable and his reflections on certain mining companies of good standing not worthy of credence. In support of this contention we ask that the annual report of the Crow's Nest Pass Coal Co., Ltd., printed elsewhere in this issue, be read and contrasted with the gross mis-statements that we refuted last month and now once again denounce. The mining industry of British Columbia could well do with more companies of the Tye Copper and Crow's Nest Pass Coal class, and fewer traducers of the Blakemore type.

The progressive and successful policy of the B. C. Copper Co., Ltd., of New York, which for nearly eight years has been developing the Mother Lode mine, near Greenwood, Boundary district (after the same had been thoroughly prospected and partly opened up by the Boundary Mines Syndicate, that during its two years' operations prepared the way

for the eventual organisation of the larger company now under notice), is evidenced by the satisfactory nature of the annual report and balance sheet printed on another page of this issue. From its inception this mining and smelting company has been marked by avoidance of inflation in its capitalisation, efficiency in its management, effectiveness in its operations and conservatism in the publicity it has given to the substantial results it has achieved. Compared with that of many other incorporated companies operating in the Province its authorised capital—\$2,000,000, of which but \$1,765,000 has been issued—is small; a distinct advantage finding practical recognition in the fact that now that the company's operations are known to be profitable its \$5 shares are marketable at a premium of about 90 per cent. Its ore production to date aggregates about 800,000 tons, of which 750,000 tons were from its Mother Lode mine. The results it has achieved led its directors to last year express the belief that its “costs for mining, smelting, and converting will compare favourably with those of any similar plant.” Its financial position, as exhibited by the balance sheet to November 30, 1905, is sound, its indebtedness of \$54,620 having been for current bills at mine and smelter and against which there were liquid assets totalling \$260,142. Its surplus earnings for its last fiscal year were \$102,907 as compared with \$88,922, which was the total for the immediately preceding two years—an increase at the rate of 130 per cent over the average of the latter period, and this notwithstanding that, as stated by the directors in their last annual report: “Against our profits for the past year have been charged large sums for the extensive developments which have been going on in preparation for trebling the output of the Mother Lode mine.” Now the installation of a modern and much larger plant, to have a capacity of 50,000 tons of ore per month as against 18,000 tons per month with the plant heretofore in use, has been commenced, and completion next summer is looked for. The outlook for this enterprise is undoubtedly promising, for having mines with an abundant supply of ore readily accessible, adequate and up-to-date facilities for mining and smelting ore and producing blister copper, experienced men of proved capability in charge of mines and smelter, and a profitable market for its products, it possesses a combination of facilities for the realisation of excellent results such as should ensure success to a degree that will be eminently satisfactory whether from the point of view of the shareholders directly concerned or of the public interested in the success of the mining and smelting industries chiefly as a matter of general advantage. The policy of the directors in extensively developing the company's mines and erecting at considerable expense a large reduction plant, meanwhile deferring the payment of dividends to the stockholders until such time as ample provision shall have been made for substantially increasing the profit earning capabilities of the company, is commendable and one that deserves, as it will doubtless receive, the approval and confidence of those investing money in *bona fide* mining and smelting enterprises.

## DEATH OF MR. JOHN STANTON.

SINCE the part the late Mr. John Stanton, of New York, U.S.A., took in directing the attention of capitalists to the great potentialities of the Boundary district of British Columbia as a producer of copper was of substantial value to that district and indirectly to the Province at large, the news of his death possesses more than passing interest to mining men engaged in developing the copper resources of British Columbia. Mr. Stanton in company with other prominent mining investors visited the Granby Co's mines at Phoenix, Boundary, in the autumn of 1903. So impressed was he with what he saw there that he said to the editor of the *Grand Forks Gazette*: "The Granby ore body is the largest sulphide ore deposit I have ever examined, and my mining experience has extended to every variety of copper ore. I don't know of its equal elsewhere on the continent." That favourable expression of opinion was widely published, and it did much to confirm the growing confidence in the merit of the Boundary district as a promising field for mining investment. The great value of Mr. Stanton's testimony lay in the fact that the big mining world in which he lived believed implicitly in his honesty and sincerity, so that his influence was very considerable, as the Granby Co. afterwards found to its advantage. But apart from this narrower local interest there is the keen satisfaction to be found in knowing that there are men actively engaged in the business of legitimate mining of whom such sentiments may with truth be given expression to as the following editorial comments of *The Engineering and Mining Journal*, which we reprint for the information of many readers of the B. C. MINING RECORD who might not otherwise have opportunity to read them:

"The death of a man like John Stanton is a distinct loss to the world. Not merely that he was a man of marked ability, but because he presented an example much needed at the present time; the example of a man who attained high position and universal respect by unflinching adherence to his standard of rectitude. And because he set honesty above money, there came to him wealth to a considerable degree and also a standing and position in the world to which no one man can fairly be said to succeed him.

"In business and management his strongest characteristics was common sense. With a moderate training as an engineer under his father, his attention was turned early in life to copper mining; and to that he adhered throughout the rest of his long life. He learned his business thoroughly by experience; he used common sense in the application of his knowledge; and that made him a successful manager and head of important enterprises. Like all men he made mistakes sometimes, but they were few.

"His most marked distinction, however, was his absolute honesty. It was never necessary to defend or excuse the management of a Stanton enterprise, and men generally recognised that. They knew that he never, for an instant, thought that the ownership or control of a majority of the stock of a company

gave him the right to do as he pleased. He was always the trustee for all the stockholders; ready to protect their rights and to give them the fullest information about their property, in which he considered the smallest ownership as important as his own. More than once he refused offers most advantageous to himself, because minority interests were not protected. It would be well if his example had been generally followed.

"On fraud or deceit in any form, John Stanton had no mercy; but he was ready with help and advice where he thought they were needed and deserved. There are many who will share with us a strong sense of personal loss—the loss of a friend whose aid and counsel were always to be relied on in time of need."

## INTERNATIONAL COAL &amp; COKE CO., LTD.

ELSEWHERE in this number is printed a brief report of the annual meeting of the International Coal & Coke Co., Ltd. The general manager, Mr. H. N. Galer, is reported to have recently given a newspaper representative the following information concerning the company:

This company is owned principally by Canadian people. Coleman, Alberta, where the mines are located, is on the Canadian Pacific Railway, and is 40 miles east of Fernie, B. C. The town has about 800 population, is well built, and has electric light and municipal water. The altitude of the town is about 4,000 ft., and the surrounding country is valuable for grazing purposes, but of little service as farming land.

The company is mining on the average 1,000 tons of coal a day at present, and the indications are that this quantity will be increased during the ensuing year. Nearly 300 miners, Poles, Welshmen, Hungarians and Austrians—are employed.

The company is working two seams of coal, one averaging 8 feet in width and the other about 13 ft. The company owns 4,000 acres of land, which lies along the coal seams for seven miles.

Development work on the mines was started a year ago last October, and in the meantime a plant has been installed, also power-houses, machine shops and a tippie for screening the coal.

The employees are working into the hill a distance of 4,000 ft. from Old Man River, and the workings give a depth of 700 ft. The company operates its coal cars with compressed air. Everything in the town is modern and up-to-date. The officials of the company anticipate that the coming year will be exceptionally successful.

The Kootenay lead smelters have reduced the ordinary freight and treatment charges on silver-lead ores from \$15 to \$12 per ton. It is expected this reduction will encourage the working of a number of properties not now operative. The chief difficulty in some parts of the Kootenay districts is the cost of getting the ores down the mountains from the mines to rail or steamer.

LEGISLATION AGAINST FRAUD IN CONNECTION WITH THE PROMOTION OF MINING COMPANIES.

**M**INING Company Promotion has not been active to any considerable extent in British Columbia during recent years, but with the marked advancement the mining industry is making the possibility of the fraudulent promoter resuming operations either in the Province or in connection with some promotion for the stated purpose of mining in it, is by no means remote. Last November Mr. Lewis E. Aubury, State Mineralogist of California, read a paper entitled "Prevention of Mining Fraud by State Legislation," before the American Mining Congress at its annual convention, held at El Paso, Texas. Mr. Aubury's views on this subject, as printed below, are always timely, so that their perusal, especially if it encourage a movement in a similar direction in this Province, may with confidence be recommended.

Now that mining is attracting more attention than probably any other industry, said Mr. Aubury, in my opinion a necessity has arisen for the enactment of stringent laws to protect the investor in mining properties. Had such been passed a generation ago, mining would not now be suffering to such an extent from unscrupulous promoters. Let us rid ourselves of these leeches as soon as possible, and the sooner the better; and, when this has been accomplished, mining will have been placed on a higher standard and the legitimate promoter will have some chance of enlisting capital to aid him in developing his mining property."

The task of suppressing the illegitimate operator is such a stupendous one that, while the Postal Department is using the best means at its command to prosecute persons for the fraudulent use of the mails, strong efforts should be made either to extend aid to that department or to enact such State laws as will provide for the prosecution of the fraudulent promoter where glaring misrepresentations are made by him.

You are probably all familiar with the style of prospectus with which this class of promoters flood the public, and of the losses sustained by credulous persons who have been induced to purchase stock through reading this glowing literature. Probably no other business is so afflicted with parasites as is mining, and the injuries done by them are incalculable. The possibility of huge returns from small investments appeals strongly to the average person with little or no knowledge of mining conditions, and it often becomes an easy matter for the faker with his flowery prospectus to secure capital from gullible persons.

But few recognise the great injury to mining investments which has been accomplished in this country by the fake promoter. We can see the result in the millions of dollars of capital which are at present passing us and seeking investment in Mexico, in South American countries and in British possessions. I would not wish to create the impression that all of

the capital seeking investments elsewhere is caused by the fact that the foreigner has been "bitten" so often in this country that he is seeking other fields, but I do claim that a large proportion of this capital would be invested in this country had not so many illegitimate mining schemes been foisted upon the public in the past.

As it is, the investor with no knowledge of mining is not generally able to distinguish the good from the bad, and it is useless to tell him of the necessity for securing expert opinion before investing. He listens to the tale of the wily faker, who speaks of guaranteed dividend, fabulous assays, etc., and obtains expert advice after he has invested, and when the promises made him fail to materialise. When he realises that he has been handed a "gold brick" with brass trimmings he forever abjures mining and mining operators and loses no opportunity to condemn the same. If, on the other hand, he had made a profitable investment in a legitimate proposition, there is a strong probability that his capital could again be enlisted in mining, and the industry would have gained a friend instead of an enemy.

It is occasionally found that in some mining communities which temporarily profit from the operation of fake concerns in their midst that an attempt is made to uphold them, but such attempts invariably react upon the community or district where support is given to the faker. As a general rule, however, most mining communities frown upon the methods of the faker and would welcome any restraining laws which would prevent him from operating among them.

It is possible that my suggestions regarding the enactment of State laws which will restrain or obliterate the mining faker may meet with some opposition on the ground that it is impossible to so legislate as to protect gullible persons from purchasing "gold bricks," wild-cat mining stocks or any other plated investment. While I am willing to admit a large number of investors exist who need the services of guardians, yet I believe that it is due to the mining industry that we use every means in our power to place legitimate mining on the highest plane possible and, while we may have been dilatory in passing needed laws which would protect the investor, let us make a beginning now. There is no time like the present. Let mining be freed from the barnacles which have attached to it, and let us rid ourselves of a class who are not miners and never will be, but will continue to prey upon the industry unless some means are adopted to annihilate them. I have suggested State legislation, and it may be asked why not Federal legislation? To this I will say that the latter would be most desirable, but there are difficulties in the way, and that it might take years to accomplish the object sought. Let us try State legislation first, as that can undoubtedly be secured immediately. National legislation we can look for in the future.

At the last session of the California Legislature, I had the honour of presenting a bill, aiming to put a stop to fraudulent practices, which became a law. It



provided that an officer, or anyone pretending to be an officer, or in any way connected with a mining company in California, who should publish or subscribe to misleading statements as to the condition or prospect of a mining venture, should be deemed guilty of a felony, and on conviction thereof should be punished by imprisonment in the State prison, or a county jail, not exceeding two years, or by fine not exceeding \$5,000, or both. Since the passage of the bill the fraudulent and exaggerated prospectus has nearly disappeared from California, and the faker has gone to other fields. I have been informed that the State of Washington has enacted a similar law.

#### NEEDS OF YUKON TERRITORY.

**D**R. ALFRED THOMPSON, member for Yukon Territory in the Canadian House of Commons, who is well informed on the chief needs of the district he represents in the Parliament of the Dominion, has stated in the *Yukon Works* that in his opinion there are at the present time two matters of paramount importance to the Yukon, viz., the adoption of a mining code and the obtainment of sufficient money to provide an adequate water supply for mining purposes. Next to these comes the necessity for a material reduction in the cost of transportation.

Regarding a mining code, Dr. Thompson advocates the incorporation of the mining laws in an Act of Parliament, thus rendering them changeable only by the Dominion Legislature, instead of, as at present, in a measure, at the will of the Department of the Interior. Not only the large placer-mining interests of the Yukon require such a guarantee of comparative stability, but quartz-mining (especially in the Windy Arm section of the Territory, where lode-mining promises to become soon an important industry) also needs less unstable conditions than can exist so long as the Department of the Interior shall retain power to make regulations affecting mining. The Commissioner of Yukon Territory and the members of the Yukon Council have already obtained much useful data and information relative to mining in this section, so that there should not be any difficulty in drafting an act that would be workable and, as well, sufficiently comprehensive to include all branches of mining in the Yukon.

The water-supply problem has already been receiving the attention of the Dominion Government to the extent that one of its engineers has for several months been occupied in making a survey and obtaining information for a report on the situation. The great need for a large supply of water to admit of the economic working of the immense areas of low-grade gravels occurring in the Yukon will be strongly urged upon the Government, and the carrying out of an adequate water-supply system be asked for.

The imperative necessity for a considerable reduction in transportation costs is generally recognised throughout the Yukon. A sub-committee of the Dawson Board of Trade has been giving this subject careful consideration. In the course of a report recently

submitted to the board this sub-committee said: Our investigations confirm us in the belief that a material reduction in freight rates is necessary for the country's future life. The high rates since 1900 have been inconsistent even with the great production of gold and the cost of producing it since that time. We must now face a new condition—the creek bottoms, where the richest placer gold had concentrated, are now practically worked out, leaving only the hill sides, higher levels, and old channels, which require hydraulicking, the building of immense water systems (one of which, to cost approximately \$6,000,000, is now under consideration), the impounding of waters in reservoirs, the installation of dredges, etc. The speculative era as to the country's permanency, based upon the now known large fields of gravel being profitably worked, is past, and competent engineers are a unit in the opinion that all that is required for the successful working of these gravels is economical methods of procedure.

It is estimated that in the Klondike mining division of Yukon Territory alone there are 600,000,000 cu. yd. of these gravels which will yield 35 cents per cu. yd., to say nothing of the vast length and breadth of other parts of the Territory in which is contained more or less of similar deposits. There are known to be about 150,000 sq. miles in Yukon Territory within which area the gold belt is contained. The successful encouragement of capital and men to open up and develop these enormous resources depends largely upon cheaper transportation. With lower cost of machinery, equipment and supplies generally, the possibilities of the country are almost unlimited. So far as the common necessities of life are concerned, though, the country is practically non-productive; everything has to be shipped in.

The recommendation of the sub-committee to the Board of Trade is, therefore, to at first confine its efforts to endeavouring to secure a reduction in the high transportation charges.

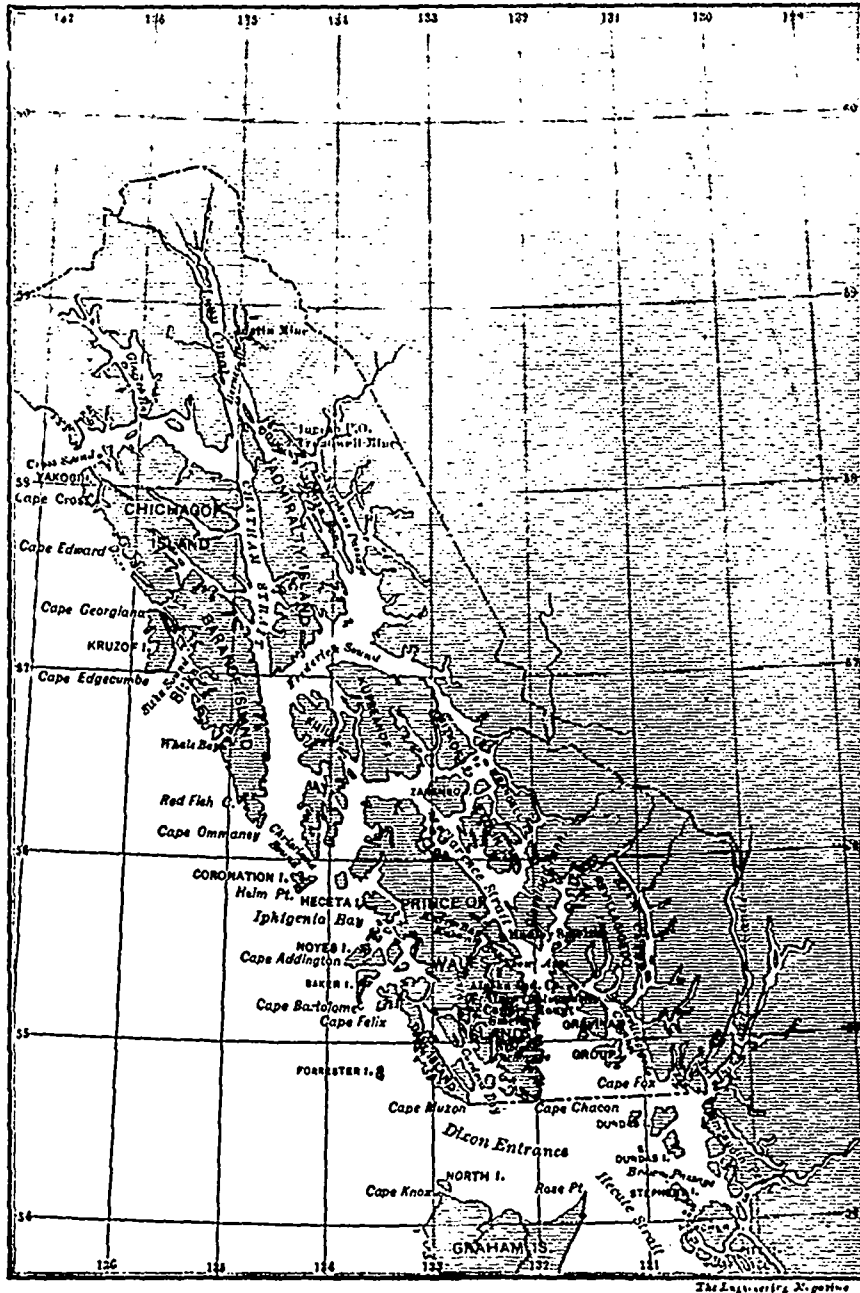
It is most earnestly hoped that the persistent efforts of both Dr. Thompson and the Dawson Board of Trade will result in the desired ends being attained, to the marked advancement and permanent benefit of the Yukon.

The Provincial Government of Ontario is showing an active and very practical interest in the mining industry of that Province in marked contrast to the seeming indifference to the advancement of the industry in some other parts of the Dominion. Mr. Thos. W. Gibson, formerly director of the Provincial Bureau of Mines, has been made Deputy Minister of Mines with an increase of \$500 per annum in his salary, and the estimates for the next financial year show that in the Crown Lands Department, under mining development, an increase of \$12,000 is devoted to the payment of salaries, wages, subsistence, travelling and other expenses to parties exploring in Northern Ontario, with other field officers' salaries; \$500 expenses of mining conventions, and an increased allowance for the mineral collection at the Parliament buildings.

PRESENT CONDITIONS SOUTHERN ALASKAN MINING DEVELOPMENT.

THE ENGINEERING MAGAZINE of New York published in its issue for the current month the following article by Mr. Wm. M. Brewer on Southern Alaskan Mining Development:

insula. Within the area are located nearly all of the quartz or lode mines so far discovered in United States territory in the great North Land, but few placer diggings—in fact, none of the placer camps which are to-day receiving so much attention and yielding such phenomenal outputs of gold dust and nuggets.



A Portion of the Southern Alaskan Coast.  
(From the Chart of the U. S. Coast and Geodetic Survey.)

In discussing this subject I propose to confine myself to that portion of Alaska which embraces the mainland along the coast line and adjacent islands, from the south end of Prince of Wales Island to Kodiak Island lying to the east of the Alaskan Pen-

When it is considered that the length of this coast line, according to the route travelled by the steamers which make regular trips to those Alaskan points situated to the westward from Sitka, is about 1,600 miles, via what is known as the inside channel, it can

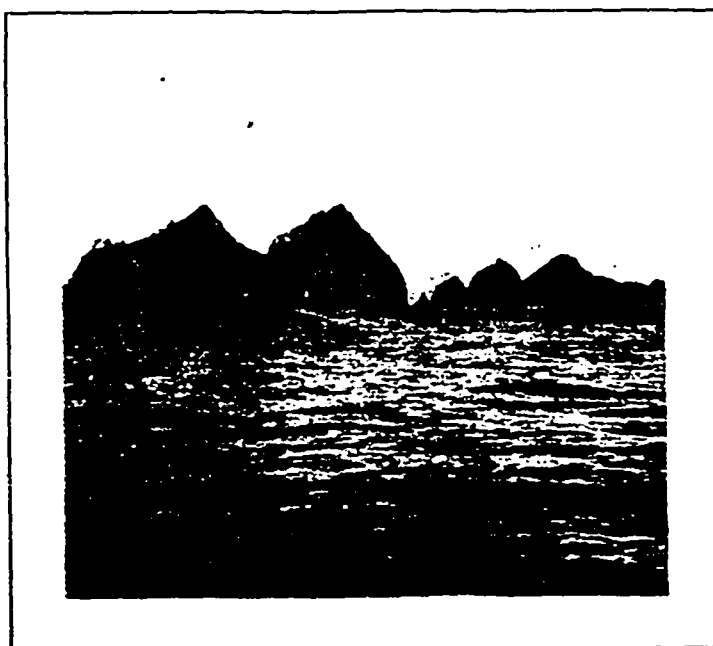
readily be understood why I confine myself within the boundaries given, and do not propose to attempt to discuss the development in the placer camps in the more northerly portion, which covers a far larger area.

Except the Juneau district, where placer mines were operated as early as 1884 (when gold-bearing gravel was discovered in Silver Bow Basin, and the famous Alaska-Treadwell quartz mine was located) all the territory described in this article was practically *terra incognita* so far as concerns its mineral resources until after the discovery of placer gold in the Canadian Yukon or Klondike proper, in 1896. One does not wonder at this, either, when he has sailed along the coast and observed the difficulties to be encountered by the explorer. Viewed from the deck of the vessel the dense growth of underbrush,

description of the districts at the southern boundary of Alaska and take up each camp from that point of geographical order, from south to northwest rather than according to its importance or age.

*Prince of Wales Island.*—Previous to 1898 but little prospecting had been done on this island, and that had been confined to the western side, chiefly in the vicinity of Hetta Inlet. Since then and especially since 1900, the island has been quite extensively explored, until to-day there are mining camps located every few miles along the eastern coast line in addition to those on Hetta Inlet on the west side.

There are two smelting plants, one owned by the Brown Alaska Co., with a capacity to treat about 400 tons of copper ore per day, situated on the east side of the island at Hadley, on the north side of the Kasaan Peninsula; the other owned by the Alaska



Cape St. Elias, Alaskan Coast.

almost impenetrable forests, and precipitous mountain ranges, in many of which are glaciers covering enormous areas, apparently present obstacles which even the hardest and most venturesome prospector would hesitate before attempting to overcome. However, of the many thousands who started to cross the passes and travel down the Yukon River to the Klondike, a few took up the task of prospecting along the coast line. They argued that other "Treadwells" might be found, and that reasoning was to a great extent responsible for the present condition of the development of lode mining on Prince of Wales Island, Prince William Sound, La Touche Island, Illiamna Bay, and near Sunrise City on Turnagain Arm, the head of Cook's Inlet. Of course by far the most extensive development has been carried on in the Juneau district, where the Treadwell group of mines alone have produced upwards of \$21,000,000 in bullion since 1884, to say nothing of other mines in the same district; but in this article I propose to start my

Copper Co., with a capacity of about 200 tons of copper ore per day, situated at Coppermount on Hetta Inlet. The first-mentioned of these was erected to treat the ore from the Mamie mine, situated near the top of the mountain on Kasaan Peninsula, about 1½ miles from the smelter, and the last-mentioned to treat the ore from the group of copper properties situated on a high mountain in the immediate vicinity of the smelter, which were the first discoveries of copper-ore deposits on the island. During the past year more serious attempts at systematic development have been made on this island than during all the previous years since the first discoveries of ore bodies.

The geology of Prince of Wales Island can hardly be worked out in detail for years to come, notwithstanding the good work that is being done annually by members of the United States Geological Survey. The surface is covered with so much moss, underbrush, and fallen timber that natural exposures of the rock formations, except where mountain streams

have cut their channels, are very few and far between and usually near the summits, to climb to which without the aid of beaten trails is really a formidable undertaking, and means that the explorer must pack on his back his blankets and supplies, and travel very slowly.

Hetta Inlet is a long arm of the sea which penetrates into the island a distance of about 30 miles. About five miles above the properties of the Alaska Copper Co. is situated Jumbo Basin, only a comparatively short distance from the southeasterly shore of the inlet. In this basin are located a portion of the properties owned by the Alaska Industrial Co., on which a considerable quantity of development work



In Silver Bow Canyon, Juneau District, Alaska.

has been done during the past five years. At the present time tramways are being constructed to convey the ore from these properties to the shore.

There are besides the properties referred to quite a large number of prospects in the mountains in the vicinity of this inlet, on which assessment work has been done. One of the most promising is a claim located in January last by H. C. Corbin on which he discovered an ore body of considerable extent, as has been demonstrated by actual work. The distance from this ore body to a deep-water wharf is less than half a mile. The location of this mineral claim is nearly midway along the coast line between Coppermount and the landing for Jumbo Basin.

The general character of ore is chalcopyrite, except on the Alaska Copper Company's property where quite a considerable tonnage of copper-carbonate ore occurs at an altitude of about 4,500 ft. above sea level. The altitude of the other occurrences is much lower than this, and there is no oxidized zone; in



Mill Site, Alaska-Perseverance Mine, Silver Bow Basin, Juneau District.

fact, so far as I have observed, there is no well defined zone of oxidation on Prince of Wales Island except the occurrence referred to on Copper Mountain.

From the head of Hetta Inlet across the island to the head of Cholmondeley Sound on the east side is a distance of only about four miles over a very low divide, the summit of which does not exceed 250 ft.



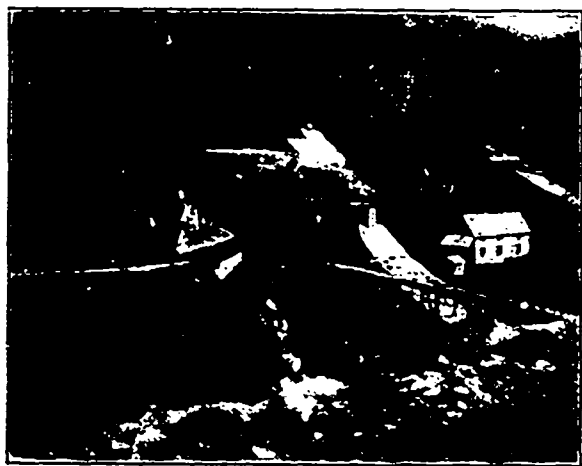
Alaska-Juneau Mine, Silver Bow Basin, Juneau District.

This is the route generally travelled from the west side to the east, and as there are no other properties on the west side of the island that have been developed to any appreciable extent I will cross this portage in this description and take up those properties on the east side that have been opened up there.

From Cholmondeley Sound one sails into Clarence Strait, a wide sheet of water which separates

Prince of Wales Island from Annette and Graviana Islands. A few miles southwesterly from the entrance to Cholmondeley Sound down Clarence Strait is situated Niblack Anchorage, where are located some extensive bodies of chalcopyrite ore occurring in a greenstone country rock. One of these is being operated by the Niblack Copper Co., which last winter built a wharf, bunkers, and tramways from the mine shaft situated only a few hundred feet from deep water. This company has since shipped about 10,000 tons of ore to the smelter at Tacoma in the State of Washington.

Leaving Niblack Anchorage and travelling a few miles up the coast one reaches Dolomi mining camp, where operations have been carried on for the past five years on some comparatively narrow veins of gold-bearing quartz, partially free-milling. Some of this quartz carries phenomenal values, the gold contents reaching as high as 18 oz. to the ton. These samples were from the Valparaiso mine, which is the most extensively developed in the camp. On another



Ebner Mine, Silver Bow Basin, Juneau District, Alaska.

property in this camp a small stamp mill was erected some time ago and operated until recently. It is, however, more economical and also more profitable to ship this character of ore to a smelter than to treat it by amalgamation, unless very good concentration is effected.

After leaving Dolomi one has to travel along the east coast of Prince of Wales Island about twenty miles, or to Skowl Arm, a beautiful bay affording excellent anchorage, to reach the next mineral property where any extensive operations have been carried on. There the Omar Mining Co. is developing and operating the Khayyam group of mineral claims located in the mountains about four miles from the shore. This company has constructed wharf, bunkers, a gravity tramway to the foot of the mountain a distance of nearly three miles, and an aerial tramway up the mountain to the mine 4,600 ft. away, and is shipping ore to the smelter of the Tye Copper Co., at Ladysmith, Vancouver Island, British Columbia, for treatment. The ore body on this property differs in many respects from any of those already referred

to. In character the ore is pyrrhotite closely associated with iron pyrites and chalcopyrite. Cross-cutting and drifting have demonstrated that near the surface the ore body possesses very considerable extent, and if this extent remains constant as greater depth is attained the tonnage from this property will be immense.

The next mineral-bearing zone is found on Kasaan Peninsula and in the mountains at the head of Kasaan Bay and Karta Bay, which is to all intents and purposes a portion of Kasaan Bay.

At Hollis mining camp at the head of Kasaan Bay there occur several veins of gold-bearing quartz very similar in character to those referred to in the Dolomi camp, while at the head of Karta Bay the ore bodies are chalcopyrite, in a magnetite gangue in some instances and closely associated with pyrrhotite in other cases.

In Hollis camp the ore so far found has been treated by amalgamation in small stamp mills, but in the camp at the head of Karta Bay the ore mined has necessarily been shipped to smelters, and during the latter portion of the present year one property, known as the Rush and Brown, has been operated under lease by the Alaska Copper Co., and another known as the Newell and Metzdorf is being operated under option by the Britannia Smelting Co., owners of the Crofton smelter on the east coast of Vancouver Island.

On Kasaan Peninsula proper the chief development work done up to the present time has been confined to the Mamie, owned by the Brown Alaska Co.; the Stevenstown, owned by Sam Silverman and associates; the Mt. Andrew, under option to the Britannia Smelting Co., and the White Eagle, owned by Sam Silverman and associates. All of these properties are located at and near the summit of the mountain which really forms the peninsula. The ore bodies are more or less extensive deposits of magnetite, carrying variable values in copper contained in chalcopyrite disseminated through the magnetite in particles of variable size. The general character of the country rock is a greenstone, much of it resembling a diabase or diorite, and occurring as enormous intrusive masses and dykes which have metamorphosed the limestone with which it contacts, altering it to crystalline. Some of the ore bodies occur as contact deposits between the limestone and greenstone, while others occur as lenses in the greenstone. Both the Mamie and Stevenstown have been developed during the past year into shipping mines, the ore being transported by tramway to the Brown Alaska Co.'s smelter at Hadley, situated on the northerly side of the peninsula.

In addition to the foregoing developments there have been operations carried on during the past year on the east side of Prince of Wales Island in quarrying marble for building and decorative purposes.

Capital was brought into the Kasaan camp in larger amounts and at an earlier date than into most of those on Prince of Wales Island. This has resulted in the building of the smelter at Hadley on the northerly side of the peninsula, as well as in the extensive de-

velopment which has been carried on at the Mamie, Stevenstown, Mt. Andrew, White Eagle, and other mineral claims. From the two first-mentioned during the past year about 25,000 tons of ore have been mined and delivered to the smelter.

The operations of the smelters on Prince of Wales

of the smelting plants on Prince of Wales Island, but the managements of both are concluding arrangements to blow in for a steady run at once.

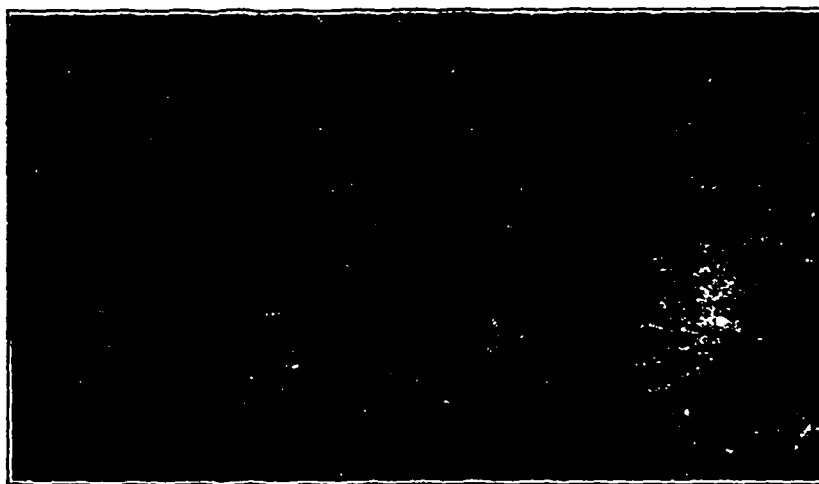
*Revillagigedo and Graviana Islands.*—On the islands lying between Prince of Wales and the mainland but comparatively few discoveries of ore bodies



The Treadwell Mill and Mine, Juneau District, Alaska.

Island will be watched with a good deal of interest, for the reason that all the fuel will have to be freighted either from Puget Sound or Vancouver Island, which means in either case an ocean haulage of about 600 miles in the direction that has always commanded high freight rates. Fuel from Vancou-

have been made, although with the exception of Annette Island, which is considered an Indian Reservation and on which no prospecting by white men is allowed, considerable prospecting has been done on Revillagigedo, Graviana, and Grindell Islands. On Revillagigedo, quartz veins carrying gold values par-



In the Pit, Treadwell Gold Mines, Juneau, Alaska.

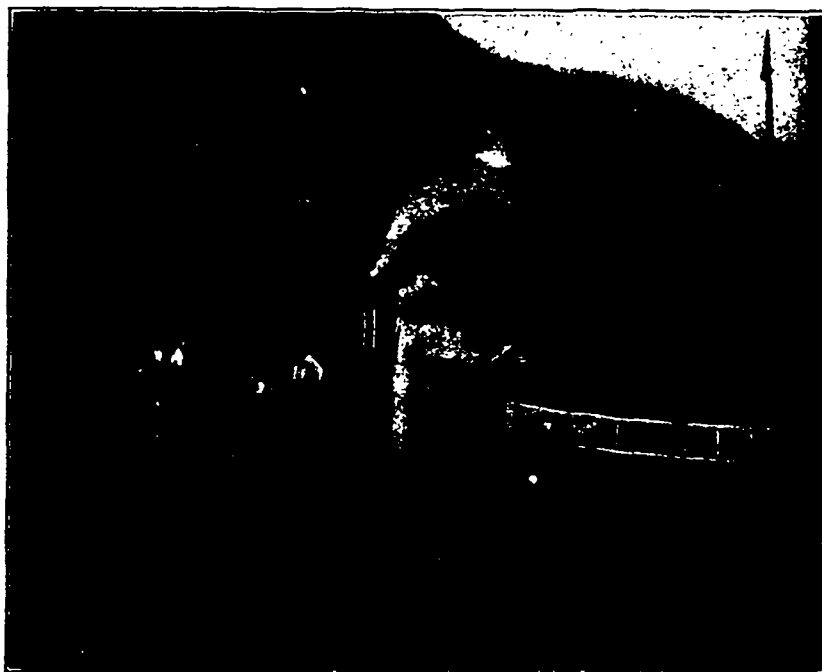
ver Island will be subject to a duty, but its superiority in quality over Washington fuel is so generally recognized that it is almost certain the smelting companies will find it more profitable to use that fuel and pay the duty than to attempt to use Puget Sound coke or coal. Up to the present writing, active operations can hardly be said to have been commenced at either

tially free-milling were discovered some years back, and on the Sea Level group of claims a stamp mill was erected in 1901 and operated for about a year. This is at present idle, owing to some legal questions regarding ownership. On Graviana Island gold-bearing quartz occurs in a talcose-schist country rock which carries sufficient values to warrant mining and

milling operations. Some specimens of this ore are exceptionally high grade and show particles of free gold as large as grains of coffee, and when sorted with reasonable care the ore carries about \$30 to the ton. The prevailing country rock on both of these islands is schist, much of it being garnetiferous and talcoid in character. Sufficient exploration has not been done to determine the full extent of this belt of schist either as to its width or length, but it is interesting to note that country rock of similar character is found at other points along the coast towards the north-west, notably in the vicinity of Wrangel, and also in the Juneau district, but no discoveries of ore bodies of importance have been reported either on islands or on the mainland between Prince of Wales

bullion outside of that produced by the Treadwell group. In the near future the Alaska-Perseverance mine, situated at the head of Silver Bow Basin, and the Greek Boy on Berner's Bay, will be added to the present producers.

One of the most interesting features connected with the Juneau mining district is the method of mining employed underground in the Treadwell group, where no attempt at timbering in the stopes is made, notwithstanding the fact that these are upwards of 200 ft. wide and 1,000 ft. long. In opening a new level a drift is driven along the strike of the ore body, and every 60 ft. along this drift an upraise is made 20 ft. in height, which is timbered and later serves for a chute to discharge ore from the stopes above into the



Gladhaugh Copper Mine, Ellamar, Prince William Sound, Alaska.

Island and Snettisham Bay, which may be considered the south-easterly boundary of the Juneau District.

*Juneau District.*—Berner's Bay, a harbour on the east side of Lynn Canal, may be considered the north-westerly boundary. The greatest activity at the present time in this district is seen on Douglas Island, where are situated the Alaska-Treadwell, Alaska-Mexican, and Ready Bullion mines; in Silver Bow Basin, back of the town of Juneau on the mainland where are located the Ebner, Alaska-Juneau, and Perseverance quartz mines, as well as some hydraulic diggings in the basin proper; on Silver Bow Creek, on Eagle River, and in Berner's Bay on the Jualin mine. The Treadwell group of mines are to the Juneau district what the Homestake group are to the Black Hills. In the latter, there are in addition the Golden Reward group and a few other producing mines, so in the former we find the Jualin, the Eagle River, and the Ebner mines to-day producing practically all the

cars. From the top of these upraises stoping is started and extended in every direction except downwards; the machine drills are set on the broken ore, of which fully two-thirds is always kept in the stopes, until the entire body of ore between two levels, except the 20 ft. left above the drifts, is stoped out. In addition to leaving this horizontal body of ore there are several vertical pillars left in the stopes, through which at regular intervals are driven man holes, by which method miners can obtain ingress and egress between the various chambers in the stopes. By working in this way the cost of timbering is eliminated, and by leaving two-thirds of the broken ore and the vertical pillars until the ore body is stoped out between the levels, a factor to insure safety from caving has been introduced.

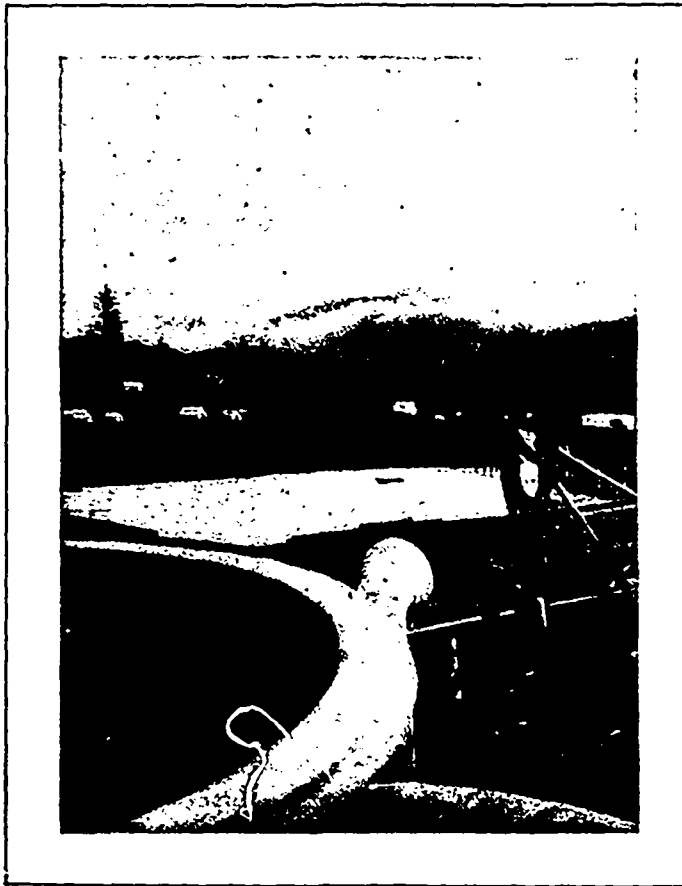
Eventually it is proposed not only to stope out the vertical pillars, but also the 20 ft. of ore left above the drifts. When this is done the entire workings will present the same appearance, only on a much

more extensive scale, as the Glory Hole does at the present time. The dimensions of this are about 270 ft. in depth, about 300 ft. in width, and some 800 ft. in length.

The high-grade ore mined in the Eagle River and the Jualin mines last season has proved a strong incentive not only to prospectors, encouraging them to explore the country more thoroughly, but to the owners of partially developed prospects and idle mines, leading them to renewed efforts to persuade capitalists to invest. When such results accrue from systematic development, as was the case in the Jualin mine on Berner's Bay—where late in the season the apex of a new ore body was exposed in a drift and

pired, and the ore proved to be of considerably higher values than the owners had anticipated.

*Prince William Sound District.*—To the north-westward from the Juneau district no metal mining is being done between Berner's Bay and Ellamar, in Prince William Sound. The earliest discoveries on Prince William Sound were the Gladhaugh mine at Ellamar and the property known as the Beatson mine on La Touche Island. Both of these properties have been shipping copper ore, much of it carrying in the neighbourhood of 10 per cent copper per ton, for the past two years. The tonnage shipped by the Gladhaugh has been from stoping from the various levels to a depth of 500 ft., but the ore shipped from the



Seward, Alaska, Showing the Track of the Alaska Central Railway Connecting the Wharf with the Town.

proved to be 350 ft. in length, the ore from it yielding free gold on the plates and in the batteries \$25 per ton, in addition to the values carried by the concentrates—owners of other properties in practically the same geological formation certainly have cause to feel that capital judiciously invested may result in placing mines idle to-day among the list of producers to-morrow.

As a matter of fact, in the case of the Jualin mine, the owners, on the advice of the superintendent (Mr. W. W. Hoggat) had arranged for the expenditure of capital in development during this season, but to their agreeable surprise the ore body they were seeking was exposed when the season was about half ex-

Beatson mine has been principally the quantity removed in doing development work. This property is phenomenal in several respects. Exploitation through a cross-cut tunnel at a depth of some 200 ft. below the apex of the outcrop has demonstrated that the ore body is about 200 ft. wide, of which width some 35 ft. carries exceptionally high-grade copper ore, while the average of the balance of the ore body is about 5 per cent in copper.

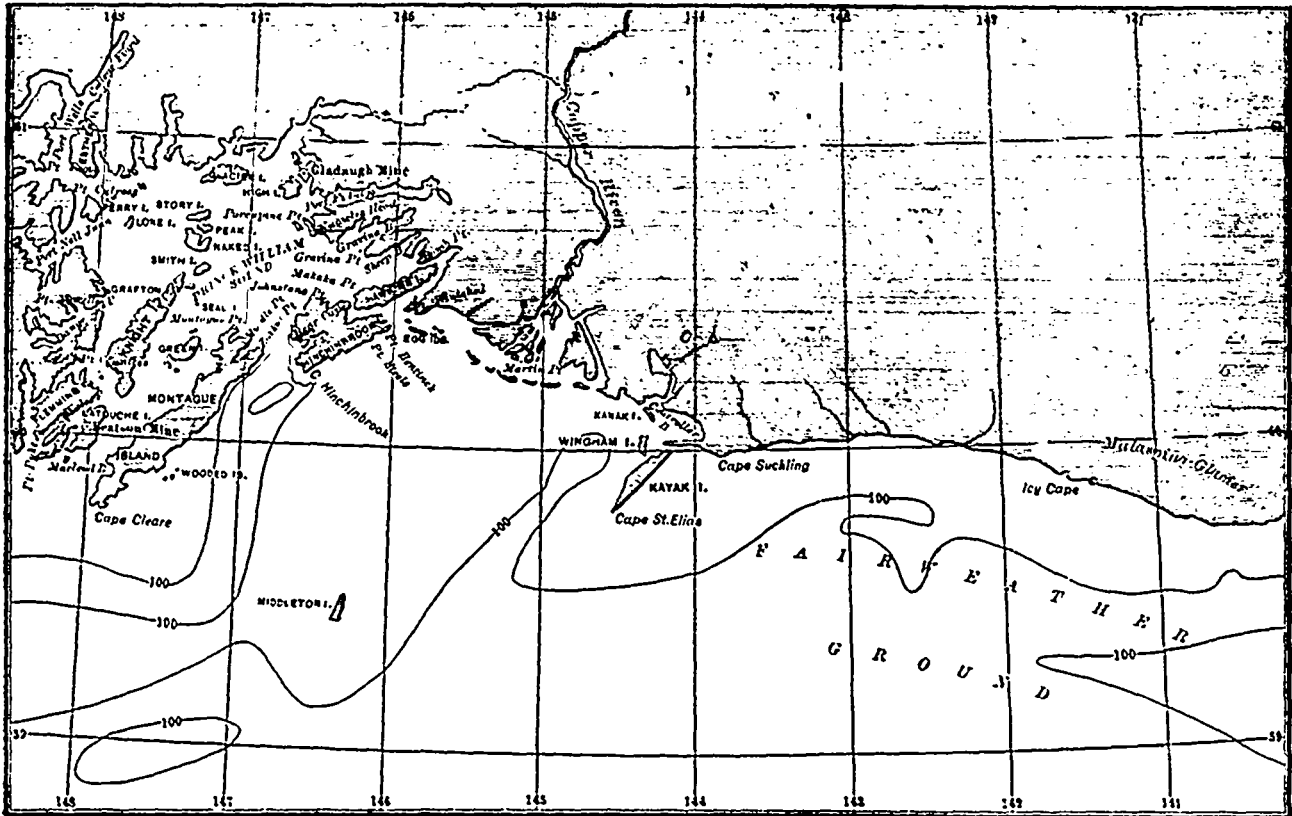
The outcroppings on this property are chiefly found in a bold bluff, almost immediately over the cross-cut tunnel, and the ore body has been traced along the surface for a considerable distance in both directions from this bluff. During the summer season a



considerable tonnage of shipping ore is quarried from the face of the bluff, but no ore is stoped down from above the cross-cut tunnel in the underground workings. A second tunnel is being driven at a level about 100 ft. below the one already referred to. When this

during the past few years attracted so much attention that at the present time a railroad company is preparing to construct a line into the Copper River district.

*Kenai and Alaskan Peninsula Districts.*—To the



A part of the Middle Alaskan Coast.  
(From the Chart of the U. S. Coast and Geodetic Survey.)

tunnel intersects the ore body it will be made the main working tunnel, and all ore will be trammed through it to the bunkers on the wharf, about a quarter of a mile distant.

The visitor to the Beatson property on La Touche Island, cannot help but be very favourably impressed not only with the property itself but also with the surroundings, for no expense has been spared to make all the buildings as substantial and as comfortable as are those in many of the older mining camps. Evidently the comfort of his workmen has been one of the main considerations taken into account by Mr. Beatson, the manager.

Although there are no other regularly shipping mines at present in this district, yet there are several very promising prospects on Landlock Bay, Fidalgo Bay, Boulder Bay, Orca Bay, and on the mainland within a few miles of Valdez, the supply centre, situated at the head of Prince William Sound.

In the interior from Valdez some 160 miles or so are situated the Copper River occurrences of chalcocite, bornite, and other copper ores which have

westward from Prince William Sound along the coast some very promising prospects have been located, some near Seward, the southern terminal of the Alaska Central railway, others at Port Dick and Port Chapman, near the eastern side of the entrance to Cook's Inlet, and still others in the vicinity of Iliamna Lake on its western side. The ore occurring on these prospects is a copper-gold sulphide, carrying (it is claimed) high values; but on none of the prospects has there yet been sufficient work done to warrant an estimate of tonnage of ore in sight. Indeed, during the last season the first really earnest, systematic development work has been performed.

Prospectors during 1904 carried their explorations in search of copper-gold ores to the westward as far as Kodiak Island, and some locations were made; but owing to the remoteness and consequent difficulties in transportation, there being only one boat a month direct from Seattle, the owners of these prospects have found difficulty in interesting capital; for this reason assessment work only has been performed.

The building of the Alaska Central railroad from

Seward is proving to be an encouragement to prospectors to explore the country along its route. This has resulted in the location of several gold-bearing quartz claims in the vicinity of Kenai Lake, some 20 miles from the town of Seward. Several very fine specimens of quartz showing free gold were brought out from this section late in the season, and the probabilities are that some systematic development will be attempted this year.

An occurrence of copper-gold known as the Ready Bullion group of mineral claims is situated some 16 miles from the proposed line of the Alaska Central railroad, on Turnagain Arm at the head of Cook's

The coal mining and prospecting for oil industries are carried on on the mainland near Kayak Island; also on the Kenai Peninsula and near the coast on Illiamna Bay; but owing to the remoteness of the districts the coal mines have not yet reached the point of production on a commercial scale, nor has any oil been shipped.

That portion of Alaska along the coast westward from Sitka undoubtedly possesses great wealth in mineral resources which will in the near future be developed to a point that will insure commercial success to many of the operators.



Landlock Bay, Prince William Sound, Alaska.

Inlet. During the season of 1905 considerable development work was performed on this property, with the expectation of blocking out ore ready for shipment when the railroad is completed sufficiently near to warrant building a branch to it.

The vicinity of Turnagain Arm has been the scene of considerable placer and hydraulic mining since 1897, and every year some three or four hundred men have been employed in this industry. During 1904 and 1905 several companies took in heavy machinery for hydraulic mining, and during the present season these companies should be in a position to demonstrate whether or not their operations will result in commercial success.

This portion of Alaska has been handicapped in the past because of transportation difficulties. A 52-ft. tide is not an unusual occurrence on Turnagain Arm; consequently navigation, especially in small boats such as are used by prospectors, is hazardous in the extreme, but with the advent of the Alaska Central railroad into this portion of Alaska many of these transportation difficulties will be overcome.

#### PROGRESS OF MINING IN THE SIMILKAMEEN DISTRICT.

By Geo. E. Winkler.

(Continued from last month.)

**A**CROSS the Similkameen River from Kennedy Mountain and about 12 or 14 miles south of Princeton is situated Copper Mountain, which, with the exception of Camp Hedley is the most widely known camp in the Similkameen district.

During the early part of the year just past the British Columbia Copper Co., owning the Mother Lode mine and smelter near Greerwood, took a working bond on a group comprising about 15 full claims and fractions, which included the Sunset and other promising locations surrounding it.

Owing to the Sunset belonging to a stock company, which had spent between \$10,000 and \$12,000 in sinking a shaft to a depth of 183 ft. and running a number of drifts at various levels, it was held at a higher figure than any other property in the group.

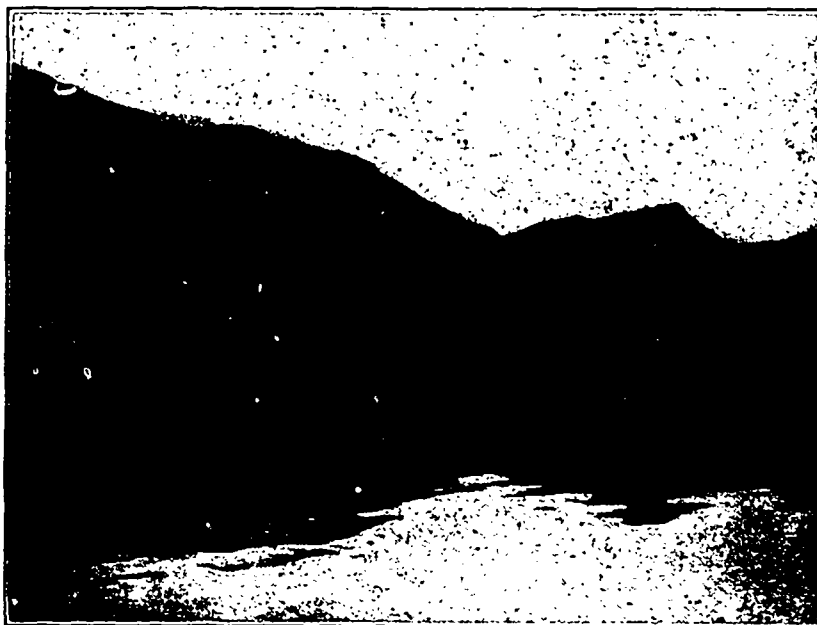
The purchasing company was reported as paying \$50,000 for 51 per cent of the stock of the old company, but the exact terms of the deal between the two companies were not made public, and little is known except that a hitch occurred in the negotiations between them, owing to which the British Columbia Copper people have seen fit to abandon the development of the group, at least for the time being.

During the time work was being done, the old Sunset shaft was unwatered and a number of drifts and cross-cuts run in different directions to determine the extent and grade of the ore body. On the surface the Sunset deposit is from 50 to 250 ft. wide, running almost north and south, and is paralleled by dykes of quartz-porphry. A porphyry dyke was cross-cut from the bottom of the shaft and ore was found to

account of getting too close to the contact with the porphyry, which dips under the ore body, the drill ran through the ore and into the rock on both the Sunset and Gardner.

The deepest drill hole was put down in the Princess May, where a depth of nearly 650 ft. was reached. The drill was in ore all the time this hole was being sunk. Assays from the core at first showed about 4 per cent copper, but the the general average assay value was much lower. Other deep holes were drilled with similar results.

The Princess May deposit is 60 to 70 ft. wide and has the same trend as that at the Sunset. The ore is of different character, being entirely chalcopryite. By many it is regarded as the banner property of the camp.



Prince William Sound, near the Entrance to Landlock Bay, Alaska.

exist on the opposite side of it.

The ores of the Sunset are chalcopryite and bornite. In some of the deeper workings a little native copper has also been found. Small gold and silver values are contained in the ore. The matrix has been described as a basic andesite. To the eye of the ordinary observer the rock resembles more on epi-diorite. Near the surface the minerals occur in little veinlets and kidneys through the gangue, but as depth is attained a more even mineralisation is noticeable. The bornite crystals are so fine that concentration by the better known processes is practically impossible, and smelting will be necessary to extract the values. The grade of the ore is a question difficult to give an answer to. It will probably average between 2 and 3 per cent copper and small values in gold and silver.

In addition to the drifting and cross-cutting done from the shaft, the British Columbia Copper Co. put down a number of diamond drill holes on the Sunset, the Helen H. Gardner, and the Princess May. On

Since the Granby Co. dropped its option on the Ada B. last spring several other companies and individuals have been trying to secure this desirable property, but so far no deal for it has been consummated. Mr. W. Y. Williams, who examined this claim for the Granby people, expressed himself as highly pleased with the large showings on it, and the only reason a bond was not taken was because of the prices asked by those owning the neighbouring claims in the group on which the option was taken. The deposits on the Ada B. are from 60 to 70 ft. wide and have been traced by open cuts for 700 to 800 ft. A porphyry dyke separates the two showings on the claim. The ore is yellow sulphide of copper occurring in felspathic rock. There is more iron in the Ada B. than in the ores of the Sunset group. Gold and silver values are also slightly better.

In Voigt's camp on the eastern end of Copper Mountain a great deal of work has been done. The group contains between 70 and 80 claims. On the R.

S. a tunnel has been driven about 140 ft. An immense open cut has been made on the Frisco and Roberta, men having kept at work on this for about two years. There is another large open cut on the Victor, on which there is also an 80-ft. tunnel. Shafts and open cuts on other claims have also shown the ore characteristic of this camp, viz., magnetite with considerable copper stain and said to carry good values in gold. This group has been operated by Portland people.

Nearer Princeton, on the Copper Mountain side of the river, a promising property called the Knob Hill has recently had a little work done on it. Unlike most of the claims of the district the Knob Hill is located on a white quartz vein, traceable on the surface for 700 ft. and with surface croppings varying in width from a few inches up to 4 ft. The principal values are in copper and silver, although small gold and platinum values also exist. The vein has been opened up by shallow shafts and open cuts. One shaft has been sunk to a depth of 30 ft. and shows the vein at that point to be between 9 and 10 ft. wide. The ore will average between \$10 and \$12 in all values. The copper is of the yellow variety and the associated minerals are blende, iron pyrites and pyrolusite. The vein is a fissure with a north-east and south-west strike and dips to the south-east at an angle of 45 degrees. It is cutting a porphyritic diorite.

A similar vein to that on the Knob Hill is found on the Podunk, situated a few miles to the south. It is running up the side of what is known as the Red Mountain (evidently an extinct volcano). The owners have been able to explore the vein by means of tunnels. It varies in width from 8 or 10 in. up to 4 ft. and in addition to good copper values runs well in gold.

North-east of Princeton on One-Mile Creek, what promises to be a valuable deposit of copper-gold ore is being developed by W. C. McDougall on the United Empire group. By means of tunnels, open cuts and shafts the ore body has been traced for 3,000 ft. or more. It has a width of 50 ft. on the lower end. Owing to the presence of much iron, the vein is greatly oxidised for some depth, and for this reason could be mined very cheaply. The Canadian Pacific Railway survey crosses the lower end of the group, and a deposit of lime has been found on the south side of the vein. The grade of the ore is not high, possibly not over \$5 to \$6 a ton on the average, but considering the ease with which it can be mined, and the exceptional position of the group, it should be a big producer when transportation facilities and smelters are secured to the district.

On the north, only a few hundred feet distant, a 4 ft. seam of coal crops out in a small tributary of One-Mile Creek. On Holmes Mountain, between Five and One-Mile Creeks, prospectors have been opening up some small veins of copper-gold ore with results that are said to be encouraging.

For a distance of 15 miles or more down the Similkameen River from Five-Mile Creek, granites, in which little mineral is found, predominate. A few

miles above Hedley an area of sedimentary rocks overlying the granites and consisting of slates, schists and limestones commences, and runs in a north-easterly direction through the Nickel Plate Mountain, and in a south-westerly direction across the Similkameen River up a tributary of that stream known as Sterling Creek.

In that portion of the sedimentaries lying south of the Similkameen River, about 2½ miles from Hedley, the Pollock group has been located on a series of quartz veins carrying arsenical pyrites. The veins are trending north-west and south-east, and dip about 55 degrees west. The group is owned by the Pollock Mines Co., Ltd., and consists of the following claims: Pine Knot, Daisy, Minnehaha, Maple Leaf and Marten.

The main lead on the Maple Leaf is from 2 to 10 ft. wide. On the Marten, a vein between 5 and 6 ft. wide has been sunk on to a depth of 50 ft. in one place, and 66 ft. in another. From the bottom of the 66 ft. shaft a 24 ft. cross-cut has been run to strike the contact of a green eruptive dyke paralleling the vein. The 50-ft. shaft shows 8 ft. of ore, assaying between \$7 and \$8 in gold.

A number of leads are found between the Maple Leaf and Marten veins described above, making a mineralised zone 600 ft. wide, carrying small values. The oxidised outcroppings of the different leads par. gold. A 50-ft. tunnel has been run on the Maple Leaf on a 2-ft. shoot of ore, assaying \$48, and a 4-ft. shoot has been exposed on the Daisy in a surface cut that runs \$15 to the ton. Between the highest and lowest outcrops of the main leads there is a difference in altitude of 500 ft. It is the intention, after the character and dip of the ore bodies shall have been sufficiently determined, to mine by means of tunnels. The capitalization of the company is \$1,000,000. Mr. H. C. Pollock is president and Mr. C. E. Oliver secretary, with head office at Hedley, B. C. No attempt will be made to put up a stamp mill on the property until \$15,000 to \$20,000 have been expended in development. Arrangements are being made to secure the necessary capital, and with the advent of a railway the group is one that will be likely to give a good account of itself.

In Hedley Camp proper a number of important changes have been made during the past year in regard to the only producing mine in the district, the Nickel Plate.

Mr. Myron K. Rodgers, who "discovered" the mine for the Daly people, and who had complete charge of the initial development of the property, and the erection of the 40-stamp mill and cyanide plant at Hedley, was replaced last October by a new manager, Mr. R. B. Lamb, and a new board of directors were elected at the same meeting of the Daly Reduction Co. that deposed the former manager. Mr. Rodgers retained the management of the Nickel Plate mines belonging to the Yale Mining Co. for a short period after losing the superintendency of the reduction plant, but was finally ousted from this position also. He is the owner of a one-fifth interest in the mine, and is said to be negotiating for the sale of his

stock holdings to the other members of the company. Some misgivings have been expressed as to the probability of the mine and works closing down while the warring factions are reaching a settlement, but it is hoped there is no likelihood of such an unfortunate occurrence. One result of the quarrel has been to advertise the Nickel Plate far and wide, as the first manager has departed from his former rule of secrecy and has been openly telling for publication what a great mine the Nickel Plate really is, so that British Columbians have commenced to realise the fact that probably the richest mine in the province is situated in the comparatively little known Similkameen district.

The mine has only been developed to a depth of 500 ft. as yet, but even with this amount of development it has been authoritatively stated that ore to the value of \$4,000,000 has been put "in sight." The ore body has an average width of about 40 ft. and has been developed almost entirely by tunnels, the longest of which is in over 1,100 ft. The vein underlies a brecciated lime. The vein filling is of a peculiar character, being variously described as a quartzite, an andesite, and a greenstone. It is doubtless an eruptive. Some of the richest ore has a porphyritic structure. Mining during the past year has been largely from glory holes on the Sunnyside and Nickel Plate. Some very rich ore has been taken out, especially from the Sunnyside, and it was necessary while running it to mix it with considerable waste in feeding it to the stamps in order that the plates might care for the gold released. Specimens rich in free gold and tellurides were found in the Sunnyside. The gold is associated with mispickel, which is saved in the concentrates and shipped to the smelter. Since the change of management the company has not kept up development work to the extent it had done in years past.

A new departure in exploring the vein has also been made in the getting in of a diamond drill with which bore holes have been sunk on the Sunnyside, Nickel Plate and Bull Dog, with good results on the two first mentioned. The drill is now at work in the 1,100-ft. tunnel, where the ore has not been struck at the distance expected when the tunnel was begun. When the ore is reached in this tunnel it will give a depth of 700 ft. on the vein.

Owing to the shortage of power (necessitating shut downs) during the winter of 1904-05, caused by the cold weather freezing the water in the 14,000-ft. flume from Twenty Mile Creek, the company, early in the winter, brought in two large boilers for the mill. These have been used more or less, but the weather during the past winter has been so mild that little trouble has been experienced in getting water from the creek. In order to increase the quantity of water in the flume a pump has been operated on Twenty Mile Lake, at the head of the east fork of Twenty Mile Creek. The flume has a capacity of about 1,000 in. When plenty of water is available, under a head of 207 ft. to the mill, and 406 ft. to the lower power house, carried in pipe lines 16 and 20

in. in diameter, sufficient power is generated to operate the entire plant.

Twenty Mile Creek, like most mountain streams, is high and swift running in the spring, but when the snow on the summits has melted subsides very rapidly and at times goes almost dry during the hot weather. On this account the company are reported to be considering the advisability of constructing a large flume to bring water from the Similkameen River, where an abundant supply is always available. It is altogether likely the present year will see this work under way, as the addition of another 60 stamps to the mill when the railway reaches Hedley will make the question of power a very pressing one. Since the change of management a number of alterations and improvements have been made in and about the mill.

A new machine shop 35 by 90 ft. has been erected and well equipped with necessary machinery; also a new carpenter shop 30 by 55 ft. in size. An addition 30 by 36 ft. has been constructed on the south end of the mill which covers the rope driveway to the crushers and also the battery tank.

A short distance from the mill a furnace has been built where the battery water is heated. An extension has been made to the vanner floor to admit of the installation of eight more 6-ft. Frue vanners, making 24 in all, to handle the pulp from the stamps.

It has been found necessary to add two more slime tanks 30 ft. in diameter, making six in all. To provide room for them an addition 42 by 42 ft. was made to each end of the building.

Experiments have been made with a view to cyaniding the concentrates, but have evidently not met with success, as the company has been making regular shipments from Penticton to the Everett smelter. The assay value of the concentrates is between \$300 and \$400 a ton.

Outside the mill a stone building has been erected for refining precipitates from the cyanide plant and a large pond has been constructed for holding the slimes.

The stamps have been crushing between three and four tons each every 24 hours.

Beside the Nickel Plate group, no other property in Hedley camp has received much attention during the past year, though signs are not lacking that this period of inactivity is drawing to a close and that systematic development is likely to soon commence on several promising prospects. Within the past few months arrangements have been made between J. J. Marks, the owner of the Humming Bird group, adjoining the Nickel Plate on the north, and the Diamond Drill Contracting Co., of Spokane, Wash., for the sinking of a number of drill holes in an attempt to catch the northern extension of the Nickel Plate vein, which appears to be dipping north into the Humming Bird ground; 2,000 ft. of drilling will be done with this purpose in view. A start has recently been made on this work and the owners await the result of the tests with every confidence.

Little or no work has been done of late on the Kingston and Horsefly claims, both regarded as likely

properties, and both owned by joint stock companies in which a number of the same persons are interested.

Of the individual claim holders, Mr. Thos. Bradshaw has been doing considerable work on a claim lying north-west from the Nickel Plate, where he has succeeded in exposing some good ore.

Nothing has been done on the Boston since the Yale Mining Co. threw up its bond on the property after expending between \$10,000 and \$12,000 on it. The work then done demonstrated the existence of a large body of \$8 to \$10 ore, and with the opening up of the camp that is bound to follow railway construction, this claim is certain to again attract attention.

On the Golden Zone group lying four miles north of the Nickel Plate, belonging to Messrs. Marks, Brod-hagen and Murphy, the work last season consisted of a 30-ft. open cut with a 12-ft. face showing 6 ft. of solid ore carrying good values, and a 75-ft. tunnel from which a 45-ft. cross-cut was run in ore.

During the summer this property was examined by A. C. Merrill, M.E., of Tacoma, who took five representative samples, from a width of four or five ft. on different exposures of ore. The following assays were obtained: Sample No. 1, \$7.42; No. 2, \$12.52; No. 3, \$21.32; No. 4, \$3.16; No. 5, \$118.88. An appropriation of \$5,000 has been set aside by the government for the building of a road up Twenty-mile Creek from Hedley, which will make this property much more accessible.

Little work has been done on locations on Fifteen- and Sixteen-mile creeks during the past twelve months. The two best known properties in that portion of the district are the Oregon and the Two Brothers, the former a large showing of yellow copper and bornite, owned by Messrs French, Shattford, *et al.*, and the latter a vein of arsenical pyrites carrying fair values in gold.

Between the Nickel Plate and the valley of Kere-meos Creek is a large mineralized area, composed mainly of eruptive rocks, that has claimed considerable notice from the prospectors of the section. Riordon Mountain, named after the first prospector to locate on it, Mr. James Riordon, is the most northerly of the camps in the area spoken of. It is now nearly 11 years since the first stake was planted on the Billy Goat, the banner claim on the hill. The first discovery was on a white quartz vein, comparatively barren looking on the surface, which showed a little copper at a depth of a few feet, and gave fair returns in gold and silver. Shortly afterwards, in prospecting his location, the owner came upon the large showings of ore that have given this property its prominence in the district. These ore shoots occur in a belt of garnetite overlying granite. It will require much work to determine the extent of the deposits, but judging from the surface croppings they are large. The ore will average between \$10 and \$12 to the ton in gold, silver and copper. Some specimens are a mass of small reddish garnets cemented together with calcite. Iron pyrites and pyrrhotite accompany the yellow copper.

On the western side of the mountain in another claim of the group, Mr. Riordon last season discov-

ered a second vein or series of ore shoots that gave good assay returns and is equally as promising as the first showings located.

South of Riordon Mountain is Northey Mountain, or Red Mountain as it is sometimes called. This hill has some remarkably large showings of pyrrhotite carrying as a rule low values in gold and silver, and a number of smaller veins of arsenical iron in which the values are much higher. Mr. R. W. Northey of Rossland and Olalla has superintended the development and surface prospecting of a number of the most promising of these properties for a couple of American companies owning them.

Independence Mountain, south of Northey Mountain, is the highest point in the range, having an altitude of nearly 8,000 ft. The showings that have so far received the most attention, are immense bodies of pyrrhotite occurring in an epi-diorite. The values are low and unless development work discloses richer shoots of ore, the deposits will not be workable. No depth has been attained as yet so there is a possibility of improvement. In one or two instances, notably on the Dominion claim owned by Mr. A. Ford, the pyrrhotite is found in a matrix of garnetite and carries an appreciable amount of yellow copper in association with it. The gold and silver values are also slightly better. Work on this claim has exposed a large body of ore that promises well with further development.

East of Independence Mountain on the headwaters of Keremeos Creek the British Columbia Copper Co. last year bonded a group of four claims from Messrs. McMillan and Forbes, known as the Apex group. Two showings of ore are found on the property, one a 28-ft. vein of arseno-pyrites carrying low gold values, and the other a small vein, but better in grade. Up to the end of 1905 the company had done 120 ft. of work in tunnelling and cross-cutting the large vein and had sunk an incline shaft nearly 100 ft. on the small vein. From this shaft several short drifts were run, making in all 140 ft. of work in and from the shaft. The vein in the shaft follows a line contact and varies in width from two to seven ft. It is running east and west and dipping to the south. The ore shows arsenical pyrites, pyrrhotite and chalcopryrite. Picked samples run \$200 and higher in gold to the ton, the highest values occurring in the copper sulphides. The average value of the ore would probably be about \$25 per ton. The property is being developed under the superintendence of Mr. Frederic Keffer, M.E., of Greenwood, who has placed Mr. Hall in charge of the work. Mr. Hall is an old-timer in the Boundary, both in connection with the first work on the Mother Lode mine near Greenwood and the first tunnel contract at the Sally mine on the West Fork of Kettle River. The company has erected comfortable bunk houses, a cook house, and stables, making in all 7 or 8 substantial log buildings. A small force of men has been kept busy all winter. Should the operations of this corporation prove successful a great impetus will be given to mining throughout the lower Similkameen.

Near the Nickel Plate road, a short distance above where it branches from the main road to Hedley, and a few miles north and east of the Apex group, Messrs. McDonald and Wheedon of Olalla have located a number of claims with likely showings. On the Scotia a body of good grade copper ore in garnetite has been tunnelled on a short distance with encouraging results. A larger and still more promising body of yellow copper, capped with pyrrhotite, has been exposed on the Le Roi No. 2.

Very little is heard of Olalla camp these days, the Olalla Co. having abandoned its policy of announcing rich strikes before making them. Under the management of Mr. A. A. Watson, a few men have been employed the greater part of the year quietly determining what the chances are of the Bullion claim making a mine. Early in the winter some fine samples of hematite iron were brought in from Cedar Creek, near Olalla, by Mr. J. C. Riley, who made a number of locations on the creek. Near Keremeos, on the Webster ranch, locations were made last fall on a large iron showing carrying between \$6 and \$7 in gold and copper.

A free gold property down the river from Keremeos near W. J. Manery's place was examined and reported on last summer by Mr. E. Philip Gilman, M.E., of Vancouver, B.C., for an American company.

Development work on a small scale was prosecuted on the King Edward group on Suswap Creek early in the year. Molybdenite in considerable quantities was met with in driving a tunnel on this group.

#### MINING IN ATLIN DISTRICT IN 1905.

**M**INING operations in Atlin district in 1905 were dealt with in an article contributed by Mr. H.

W. Ebbs Canavan and published in the December number of the B. C. MINING RECORD. The following review, reprinted from the *Atlin Claim*, will doubtless also prove interesting:—

Although there were not so many men employed in mining operations in the Atlin district during the season of 1905 as had been employed in previous seasons, and the total value of gold produced did not equal that of former individual years, still, we can truthfully state that the results *per capita* were quite as good as any previous year and better than most.

The drifting operations of last winter were on the whole quite satisfactory, but the comparatively light snow fall of that season and the warm dry summer—particularly in the early part—rendered the water supply the scantiest perhaps since the opening of the camp, and to this fact is attributed the decrease in the number of men employed.

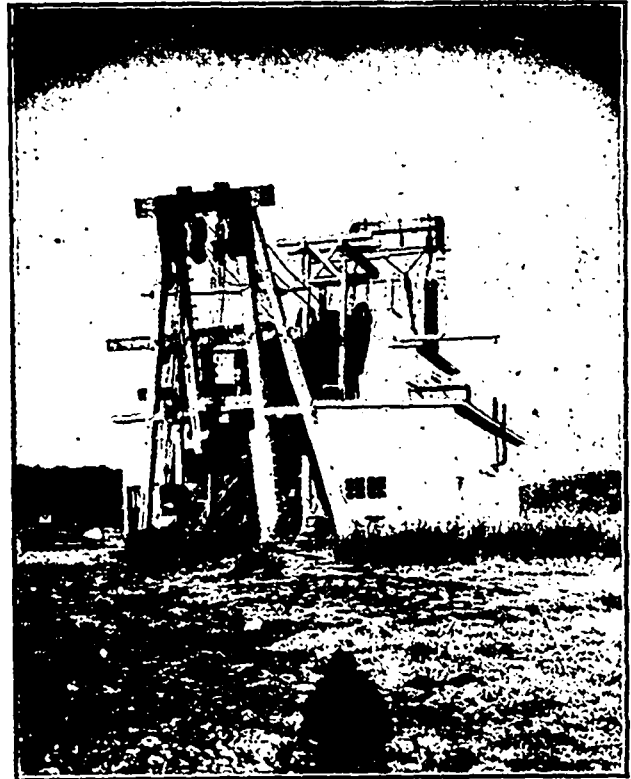
Drifting operations are being carried on this winter on Spruce, Pine, Gold Run, Boulder, McKee, Birch, Otter, Ruby and O'Donnell creeks and many are sluicing, to which operation the very mild weather which has predominated has been peculiarly favourable.

#### MCKEE CREEK.

Owing to the acquisition and control of much of the

ground on this creek by companies only 12 or 15 individual miners operated on it during the past summer, but those who did were rewarded by the usual good returns for which this creek is noted.

Scarcity of water and uncomfortably close quarters caused the McKee Consolidated Hydraulic, Ltd., to suspend operations for the season so as to allow Ginaca & Co. to work past a point of conflict and inter-



British Columbia Dredging Co's new 7½ cu. ft. Bucket Dredge, Open-connected Type, on Spruce Creek, Atlin.

ference, which object they accomplished. Ginaca & Co. operated the Old England and Winnemucca leases and uncovered about 5,500 sq. yd. of bedrock and moved about 27,500 cu. yd. of gravel with very satisfactory results.

The Amalgamated McKee Creek Mining Co. operated the Beta and Gamma leases all summer with about 12 men and expended nearly \$15,000. They uncovered 4,700 sq. yd. of bedrock and, the banks being more than 100 ft. high, moved a considerable yardage of dirt, which returned good profits. The company operated two monitors for a few weeks when the shortage of water compelled them to cut one of these out for the balance of the season.

During the present winter some 25 men are drifting on McKee Creek and good returns are being obtained by some of those who are winter sluicing.

#### PINE CREEK.

About 50 individual miners operated on Pine Creek

and Gold Run during the season and, although quite a little time was lost on account of the water shortage, the results were in most cases very satisfactory.

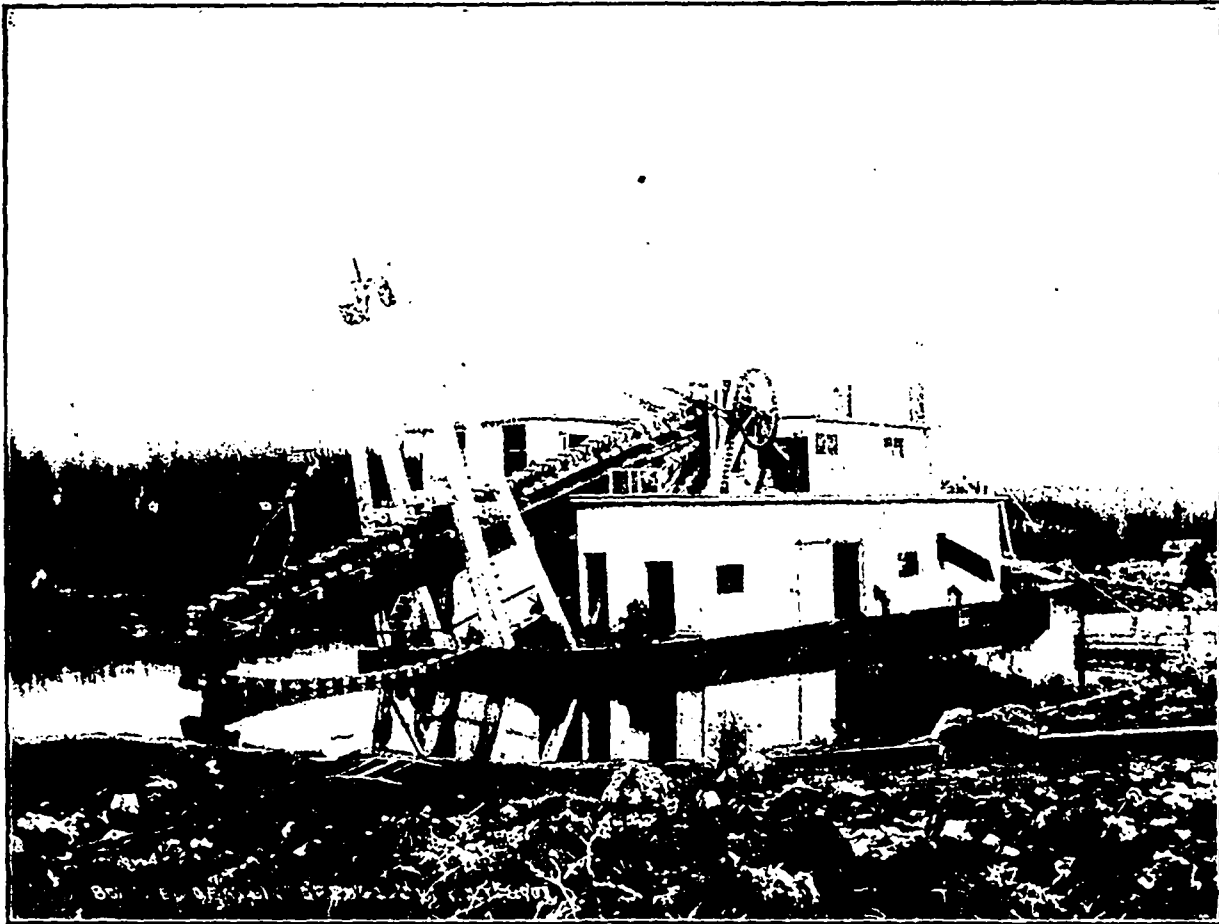
The Pine Creek Power Co., Ltd., and the North Columbia Gold Mining Co., both under the one management, had a very successful season and moved a large quantity of gravel which returned them splendid profits. Their earnings last season were larger than those of any other company in the district and they owe their success to the improved methods of

Creek and Gold Run during the entire season.

We have good reasons to believe that a steam shovel will be installed on Tar Flats early the coming season and that the necessary steps are being taken to divert from Surprise Lake a large supply of water for the season's operations.

#### SPRUCE CREEK.

Two hundred men were employed on this creek during the season, including those employed by the companies, and, as before, the total output of the individual miners on this creek exceeded that on any



British American Dredging Co's Dredge on Gold Run, Atlin.—Showing Close-connected Bucket Line with 96 Buckets of 3 cu. ft. capacity each.

operating—the running in and discharging of powder drifts and the installation of a new style of elevator for the disposition of tailings and debris.

The Atlin and Willow Creek Gold Mining Co., Ltd., continued on the "D" lease all season and recovered about \$14,000 by their sluicing operations at a satisfactory profit.

Notwithstanding the use of a Keystone drill and dynamite, which, however, helped considerably, the British American Dredging Co., Ltd., did not move as much gravel with their dredge on Gold Run as the management anticipated, but for all that realised fair returns from the amount of gravel handled.

About 140 men were employed continuously on Pine

other, being well over the \$110,000 mark.

The scarcity of water and want of sufficient dumping room on this creek somewhat delayed the operations at the beginning of last season but not to the same extent as in previous years, as these and other disputes were settled by the Committee of Miners, which was elected by the miners from among themselves.

More than 100 men are drifting on this creek this winter. Some are carrying on winter sluicing while others are getting out dumps for spring washing.

The Spruce Creek Power Co., Ltd., kept a force of about 15 men employed last season and ground sluiced and prospected the Duchess lease and Wood-



line group of placer claims, besides which they enlarged part of their pipe line and enlarged and repaired their ditch, etc. This company is at present prospecting on the Plumas lease by means of tunnels.

Over \$10,000 has been expended on the Tobacco Box lease in drifting work during the last two seasons and the operators have been rewarded with good profits.

Owing to shortage of water and lack of dumping room the owners of the Gladstone lease confined themselves last season to individual methods and spent \$5,500 in running drifts, sluicing, etc. Their ground proved rich and gave good returns.

Although a good pay streak exists above and below their ground, the Columbia Hydraulic Co. prospected much of their ground last season and were unsuccessful in trying to locate "pay."

The British Columbia Dredging Co., Ltd., completed the construction of their dredge in Blue Canyon, Spruce Creek, in time for a test run of about three weeks before the season closed. The management stated that the results, both from efficiency of operation and gold secured standpoints, were exceedingly satisfactory and the company is quite confident of successful operations during the approaching season.

The introduction on Spruce Creek of a steam traction shovel, by the Northern Mines, Ltd., as a means of successfully working placer ground was an entirely new venture in this district. The shovel was operated seven or eight weeks, moved a considerable yardage of gravel and made good returns and clearly demonstrated that it will almost assuredly become a mode of successfully operating much of the ground in this district.

On a group of leases on Little Spruce Creek prospecting was done by means of a shaft, which was sunk to a depth of between 70 and 80 ft. without getting bedrock. The holders have good faith in their ground and will continue sinking next season.

#### BIRCH CREEK.

The ground on this creek is quite rich but the water supply is quite inadequate and from the results of last season's operations by a dozen individual miners and two companies the only practical conclusion is that reservoirs will have to be constructed in order to obtain a sufficient supply of water to ensure successful operation.

The Atlin Lake Company, Ltd., only sluiced for about two months, being compelled by shortage of water to then shut down, but they obtained good results.

Cancellor, Pearse & Co. were put to much expense by damages caused to flumes, pits, etc., by the spring freshet, but operated until the end of August with inspiring returns obtained. They will continue operations at the commencement of the season.

#### BOULDER CREEK.

About 40 individual miners operated on this creek during the past season and obtained good returns, which would have been greatly increased had they not been restrained from ground-sluicing by the un-

expired injunction in the hands of the French company holding property on Boulder.

The Societe Miniere de la Colombie Britannique cleaned up considerable bedrock with fair returns and at the end of the season had again got into rich ground, which gives promise of successful operations during next season.

J. H. Black employed 12 to 14 men all the season and successfully operated a lay on a portion of the above mentioned company's ground, and on which he is continuing operations during the present winter.

A force of six men were employed during the season on a lay on the Non-Union lease and much gravel was sluiced, netting good profits.

Drifting operations are being carried on at present on Boulder by some 20 men.

#### RUBY CREEK.

Ten miners carried on development work on Ruby Creek during last season.

The Ruby Creek Mining Partnership employed half a dozen men in exploratory work on their ground and, beside proving a doubt that their holdings are exceedingly valuable, had the satisfaction, though the yardage of gravel washed was comparatively small, in netting a profit over expense while carrying on purely prospecting work. They have demonstrated a pay streak, of over 170 ft. wide with the eastern rim as yet unfound. The property of the partnership is about the most promising hydraulic proposition in Atlin camp.

A lone miner is keeping things warm on Ruby over winter, and in the spring that creek will talk for itself.

#### WRIGHT CREEK.

Over a dozen men prospected on Wright Creek during the season and quite a few of them were rewarded with good returns.

The Lincolnshire and Surrey Hydraulic Syndicate expended some \$2,200 in preparatory work on their ground and it is expected that next summer they will open up the pay streak in their ground.

#### OTTER CREEK.

Five or six men prospected different leases near the mouth of Otter Creek last season with fair results.

A. Carmichael is at present on the creek developing on a group of leases for next season's operations.

#### O'DONNELL RIVER.

Although O. B. Perry did not take up the bond which he had on a number of leases on this river last season it is confidently believed that there is a large quantity of placer ground there which will eventually be opened up and made to pay big profits.

A number of men are at present doing prospecting work on three O'Donnell River leases and a like number of leases on Bull Creek and good prospects have been found.

#### VOLCANIC CREEK.

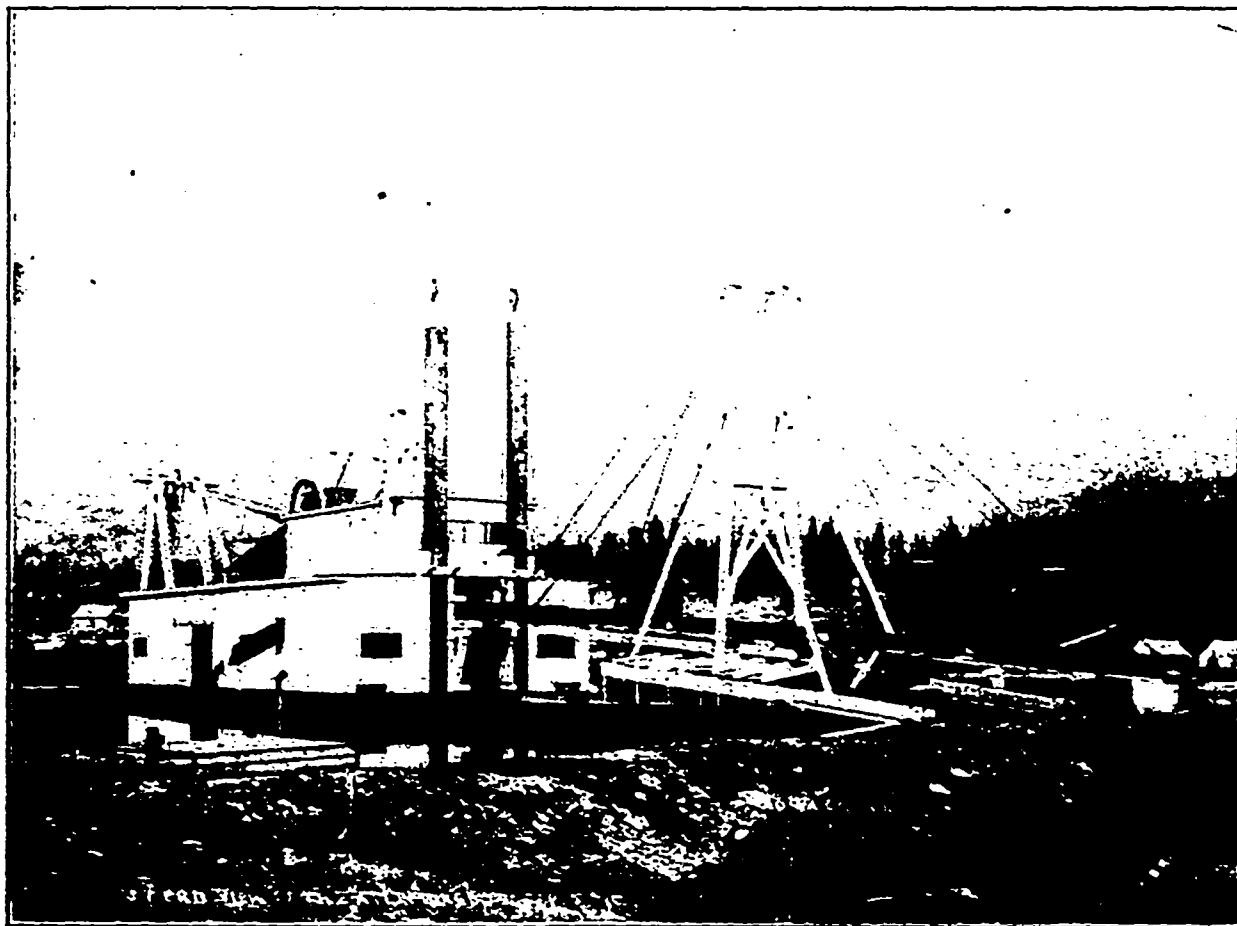
Last season a number of individual miners with holdings on this creek combined their efforts in an endeavour to sink to bedrock and had reached a

depth of 45 ft. when stopped by water. They had, however got into dirt which gave big returns to the pan and as a result arrangements have already been made for installing a powerful pumping plant in the spring, when the men will continue their quest with increased energy. So great is the faith of the men in the possibilities of this creek that about 16 miles of wagon road have been constructed to their workings

throughout coming years. At the present time mining in general throughout the district is in an exceptionally healthy condition and the indications are that the season of 1906 will greatly surpass last season both from the standpoint of value of gold produced and numbers of men employed.

#### MINERAL CLAIMS.

Assessment work was done during the past year on a large number of mineral claims (over 150) in



British American Dredging Co's Dredge on Gold Run, Atlin.—Showing Gold-saving Tables.

to facilitate the getting in of supplies and heavy machinery.

#### GENERAL.

Taking into account the shortage of water experienced and the somewhat smaller number of men employed, the placer mining operations of the past season in the Atlin district were on the whole very successful and we are confident by what we know that we do not greatly overshoot the mark when we state that gold to the value of \$500,000 was produced in this camp in 1905.

We understand that steps are being taken to conserve water at several different important points in the district by the construction of huge reservoirs so as to ensure a sufficient supply for all operators

different parts of the district, beside which Crown grants were obtained on many claims. Upwards of 50 new locations were recorded and to a casual observer it is evident that from a quartz mining standpoint the Atlin district is as yet in the infancy of a great future.

The development work on the quartz mines on the Yukon side of the line at Windy Arm last year caused much renewed interest and many parties took the field in that part of our district bordering on Windy Arm in the latter part of the season and several promising claims were located. It is also said that work of a permanent nature with a view of making shipping mines will be inaugurated on quite a few well developed claims during the coming season.

## THE BIG BEND DISTRICT OF BRITISH COLUMBIA.\*

Report by H. Carmichael, Provincial Assayer.

**B**IG BEND district is that portion of British Columbia north of the Canadian Pacific railway and enclosed by the Big Bend of the Columbia river, having an area of approximately 2,300 sq. miles. Crossing the C. P. R. at Beaver Mouth, the Columbia river flows in a north-westerly direction for 60 miles, when it makes a sharp turn to the left and flows south, again crossing the railway at Revelstoke, 76 miles south of the Bend. With the exception of a few rapids, the river is navigable for boats or canoes for the entire distance, and the only bar to steamer navigation is at La Porte, 40 miles above Revelstoke, to which point a stern-wheel steamer ascends twice a week from Revelstoke, the return journey being made in one day.

### HISTORICAL.

In the spring of 1865 four boat-loads of prospectors left Marcus, in Washington Territory, to prospect the Columbia river. They were headed by five men who, in some form or other, have left their mark upon the country, a creek, a basin, or a mountain peak being named after them. These men were Wm. Downie, Hy. Cairns, Nelson De Mars, Louis Lee and Steve Liberty.

Ascending the Columbia through the Arrow lakes, prospecting as they went, they first struck gold on Cairns creek, 20 miles above the present town of Revelstoke. Washing here proved so successful that the party decided to send some of their number back to Marcus for more supplies, while the remainder whip-sawed lumber and put in sluice-boxes. While the return party was at Marcus some of the others prospected the creeks further up the Columbia, staking gold on a number of them, the best, however, being McCulloch and French creeks.

The news of the discovery of gold in this region travelled down to Marcus and through the west, with the result that in the following year (1866) there was a rush to this section, the population becoming between 8,000 and 10,000 people. A steamer was built at Marcus, called "The 49," and during the one season (1866) made 37 trips from Marcus to La Porte, where a rapid blocks further continuous navigation. In the same year the government appointed the late Hon. Peter O'Reilly as gold commissioner at French creek.

Quite recently a pair of old English handcuffs and part of a billiard table were unearthed, reminders of these early days. It has been estimated that some \$3,000,000 of gold were taken out in 1865-6, a \$375 nugget having been found on French creek.

Travel was not entirely confined to the Columbia river, as parties came in from Kamloops with pack-trains, following down Smith creek to the Columbia opposite Gold creek. This placer excitement died

down, many of the miners going to Perry creek, in East Kootenay, others pushing northward until they struck the Peace and Finlay rivers, bringing the placer camp of Omineca into existence.

From this time the Big Bend district took a long rest, comparatively little mining being done, and that confined to placer and hydraulic claims, no lode mining being prosecuted. In 1896 prospecting for quartz was commenced in this region, but, unfortunately, had barely begun before the wave of mining development over the whole of the North-West showed signs of slackening; the prospector, not seeing a buyer for his claims, turned his attention elsewhere, and Big Bend district continued to slumber a little longer.

### FORMATION.

The entire region is rugged, the mountains rising rapidly from the Columbia river. The lower hills and benches are covered with a heavy growth of timber, consisting of Douglas fir, cedar and white pine; timber line being reached at an altitude of 6,000 ft. above the river of 7,500 ft. above sea level.

On the divides between the creeks, at an elevation of 7,500 ft., there is a considerable area of what might be called a rolling plateau or parkland, from which peaks rise from 1,000 to 2,000 ft. still higher. In summer these grassy slopes furnish excellent food for pack animals: the rocky portions are easily seen, and prospecting does not present the difficulties encountered in the thick underbrush of the lower altitudes. An easy grade to these plateau regions is obtained by following up the numerous creeks flowing into the Columbia river. For instance, the divide above Standard basin is reached by following up Five-Mile creek on a gradual grade of about 600 ft. to the mile. Some of the creeks, however, are much steeper.

From personal observation and information obtained, the country rock of the Big Bend district seems to be schist, a typical sample of which was sent to Dr. Dresser, who gives the following report:

#### "Big Bend District, Country Rock.

"Hand Specimen.—A greenish gray rock, apparently consisting of dark, schistose serpentine and containing small layers of calcite along the cleavage lines. The latter mineral is so pure as to effervesce readily with cold hydrochloric acid.

"Thin Microscopic Section.—The rock is found to be composed of serpentine, quartz, feldspar, and remnants, or alteration products, of some ferromagnesian mineral. The feldspar is by far the most abundant mineral, and, with the calcite and quartz, makes up the essential part of the rock.

"The alteration of the original rock is so complete that few, if any, parts of the primary minerals remain. It is an impure serpentine, evidently derived by alteration from a rock whose original composition was between that of gabbro, or diabase, and a peridotite."

The country rock, where seen, did not show much local contortion, and the open ground on the divides makes it easy to see the strata and to prospect. So far as examined, mineralization seems to have taken

\*Provincial Bureau of Mines' Bulletin No. 2, 1905.—Mineral Locations, Big Bend District, in the Revelstoke Mining Division, British Columbia.

place along zones of movement in the schist and parallel with the strike. No veins were observed crossing the formation. The vein filling differs in different properties and in different parts of the same vein. In places it is quartz showing a remarkably banded structure; in others, copper and iron pyrites or zinc blende have been deposited in the original schist and are minutely interbanded.

Prospecting in the region above timber line is easy, compared with the densely wooded portions of the province. Communication will undoubtedly be better in the future, so that this section appears to offer a favourable field for the prospector and after him the mining engineer.

#### MINERAL LOCATIONS.

*J. and L. Group.*—The J. and L. Group is situated on Goat mountain, at the head of the east fork of Cairns creek. The group consists of five claims—the Eli and J. and L., owned by L. T. George and J. P. Kelly; the Badger, owned by J. P. Kelly, and the Annie M., owned by E. McBean and J. P. Kelly. The foot of Goat mountain is reached by a trail from Cairns creek to the forks; thence following up the east fork to the mine cabin at the base of the mountain, where it is 1,050 ft. above the Columbia river, the length of the trail being nine miles. The exposures of country rock on the trail were all schist, interbedded here and there with limestone. Goat mountain consists entirely of schist, and cutting diagonally across a shoulder is a mineralized zone in the schist, having the same strike as the schist and dipping with it into the hill at an angle of about 30°.

The southern slope of Goat mountain is very steep, rising at an angle of 40°. The vein or mineralized zone was first struck in the creek at the base of the mountain, but little work was done at this point. The highest working; are 1,200 ft. above the mine cabin, and an examination was commenced at that point, gradually descending and at the same time going around the mountain to the east.

At 1,200 ft. altitude a tunnel was driven in through a schist formation a little below the outcrop of the vein, and when 90 ft. in it cuts the vein diagonally where it is about 8 ft. wide, dipping with the schist into the hill at an angle of 30° and having a strike of N. 65° W.

From the end of the cross-cut a drift was run to the right 60 ft. on the vein, which is soft and entirely decomposed, no doubt largely due to the decomposition of arsenical iron in vein matter so close to the surface, this mineral being noted at other points in the deposit. The hanging-wall is schist and the foot-wall limestone, and both are well marked with several inches of red gouge on each.

Some 50 ft. below this upper tunnel and about 750 ft. horizontally round the hill is an open cut, which shows the ore-body to have the same characteristics as noted above, and to be about 3 ft. wide. At 275 ft. below the upper tunnel, and still further round the hill, an incline was sunk on the vein to a depth of 50 ft. On the surface the characteristics were much the same as noted above, the ore-body being 4 ft. wide, with schist hanging-wall and lime foot-wall, with 10

in. of red gouge on the latter.

On descending the incline and a few feet from the surface the vein loses its decomposed nature and becomes very distinctly banded in character, quartz and schist being interbanded with arsenical pyrites, the latter being in bands of one to two inches wide. Assays from the incline gave the following results:—Gold, 0.6 oz.; silver, 4.4 oz.; copper, none.

Still further round the mountain and 600 ft. under the upper tunnel a cross-cut through the schist was made below an outcrop of the vein, and at 90 ft. in the ore-body was cross-cut diagonally, having a slightly steeper dip than noted above, being here 45°. A drift on the vein was then run to the right, a distance of 117 ft., a bend here causing the tunnel to slightly change its direction.

The ore-body is here from 1 to 4 ft. wide, zinc blende showing, however, more largely, in one place being 2 ft. 9 in. wide. Assays from the long tunnel gave gold, 0.28 oz.; silver, 4.2 oz.; copper, trace; lead, none; zinc, 30.75%.

A small open cut, midway between this tunnel and the incline above, clearly shows the ore-body some 2 ft. 6 in. wide, with a dip of 49°, the mineralization being zinc blende, arsenical iron and galena. The values of a sample taken from this open cut gave as follows:—Gold, 0.62 oz.; silver, 0.4 oz.; copper, trace; zinc, 5.25%.

The work done on this property shows that there is a vein or impregnated zone in the schist country rock and along a contact with limestone extending from high up the mountain to the creek below, varying in width and mineralization, but showing great permanence. In places the ore is solid, carrying good values; in others, concentration would be required. The work which has been already done amply justifies further development.

Assays obtained by the owners from different parts of the vein gave the following results:—

Gold.	Silver.	Copper.	Lead.
0.33.....	16.4 .....	0.6.....	27.2
0.63.....	2.6 .....	0.2.....	3.5
0.11.....	13.8 .....	3.8.....	
0.24.....	26.52.....	1.9.....	

*Standard Group.*—The Standard Group embraces eleven claims, and is owned by the Price Mining & Development Co., of Revelstoke, B. C. The property is situated on a small divide between two forks at the head-waters of one of the south-east branches of Downie creek, flowing into the Columbia river. The claims are reached from the Columbia river by a trail 12 miles long, following up Five-Mile creek and crossing over the divide into Downie creek. The altitude of the divide is 6,000 ft. above the Columbia, about 7,500 ft. above sea level and is just above timber line. The summit is practically clear of timber, although a few hundred feet lower there is a large extent of fine park-like country, with clumps of trees and the best of feed for cattle or horses during the summer months.

The country rock over this whole neighbourhood is a well-marked schist, interbanded with limestone and

outcrops of quartz, often carrying minerals, are numerous. Nearly on the crest of the divide a mineralized zone in the schist occurs, which has been traced for over a mile along the ridge by outcrops and open cuts in the direction of the approximate strike of the schist country rock.

To prove the value of this deposit, a series of tunnels was run in to the hillside, cross-cutting the formation, at the point where the mineralization showed strongest. These tunnels are three in number, and have been run as follows:—

The lowest tunnel cross-cuts the formation and was run 315 ft. At 275 ft. a mineralized zone was struck and was estimated to be about 45 ft. thick. Drifts were run on this zone N. 40° W. and S. 40° E., a total distance of 140 ft. This zone was found to have a dip of 24° N.E. and a strike of S. 40° E., in conformity with the schist country rock on the hillside.

A second tunnel, run at an elevation of 184 ft. above the lower tunnel, struck the zone referred to at 140 ft., when drifts were run, parallel with those below, a total distance of 166 ft.

At a further elevation of 120 ft. above this a third tunnel was driven, cutting this zone at 150 ft., when drifts of 70 ft. were run north and south. The last two levels have been connected by an upraise driven on the zone, drifts 70 ft. long being run from the upraise midway between the two levels.

Besides this main work, there are other tunnels and open-cuts on other portions of the property. The work done goes to prove that there exists in the very dark talcose schist a mineralized zone, having a width of about 40 ft in the tunnels and traceable for a very considerable distance. A close examination of the vein-matter would indicate that there has been considerable movement, the black schist being slicken-sided to a marked degree, but it would appear that the mineral-bearing solution had not penetrated the zone until after this movement had ceased, as the mineral is found to be between the foliation of the schist and not in any solid masses of the schist itself. Payable mineralization does not extend across the entire zone as in places the black schist occurs without any mineralization whatever, but there are cavities in the schist which have been entirely filled with ore-bearing solutions, and represent solid lenses of ore 4 to 8 ft. thick.

The mineralization consists largely of arsenical iron and copper pyrites, with a little bornite. Assays of selected samples gave gold, 0.32 oz.; silver, 1.4 oz., and copper, 15 %. While quartz was noted as a portion of the vein filling, it is not nearly so prominent as might be expected from the number of quartz outcrops seen at different points on the surface.

Difficulties of transportation at present militate against the claims, but there is good ground for hoping that further work will prove up a property which, by offering a large tonnage of ore, will overcome this difficulty.

An effort was made to find the *Keystone Group* of claims, on which a considerable amount of work has been done, but this property was missed, owing to the entire obliteration of the trail on the Keystone divide.

## REVIEW OF THE COPPER OUTPUT IN 1905

By J. Parke Channing.

**M**R. J. PARKE CHANNING, of New York, president of the Tennessee Copper Company, recently contributed to the *New York Times'* Annual Financial Review the following general review of copper mining in 1905 in the United States and other parts of the North American continent:

The year 1905 has been a memorable one in the copper trade because of the gradual and regular increase in the price of the metal from about 15 cents at the beginning of the year to 19 cents at the close. This increase in price has not been due to any manipulation either by individual companies or by an association of producers, but has come about by an increased demand for the metal due to the general prosperity of the country causing an increased consumption for electric lighting plants, trolley roads, the electrification of steam road terminals, and the hundred and one uses to which copper is put in the arts in the form of copper and brass products. Consumption during 1905 outstripped production, so it may with safety be said that January 1, 1906, found the world bare of copper save that of the ordinary stocks which it is necessary to carry in the metallurgical establishments of the producers and in the stock rooms of the consumers. This, notwithstanding that the increased production for 1905 over 1904 was 11 per cent, while production for the previous ten years had shown an annual increase of only about 8 per cent, compounded annually.

I am indebted to Mr. Horace J. Stevens of Houghton, Mich., author and publisher of *The Copper Handbook*, for the following figures of production, which from my own knowledge of the subject I have every reason to believe are the most accurate obtainable at this early date:

### UNITED STATES COPPER PRODUCTION.

State.	1905. Lb.	1904. Lb.
Montana . . . . .	335,000,000	298,314,804
Arizona . . . . .	255,000,000	191,602,958
Michigan . . . . .	221,000,000	208,329,248
Utah . . . . .	60,000,000	47,062,889
Other States . . . . .	72,000,000	67,227,368
Total . . . . .	943,000,000	812,537,267

Properly speaking, to this should be added a very large part of the production from Mexico and Canada, as most of this copper finds its way into the United States for refining and metallurgy. The whole may be considered as the production of the North American Continent. If we should take these figures into account we would have for the year 1905, 150,000,000 lb. from Mexico, and 60,000,000 lb. from Canada, thus giving a total of 1,153,000,000 lb. for the year. The production of the whole world is given in the table below, and it will be seen that by far the largest increase has been in the United States.

## WORLD'S COPPER PRODUCTION.

Country.	1905. Lb.	1904. Lb.
United States . . . . .	943,000,000	812,537,267
Other Countries . . . . .	678,000,000	641,052,493
Total . . . . .	1,621,000,000	1,453,589,760

While a technical review of the conditions abroad would be of interest, it is safe to say that no great producers in any foreign country have come in during the last year so as to seriously disturb production, the increase noted being that which would be expected from the general enlargement of operations of existing properties.

In the United States increased production in every State is noted. In Montana most of the increased production can be traced to two sources, the most important one being the improvements which have been made at the Washoe Reduction Works of the Amalgamated Copper Co. At the present time there is being treated at the Washoe plant and the Great Falls plant of the Amalgamated about 12,000 tons of ore per day. At the Washoe plant much of the increased tonnage and reduction of costs has been due to the lengthening of the reverberatory furnaces and the placing behind them of waste heat boilers. This latter expedient has enabled the smelter boiler house to be shut down, all the steam for the power plant being furnished by these waste heat boilers. In addition to this the novel expedient of lengthening the blast furnaces by filling in behind existing furnaces has been taken up, and to-day at the Washoe plant there are two blast furnaces, each 52 ft. long, and each capable of treating 1,600 tons of ore every 24 hours. The former furnaces were 18 ft. long, and each treated 400 tons per day, so that the added length of 16 ft. joined the two furnaces together and increased the capacity by practically 800 tons. Still further economies are expected during the coming year by the introduction of electric power derived from the Missouri River to operate the concentrator. This will permit of the shutting down of the concentrator steam power plant, and will no doubt cut the cost for power in two.

The other element which has had to do with the increase at the Amalgamated Co.'s plants has been due to the strike of high-grade ore in the lower levels of the Anaconda mine, and, recently, in the Parrot. There has been much exaggeration as to these new strikes, particularly in regard to the grade of the ore and its width. Still, however, the discoveries are of far-reaching importance, as they prove that in the whole camp the striking of low-grade iron pyrites at depths of from 1,000 ft. to 1,500 ft. does not mean that the bottom has been reached; the discoveries at the Anaconda being at the 2,200-ft. and 2,400-ft. levels, and showing 30 ft. of ore carrying 6 per cent copper, most of the material between the 1,200-ft. and 2,200-ft. levels barely carrying 2 per cent.

A large portion of the increased production for 1905 is due to the strikes of rich ore in the mines of the North Butte Mining Co., and the increased pro-

duction from this source will be noticeable during 1906, now that the new shaft is in commission. The Heinze properties, under the name of the United Copper Co., have largely increased their production, owing to a truce in litigation, and it is rumoured that during the coming year they will build new reduction works.

It is in Arizona that the largest increase is noted, and this has been due largely to the development of the Calumet and Arizona group of properties. In these properties exceptionally high-grade smelting ore has been encountered, and their reduction works at Douglas have been in full blast and are now being enlarged. Of course a large part of the increase has been due to the gradual tuning up of the mammoth reduction works of the Copper Queen at Douglas, which has entirely replaced the old smelting works at Bisbee. The furnaces at this new plant are giving excellent satisfaction, and the power plant is unquestionably the finest in design and construction in the south-west.

At Clifton, Arizona, the Detroit, the Shannon, and the Arizona, have all increased and improved their concentrators, and to a certain extent increased their smelting capacity. It certainly seems as if a material increase in Arizona's production may be expected from this district, where such large deposits of low-grade concentrating ore are to be found.

In Jerome, Arizona, 1905 will no doubt show a falling off in the production of the United Verde, due to a variety of causes, though there is no reason at present in view why the 1906 production should not be normal. It is rumoured that it is the intention of Senator Clark to build new reduction works down in the valley on the river bank, and if this is done no doubt the production of the mine could be materially increased.

At Globe, Arizona, the reorganized Old Dominion, is now in good working order and producing copper at a satisfactory rate. There is also a prospect for increase in this district on the development of adjoining properties.

Although not in the United States, it is proper at this point to refer to the Greene, located at Cananea, Mexico, just over the line from Arizona. A great deal has been done in the last year to increase the capacity of the reduction works at this property; the new concentrator is now in full operation, and the smelter is being gradually improved on modern lines. The rise of this property from an undeveloped prospect to a mine producing from 5,000,000 to 6,000,000 lb. of copper per month, all in a few years, is almost phenomenal.

In Michigan the increased production for 1905 over 1904 has not been very great, nor can one expect sudden increases in a district of this kind where the rock treated is relatively of such low grade and where the development and equipment of a new mine and mill is an operation of years. The two interesting sources of new copper from Lake Superior have been the new mines on the Baltic and the Kearsarge lodes, and the whole of these wonderful new belts has evi-

dently not yet all been discovered. They are being traced on many properties where, although it was known that one or the other of the lodes existed, it was not suspected they carried sufficient copper to make them workable. The largest producer on the Baltic lode is the Copper Range, which owns the Baltic and the Tri-mountain mines and one-half of the Champion mine, the total production for these three mines for 1905 being about 40,000,000 lb. The Calumet and Hecla still heads the list with a production of 82,500,000 lb., this unquestionably being the largest production from any single mine in the world, as one can hardly with propriety call either the Boston and Montana or the Anaconda single mines, they in reality being groups of mines. A great deal of work has been done in Michigan, particularly at the Calumet and Hecla, in remodelling the old stamp mills, and this has led to improved savings and decreased costs. For 1906 there may be expected a fair increase in the production from Michigan, but there must be taken into consideration that while the new properties are increasing their production, the rock in the older and deeper mines is unquestionably growing poorer and more expensive to extract. For certain purposes Lake copper is still unsurpassed by electrolytic, and this condition will unquestionably always remain and so permit of an increased price for the product of certain of the Lake Superior mines.

In Utah the principal production continues to be in Salt Lake City and vicinity, and the Utah Consolidated, the Bingham, and the United States continue operations with slowly increasing production. One new producer was added to the list in 1905, viz., the Cactus, a large low-grade concentrating ore in the southern part of the State. During the present year production may be expected from the utilization of the immense porphyry mass owned by the Utah Copper Co. (not the Utah Consolidated Mining Co.) and the Boston Consolidated Copper and Gold Mining Co., Ltd., these two properties having arranged to build large concentrating plants near the Great Salt Lake, their concentrates to be handled by the new Garfield plant of the American Smelting & Refining Co. It is rumoured that the Cactus, Utah, and Boston Consolidated are to be brought together under one general management. The new properties in Utah may be expected within a year or two to almost double the present production.

In California the only new addition to the list of producers is the Mammoth mine and reduction works, owned by the United States Mining Co. at Salt Lake. It has just completed a pyrite smelter and is shipping the matte to Salt Lake for treatment.

Nevada will probably enter the field as a producer of copper toward the close of the year upon the completion of the Nevada Northern Railway from the Southern Pacific to Ely. Here a very large deposit of concentrating ore, almost identical with that found at Clifton, Arizona, has been uncovered, and large reduction works, of a capacity of 2,500 tons per day, are being erected.

In the Atlantic States there has been no particular

change during the year 1905, though in 1906 the Tennessee Copper Co. will undoubtedly more than double its production, as its enlarged smelting plant will be in operation for most of the year, and will toward the latter half of the year probably be treating ore at the rate of 2,000 tons per day. The ore treated at these works is probably the lowest grade of copper ore in the world which is smelted for copper alone, their being no precious metals to help out as is the case in the low grade properties in British Columbia.

In British Columbia the Granby smelter has been enlarged. Arrangements have been perfected and contracts let for the more than doubling of the smelting plant of the British Columbia Copper Co., and it is quite possible that the Dominion Copper Co., the successor to the Montreal & Boston, will also build a new plant. The ores in the Boundary district, where the mines of these three companies are situated, are extremely low-grade, yielding only about 25 lb. of copper and \$1.50 in gold and silver to the ton. They fortunately, however, are so nearly self-fluxing that they are readily smelted, and hence the cost per ton of treating them is very near that achieved in Tennessee.

The only large producer outside of those mentioned above which may be expected to enter the field in 1906 is the Cerro de Pasco, in Peru, from which it is hoped production at the rate of 5,000,000 lb. a month will be made.

With the rapidly increasing demand for copper, and with no indication of any material slacking off, it may confidently be predicted that for 1906 the production of copper in the world will hardly equal the legitimate demand, and therefore it may be expected that the average price for the year will probably not be less than 18 cents per lb. It is too far ahead to look beyond 1906, but it certainly seems that 13 cent copper is a long way off, if that price will ever again be reached. The supply of the raw material in the world is limited, and the copper of the future may be expected simply from the utilization of extremely low-grade ore which will require enormous expenditure of time and capital to make it available, and, therefore, the development of these new properties will in all probability be in keeping with the demand for the metal. In years past 15 cents was considered a fair price to both seller and consumer. The question yet remains to be solved as to whether with a rapidly increasing demand for the metal, and with but a slow discovery of new deposits, 17 cents may not be a fair and legitimate price for some time to come.

The directors of the Le Roi No. 2, Ltd., have informed the shareholders that the suggestion, put forward at the general meeting of the company held in London, England, on January 16, of changing the name of the company and changing to a lower figure the par value of the shares, having only received the approval of less than one third of the shareholders, the board does not feel warranted in taking any further steps in the matter.

## A PROPOSED DUTY ON PIG LEAD.

At the Eighth Annual Convention of the Associated Boards of Trade of Eastern British Columbia held recently at Cranbrook, East Kootenay, there was submitted a resolution requesting the Dominion Government to take the necessary steps to bring about the imposition of a duty on pig lead. From a newspaper report it is learned that the motion was supported by Mr. J. J. Campbell, business manager of the Hall Mining & Smelting Co., Ltd., Nelson, who urged that the present bounty system was inadequate for the development of the lead industry. Its term was limited to a period of five years, a lapse of time far too short to permit of a due effect upon such a slow growing industry as that of lode mining. Hence only those mines which had already been developed were in a position, at the granting of that bounty, to take advantage of its conditions. Those which were only partially developed failed to attract capital in order to go forward with development and so earn the bounty, because it was considered that after the development could be completed the bounty would expire before sufficient ore had been shipped to reimburse the capital invested. Hence further protection was necessary. The Nelson Board of Trade asked that a measure of protection be given to pig lead, not more than that given to other Canadian industries, and asked that the protection be given not later than the expiration of the lead bounty period.

Mr. Smith Curtis (Rossland) approved of the resolution. He objected to high duties on lead but thought that a measure of protection equal to that afforded to Canadian industries generally, might well be accorded, but it should be accorded at once, and not allowed to stand over until the expiry of the lead bounty period.

Mr. Campbell accepted the correction.

Mr. G. O. Buchanan (Kaslo) thought that a definite figure should be given. The tariff commission was still sitting. It would want to know what Kootenay wanted.

Mr. Smith Curtis said that 30 to 35 per cent would be a fair duty.

Mr. Campbell said the whole question of lead duties, most complex in nature, had been before the tariff commission. That commission knew better than a Board of Trade how to deal with the figuring out of a tariff. He, therefore, was not prepared to accept the suggestion of specifying a definite figure.

Mr. Retallack supported Mr. Campbell.

Dr. Hugh Watt (Fort Steele) supported the naming of a specific duty.

The resolution was withdrawn and left in the hands of the resolution committee to report on later.

The following day the resolution was amended so as to ask for the imposition on pig lead of a specific duty of one cent per pound, after deduction of any preferential allowance, and this duty to be the basis of the duties on manufactured lead products. Thus amended it was adopted by the convention.

## KETCHIKAN, SOUTH-EAST ALASKA.

The approximate value of the first shipment of copper matte, consisting of 495 tons, averaging nearly 50 per cent copper, made recently from the Alaska Smelting & Refining Co.'s smelter at Hadley, Prince of Wales Island, was \$100,000. This shipment was the product of about one month's run with a single blast furnace. The smelter's present sources of ore supply are the Brown-Alaska Co.'s Mamie mine, the Hadley Consolidated Co.'s Stevenson mine, the Cracker Jack mine—all three situated near Hadley—and the Ellamar mine on Prince William Sound. Besides these local ores, silicious copper ore, for fluxing purposes, is obtained from the Britannia mine, at Howe Sound, British Columbia.

The Moira Copper Co., understood to have Milwaukee men as its principal shareholders, has made the final payment on the Ickis and Colvin group of seven mineral claims, adjoining the property of the Niblack Copper Co., on Prince of Wales Island. The purchase was arranged and a deposit paid several months ago, since when the work done on the claims satisfied the buyers of their value and they completed the purchase. It is stated that development on a comparatively extensive scale will be entered upon next spring.

## NOTES FROM NORTHERN CALIFORNIA.

Mr. W. S. Keith, E.M., metallurgist, of Kennett, California, has kindly sent the following notes:

One of the districts in the West that is ranking high among copper producers is Shasta County, Northern California. Three smelters are in operation, and a fourth, which has been shut down owing to a prolonged suit *re* fumes from the roast heaps, will recommence operations during the coming season.

The Mammoth Copper Co.'s new 1,000-ton plant is running steadily, supplied with sulphide ore from the Mammoth mine at Kennett, and with silicious ores from Utah and Nevada. In the Mammoth mines there has been opened up an immense body of ore analysing 10 per cent silica, 40 per cent iron, and 45 per cent sulphur, which is treated by the pyritic method, *i.e.*, without preliminary roasting. The matte is shipped to the U. S. smelter at Bingham, Utah, where it is re-smelted in the blast furnaces, taking the place of iron in fluxing the silicious ores of that camp.

The Bully Hill Co. has a 500-ton plant in operation at Delaware, 14 miles from Kennett, treating ore similar to that of the Mammoth except that it carries a high percentage of zinc.

At Ingot the Great Western Copper Co. has a 150-ton furnace treating similar ore but with a higher percentage of zinc.

At Keswick the Mammoth Copper Co. is still working the great Iron Mountain mine, but during the "Smelter Smoke" suit, has allowed its 5-furnace smelter at that place to lie idle and has been shipping its ore to its new reverberatory smelter at Martinas, Calif. As this company recently succeeded in having the injunction against its Shasta County operations removed it will again start up its Keswick plant.

Other companies carrying on extensive operations are the Balaklala Company of Salt Lake, which is now engaged in getting a site cleared five miles south of Kennett for large reduction works, and the Trinity Copper Co. of Boston, operating the Shasta King mine. It is claimed that the Balaklala mine has the largest known ore body of any mine in California, this having been cross-cut by tunnels 800 ft. without encountering walls, and every foot in ore.

The ore of the different properties mentioned is of much the same character and carries: Copper, 5 per cent; gold, \$3; and silver, from \$1 to \$5 per ton. In 1904 the Shasta Co. produced \$7,000,000 worth of copper, and its output is steadily increasing at such a rate that it will soon rank among the great copper producers of the world.



## COMPANY MEETINGS AND REPORTS.

## CROW'S NEST PASS COAL CO., LTD.

The ninth annual meeting of shareholders in the Crow's Nest Pass Coal Co., Ltd., was held at the company's offices, Toronto, Ontario, on February 9. There was a good attendance and 81 per cent of the stock in the company was represented in person and by proxy. Hon. Senator George A. Cox, president of the company, was chairman. The following report was submitted:

**Directors' Report.**—The directors beg to submit to the shareholders of the company their ninth annual report, including Statement of Assets and Liabilities, as of December 31, 1905.

The balance at the credit of Profit and Loss Account brought forward from 1904 amounts to \$203,320.44. To this has been added the sum of \$497,898.68, being the company's net profits from the operations of the year; also the sum of \$35,400 representing the premium received from final payments on the stock last issued, so that the income of the company for the year is \$533,298.68 and the aggregate to the credit of Profit and Loss Account is \$736,619.12. From this amount, the directors have paid four dividends of 2½ per cent each, making 10 per cent for the year, amounting in all to \$349,418.05; have transferred to the Reserve Fund the sum of \$35,400, representing the income derived from the premium on calls on the new stock, and have carried forward to 1906 \$351,801.07 to the credit of Profit and Loss Account. This amount represents the net profits of the company from operations, after payment of dividends.

The increase in coal mined this year over last amounts to 89,039 tons, and the production of coke has increased by 125,84 tons. The exports of coal have increased nearly 100 per cent, or by 113,638 tons, and the coke exports still continue to show an increase.

During the year there has been spent on improvements the sum of \$209,576.55, the larger portion of the expenditure being at Coal Creek, as the result of the destruction of the wooden tippie by fire on March 11, last. This structure was replaced by a modern steel tippie, dump and screening plant, capable of handling 4,000 tons of coal a day, at an expenditure of \$196,000.

During the year H. B. Wright, C.E., resigned his position as chief engineer, and an arrangement was made whereby his duties were transferred to James McEvoy, C.E., the company's geologist.

The staff at Fernie and the collieries is efficient, and working zealously in the company's interests. Complete harmony exists between the company and all its employees, and everything points to a continuance of friendly relations. In the early part of the year a new contract between the company and its men was entered into, which expires on the first day of April, 1907.

## General Statement December 31, 1905—

Assets.	
Mines, real estate, plant, development, etc ..	\$5,374,644.89
Securities owned .....	328,296.98
Accounts receivable .....	616,803.27
Cash on hand and in Bank .....	13,772.98
	\$6,333,518.12
Liabilities.	
Capital stock fully paid up .....	\$3,500,000.00
Bills payable .....	367,769.96
Accounts payable .....	226,447.09
Dividend No. 20, payable January 1, 1906.....	87,500.00
Reserve fund .....	1,800,000.00
Profit and loss .....	351,801.07
	\$6,333,518.12

## Profit and Loss Account—

Balance at credit Dec. 31, 1904 .....	\$203,320.44
Net profits for 1905 .....	497,898.68
Premium received on calls paid on new stock..	35,400.00
	\$736,619.12

## Appropriated as Follows—

Dividends paid .....	\$349,418.05
Transferred to reserve fund .....	35,400.00
Balance carried forward to 1906 .....	351,801.07
	\$736,619.12

**President's Address.**—The president in moving the adoption of the report, said:

In connection with the resolution, certain information has been prepared, which I think will be of interest to the shareholders.

The Directors' Report and Financial Statement show that the company has passed a satisfactory year and indicate the steady growth we all desire. To illustrate this feature, I would like to call to your attention the figures indicating the coal and coke production of your company since its inception. The coal production was as follows:

In the year 1898 we produced		8,986 tons.
"	1899	" 116,200 "
"	1900	" 220,458 "
"	1901	" 425,457 "
"	1902	" 441,236 "
"	1903	" 661,118 "
"	1904	" 742,210 "
"	1905	" 831,249 "

Of the tonnage produced in 1905, 397,657 tons were sent to the coke ovens, and produced 257,702 tons of coke, as against 245,118 tons of coke produced in 1904, while the balance, 433,592 (with the exception of 35,843 tons consumed under the boilers) was disposed of as merchantable coal.

The coke production by years was as follows—

In the year 1908 we produced		361 tons.
"	1899	" 29,658 "
"	1900	" 73,496 "
"	1901	" 125,085 "
"	1902	" 120,777 "
"	1903	" 167,729 "
"	1904	" 245,118 "
"	1905	" 257,702 "

During the year the company's pay rolls amounted to \$1,486,047.51, as against \$1,419,735.37 in 1904, while the additions to plant and equipment at the different collieries amounted to \$209,576.55

The amounts paid for royalty and taxes to the British Columbia Government for the year were as follows:—

On coal .....	\$37,215.85
On coke .....	20,762.73
Other taxes .....	8,054.14

Altogether .....

\$66,032.72
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which is equivalent to over 12 per cent of our income.

On March 11, 1905, the wooden trestle and tippie at Coal Creek, constituting the company's whole machinery for handling coal at that point, were completely destroyed by fire. The structures were well insured, so that the direct loss to the company was comparatively small, although our operations were quite seriously retarded at this point during the remainder of the year. The indirect loss made up by the extra cost of handling the coal, and the consequent inability to fill orders has been heavy. In order to prevent such a contingency in future, your directors, as intimated in their report, have had constructed a modern steel tippie, trestle and screening plant, which will enable the handling of Coal Creek coal more economically than ever before.

This cheaper method of handling coal at Coal Creek, and the dearer cost of mining at Carbonado have induced the directors to transfer the business at the latter point to the Coal Creek mines, until such time as a considerable increase in the company's operations will permit of the mining of a much larger tonnage at Carbonado than there is at present a demand for.

At the Michel mines, a system of pneumatic haulage has been installed, comprised chiefly of a new air compressor and two air locomotives. These machines are giving satisfaction, and have reduced the cost of handling coal at Michel mines by this method in comparison with haulage by horses and mules.

At Fernie a new modern office building is under construction, made necessary by the largely increasing business of the company, and it is expected that it will be completed about April 1, next.

It is gratifying to note that our exportations of coal and coke into the United States are growing.

The year 1905 will be remembered as one in which our capacity for supplying coal at Coal Creek was not at times equal to the demand. Had it been so, our showing for the year would have been better than it is. The reason for our not being able to meet the demand is obvious in the loss of the tippie at that point, previously referred to.

The changes in the organisation, to which attention was called in last year's report, have worked out advantageously, and our present force is an effective and efficient one, working harmoniously in the best interests of the company. The feeling of the miners towards the company is good, and in March last a new agreement extending two years from April 1 was entered into with them.

In looking over our balance sheet for the year I find that our Statement of Assets and Liabilities is practically unchanged, and I will take the liberty of reminding you again that these fixed assets are made up almost entirely of cash investments in plant and development, and that the great bulk of our coal areas can hardly be said to have any representation among them.

In this connection, the directors have had under consideration for some time a plan for reorganization of the company, so as to bring its nominal capital more in line with the actual value of the company's holdings, and it is hoped that at an early date a special general meeting of this company will be called, at which will be laid before the shareholders a plan having this for its object, and which they will be asked to consider, and approve of.

The information submitted to the shareholders to-day will, I venture to hope, be regarded as highly satisfactory, and it would be an injustice to Mr. Lindsey, the managing director, if I failed to place on record, and to tell the shareholders how deeply indebted the directors feel to him for the splendid work he has done for the company during the past three years. When he assumed the management there were a number of important matters requiring capable, careful and special attention, and these have all been placed upon a satisfactory basis by the able and untiring efforts of our managing director. In no way has he rendered the company more valuable service than in the selection of the excellent staff of officers with which he has perfected his organisation.

Mr. R. G. Drinnan, general superintendent of the company, has conducted its mining operations during a very trying year, with great credit. There has been effected a not inconsiderable reduction in the cost of coal, notwithstanding the difficulties and extra expenses resulting from the disastrous fire at Coal Creek in the early part of the year.

The company's system of keeping accounts is as perfect and elaborate, your directors think, as that of any coal company in America, and reflects great credit on Mr. Davies, the comptroller, who has brought this department of the company's business up to its present excellent standard.

The company's lands have been placed in charge of Mr. James McEvoy, C.E., the company's geologist, and he has developed plans by which a considerable return may be

looked for from this source in the future. He has also been appointed chief engineer, to replace Mr. H. B. Wright, C.E., with whom the company parted with much reluctance.

Your directors regret to have to record the death of one of their number, Mr. J. A. Gemmill, towards the close of the year. Mr. Gemmill had been associated with the company since its inception, and was for many years its secretary and solicitor, and always a most useful member of the board.

On August 21, Mr. Harold C. Davies, the assistant secretary of the company, died. He had been a most zealous and capable officer, and his loss was keenly felt and deeply deplored by your directors.

*Vice-President's Address.*—Mr. Robert Jaffray, in seconding the motion to adopt the report, said:—

The subsidiary companies continue to expand their operations, and become more useful to the parent coal company, and I feel it well to make some reference to them in my remarks.

The Morrissey, Fernie and Michel Railway Co. now operates, under lease, the Coal Creek branch, and the operation of this and its other lines during the year has yielded a profit. Considerable expansion in the way of re-tracking to the coal company's operating plants, has been made during the year.

The Electric Light and Power Co. has, during the year just closed, installed a public telephone system at Fernie, and the results show that it can be operated profitably.

The water service at Fernie has been greatly improved by the establishment of two reservoirs, one for the town supply and another for the use of the coke ovens, and by the replacement of the four-inch mains with twelve-inch pipe. At a test which was made shortly after completion of the new work a 1-in. stream was thrown 99½ ft. vertically, promising excellent protection in case of fire.

As practically all the town lots in the original Fernie townsite had been disposed of, a new townsite, known as the Fernie Annex, was placed on the market, and sales of lots therein have been satisfactory. The miners are beginning to purchase lots and build on them, so that they become citizens of the country and landed proprietors, which is in the best interests of all parties.

With improved facilities at Coal Creek and Michel we have reason to expect a continuance of our steady growth, and fields hitherto unreached will now be possible of attention. The efforts to improve the quality of the output by careful mining have been continued with good results, which will be enhanced by these increased facilities.

The best evidence of the quality of the company's coal and coke is given by the position awarded them when brought into contact with other fields. I am happy to be able to say to you that the company was awarded the gold medal for coal and coke at the Lewis and Clark Centennial Exposition, held at Portland, Oregon, last year, and a bronze medal at the St. Louis World's Fair, held the year before.

The Great Northern Railway, which had just completed its extension at the time of our report last year, has been successfully operating into Fernie, and has become one of our best customers.

Considering the scope of the company's operations the present freedom from claims and legal entanglements is a subject for congratulations.

The report was unanimously adopted.

*Election of Directors, etc.*—

The following directors were elected: Hon. Geo. A. Cox, Robert Jaffray, Lieut.-Col. Sir Henry Mill Pellatt, K.B., William Fernie, Lieut.-Col. J. D. Chipman, David Morrice, Thomas Walmsley, E. R. Wood, Lieut.-Col. James Mason, Frederic Nichols, G. G. S. Lindsey, K.C., C. C. Dalton and James W. Woods.

J. G. Langton was appointed auditor.

A cordial vote of thanks was tendered to the officers of the company for their services during the past year.

At a subsequent meeting of the directors Hon. Geo. A. Cox was elected president; Robert Jaffray, Lieut.-Col. Sir

Henry M. Pellatt, K.B., and G. G. S. Lindsey, vice-presidents, and E. R. Wood, treasurer.

DOMINION COPPER CO., LTD.

An extraordinary meeting of shareholders in the Dominion Copper Co., Ltd., was held at Phoenix on February 12 for the purpose of passing a special resolution providing for changing the company's capital stock from 5,000,000 shares at \$1 each to 500,000 shares at \$10 each, which was adopted.

INTERNATIONAL COAL & COKE CO., LTD.

The annual general meeting of the shareholders in the International Coal & Coke Co., Ltd., was held in Spokane, Washington, on February 22.

President Flumerfelt rendered his annual report and showed the company to be in a flourishing condition. The report said that the profits for the year ended December 31, 1905, after paying all operating expenses, were \$67,327.54. These profits were from different business departments owned by the company, such as the sale of coal and coke, waterworks and electric light. No dividend was paid by the company during the year and the above earnings were carried to the Profit and Loss Account, making a total to the credit of that account of \$201,527.69. The operating profit for 1904 was \$6,952.88.

Coal produced during 1905 amounted to 173,023 tons, and of this quantity 23,395 tons went to the company's coke ovens and was made into 13,306 tons of coke, while the balance of 149,628 tons was disposed of as merchantable coal. This coal was produced in reality in nine months, the mines having been shut down for three months during labour troubles.

During the year the company's liabilities were reduced \$19,834.34 as against those of the year 1904. There was an increase of \$18,401.12 in the accounts receivable, and the company expended \$39,272.80 in new plant and equipment. The number of men employed at the mines is 275, and this number is to be steadily augmented as production shall increase.

The capital stock of the company is \$3,000,000 in 3,000,000 shares of a par value of \$1 each, and 2,800,000 shares have been issued.

The Balance Sheet as at December 31, 1905, showed the following assets and liabilities:

<i>Assets.</i>	
Coal lands .....	\$2,815,185.93
Expenditure on development .....	30,000.00
	<u>\$2,845,185.93</u>
Plant .....	329,229.95
Real estate .....	13,588.35
Warehouse stock .....	11,892.60
Cash on hand and in bank .....	8,764.65
Unearned insurance .....	5,682.26
Accounts receivable .....	58,150.53
Value of coal in tipple .....	789.12
Total .....	<u>\$3,273,283.39</u>
<i>Liabilities.</i>	
Capital stock, authorized .....	\$3,000,000.00
Less—unissued .....	200,000.00
	<u>\$2,800,000.00</u>
Bills payable .....	237,500.00
Accounts payable .....	34,255.70
Surplus Account—	
On December 31, 1904.....	\$134,200.15
Add profit for 1905 .....	67,327.54
Total of Surplus Account .....	<u>201,527.69</u>
Total .....	<u>\$3,273,283.39</u>

The election of directors and officers resulted as follow: A. C. Flumerfelt, Victoria, B.C., president; H. N. Galer,

Coleman, Alberta, vice-president and general manager; W. G. Graves, Spokane, secretary; H. N. Galer, Coleman, Alberta, treasurer; C. S. Houghton, Boston; D. Shults, Spokane, and W. G. Graves, Spokane.

DENORO MINES, LTD.

Mr. Smith Curtis, managing director of the Denoro Mines, Ltd., issued the following circular to the shareholders, under date January 22:

In my last report, dated 5th instant, I was unable to give results of shipments from the new ore quarry (No. 4), which was opened on the Oro Denoro claim just at the end of 1905. Since then the assays of six lots of ore aggregating 965 tons have been received, showing estimated net profits of \$2.75 to \$8.45 per ton, the lowest values coming from the surface ore first taken out and the highest and last value from the face of the quarry, which is being driven into the hill, the face having at the time of extraction of that ore a vertical height of 12 ft. The values of the last two lots are based on the assay of the company's assayer, the assays of the smelter not yet being received. They are also based on the present price of copper, although some of them are to be settled for on the price of copper 60 days after sampling.

The results of the last three lots, Nos. 140 to 142, are as follows:

Lot 140—154.5 tons; estimated net profit per ton, \$4.30; total, \$654.

Lot 141—164.2 tons; estimated net profit per ton, \$7.50; total, \$1,231.50.

Lot 142—212.25 tons; estimated net profit per ton, \$8.45; total, \$1,800.

This last lot represents the shipments of three days. The output is now 75 tons or more per day of first class ore, and will be increased this week to over 100 tons per day. In addition, arrangements have been made to begin shipping 100 tons per day of second class ore upon terms that I feel will give a fair profit. The latter is a class of ore of which there appears to be an abundance, but which heretofore the mine, for want of a suitable treatment rate, was unable to ship at a profit. This arrangement gives an additional present value to the Oro Denoro mine.

By the end of the month it is expected that 50 tons a day of first class ore can be shipped from a third locality which is now being stripped of soil. If so, the expected output at the beginning of February will be 150 tons or more of first class ore and 100 tons of second class ore.

To enquiring shareholders I wish to say, once for all, that the company is not trying to create any market for its shares. It is offering none for sale; its finances do not require it. The management proposes from time to time to give the shareholders the facts fairly as it understands them. Any statements given out have been of facts as they were really believed to be, and of what was intended to be done. That expectations have not always been realised in the past was due, just as present results are quite beyond the expectations of three months ago, to that element of chance, of good or bad luck, that exists and always must exist in every mining venture. Personally I refuse, as I have refused for years, to advise persons to buy or sell mining shares, and it is useless to ask my advice.

So far as the management is concerned, the price of Denoro shares will be determined by the known facts of the property and the public appreciation of the same. Any favourable circumstances arising will be signified to all shareholders.

The management is unable to say whether the average net profits or the increased tonnage will be maintained for a lengthened period. It is really impossible to tell; but after just returning from a visit to the mine, I am able to say that the mine looks well, that there is a large area of fine-looking ore (stripped of soil) that is being quarried with the results stated above, and in view of the contract for the second class ore, the outlook to-day for the mine appears to be brighter than ever before. But remembering that the aphorism, "Never prophesy unless you know," applies specially to mining, I do not don the robe of the prophet.

The steam hoist at the Hungry Man mine was completed a week ago, and is working very satisfactorily. Cross-cutting to the vein is now in progress there, and it is expected that in a short time it will be reached.

The force at both mines will in a few days total about 40 men.

PERRY CREEK HYDRAULIC MINING CO., LTD.

Mr. E. G. Boynton, of La Crosse, Wisconsin, U.S.A., secretary of the Perry Creek Hydraulic Mining Co., Ltd., owning a hydraulic gold property on Perry Creek, Fort Steele mining division, East Kootenay, has replied to an enquiry of the MINING RECORD as follows: The officers elected at the last annual meeting of the Perry Creek Hydraulic Mining Co., Ltd., held February 6, are as follows: H. A. Bright, president; E. G. Boynton, secretary; A. S. Trow, treasurer and general manager. The hydraulic works of the company were finished last season, but not in time to make any extended run, as the latter part of the season was quite dry. From the quantity of gravel washed, however, the return was about 9 cents per cu. yd. and no new ground was handled. It is proposed to push operations during the coming season to the full extent allowed by the hydraulic equipment.

ARK GROUP MINING & MILLING CO., LTD.

The first annual meeting of the Ark Group Mining & Milling Co. was held at Hall Siding, near Nelson, on February 5. The following officers were elected for the ensuing year: President and general manager, J. J. Budd; secretary, O. L. Budd; vice-president, D. E. Grobe; directors, J. J. Budd, T. W. Jones, M. Elliott, O. L. Budd and D. E. Grobe. Manager Budd reported that the outlook for the mine, which is situated on Clearwater Creek, is very good, and it was decided to continue development work on the various ore bodies on the property.

The *Ymir Herald* says: Men have been employed on development work all winter on the company's group of claims, which are situated on Clearwater Creek, about eight miles from Hall Siding, and Manager Budd reports the property as looking encouraging. A tunnel 315 ft. long has been driven on the ledge and which is expected to strike the ore body in the next 30 or 35 ft., at a depth of 250 ft. It is the intention of the company to continue development work and, when the ore body is encountered, to increase the force. Judging from the assays received from samples of ore in the ledge, the owners feel confident that they have the making of a good mine and intend pushing work with that object in view. On account of the better postal and telegraph facilities, the head office of the company has been changed from Hall to Ymir.

PATHFINDER MINE CO., LTD.

At the general meeting of the Pathfinder Mine Co., Ltd., held at Grand Forks, Boundary district, on February 5, directors were re-elected as follows: John Rodgers (president), M. S. Martin (secretary-treasurer), C. N. Mardon, Jas. Newby and G. H. Rutherford. An extraordinary general meeting was authorised to be called for March 3 for the purpose of ratifying the conditional sale on a working bond of the company's mining property situated on Pathfinder Mountain, on the east side of the north fork of Kettle River and distant about 14 miles from Grand Forks, to the Granby Con. Mining, Smelting & Power Co., Ltd., for the sum of \$110,000 payable in four instalments, the first of which will be due on October 1, 1906, and the others on January 1, April 1, and August 1, 1907, respectively. The company is capitalised at \$150,000 in 1,500,000 shares of 10 cents each, but there are some 343,000 still held in the treasury, so that if the bond shall eventually be taken up on the terms provided the company will receive about 9½ cents per share on its issued stock, most of which is held locally. The *Grand Forks Gazette* states that the development work done on the property consists of 337 ft. of shaft work and about 800 ft. of tunnel and drift. The ore is described as being a typical sulphide, assaying 2.5 to 4 per cent copper and carrying good gold values besides. Mr. John Rodgers is to be in charge of the development work the Granby Co. will do,

and it is stated that the intention was to put some 20 men at work on March 1.

BRITISH COLUMBIA COPPER CO., LTD.

Under date January 31, 1906, the directors of the British Columbia Copper Co., Ltd., of New York, owning the Mother Lode mine, a three-fourths interest in the Emma mine, other mining properties in the Boundary district, and the smelter and copper converting works at Greenwood, issued the following Report and Balance Sheet for the company's fiscal year ended November 30, 1905:—

*Directors' Report.*—Herewith you will please find balance sheet at the close of business on November 30, 1905, prepared by the Metropolitan Audit Co. from an examination of the British Columbia Copper Co's books in Greenwood, B.C., and New York, showing results for the fiscal year.

Against our profits for the past year have been charged large sums for the extensive developments which have been going on in preparation for trebling the output of the Mother Lode mine. These expenditures will continue for the next four or five months.

Our development work has disclosed large bodies of ore of higher grade than that upon which we have been operating. This ore will become available upon the completion of the company's new smelting plant. The machinery for this plant has all been contracted for, deliveries to begin the latter part of March and complete installation is expected during the coming summer. The new plant will have a capacity of 50,000 tons of ore per month as against 18,000 tons per month with the present plant; the three furnaces will be the largest and most modern in British Columbia, and both the mines and smelting plant will have full electrical equipment.

The developments upon new properties bought and those under option to us, have added materially to the value of the company's property.

The indebtedness shown on balance sheet is for the current bills at the mine and smelter. With this exception, the company is entirely free from debt.

Treasury stock to the extent of 37,500 shares has been sold during the past year, the proceeds of which have been and are being expended for and upon the new properties and plant.

*Balance Sheet, November 30, 1905.*—

Assets.

Mining property including real estate, mines, smelters, machinery, buildings, etc.	\$1,751,306.28
Ores, finished products, supplies	
etc., on hand	\$ 96,849.26
Accounts receivable	136,383.82
Cash in banks and in hand	26,909.08
	<u>260,142.16</u>
	\$2,011,448.44

Liabilities.

Capital Stock—Authorised \$2,000,000.00	
Issued	\$1,765,000.00
Accounts payable	54,619.59
Surplus earnings,	
Balance at December 1, 1904	\$38,921.80
Net profit year ended Nov. 30, 1905	102,907.05
	<u>191,828.85</u>
	\$2,011,448.44

KOKSILAH MINING CO., LTD.

The annual general meeting of the Koksilah Mining Co., Ltd., was held at Duncans, Vancouver Island, on February 5.

The chairman, Mr. T. A. Wood, informed the meeting that the company was in good standing financially, being out of debt and having a satisfactory balance in the treasury. Judging by results of work done on its own claims, also on other claims in the vicinity, prospects are good. All

surface and mineral rights on the company's W. A. E. claim have been paid for in full and a Crown grant will shortly be applied for. All necessary assessment work has been done on the Dora, Mabel and Ruby claims, which are under option to the Vancouver Island Mining & Development Co., and which look promising. Should the V. I. M. & D. Co. take up its option the Koksilah Mining Co. will be favourably situated, retaining an interest in the claims and as well holding a considerable share interest in the V. I. M. & D. Co.

The retiring directors, Messrs. Thos. Budge and F. W. Edgson, and the auditor, Mr H. Keast, were re-elected, and a vote of thanks to directors and officers for their services during the past year was passed.

### COMPANY CABLES AND NOTES.

#### CABLES.

##### British Columbia.

*Cariboo Consolidated.*—Cablegram from the company's resident manager in British Columbia: Main tunnel has been extended 500 ft.; block D drift from the station is now in 69 ft.; 22 cu. yd. of gravel yielded 9 oz. of gold; shows a marked improvement.

*Le Roi*—January: Shipments amount to 8,000 tons, containing 3,250 oz. gold, 5,800 oz. silver, 224,500 lb. copper. Estimated profit on this ore, after deducting cost of mining, smelting, realisation and depreciation, \$39,000. Expenditure on development work during the month, \$9,500.

*Le Roi No. 2.*—December: Shipped 2,010 tons. Net receipts are \$26,323, being payment for 1,431 tons shipped, and \$1,550 for 54 tons concentrates shipped; in all \$27,870.

*Le Roi No. 2.*—January: Shipped during the month, 2,010 tons. Net receipts are \$45,500, being payment for 2,461 tons shipped, and \$1,376 for 36 tons concentrates shipped; in all, \$46,876.

*Le Roi No. 2.*—The mine manager cables: Have struck ore cross-cut from 1350 ft. level *Le Roi* mine, width indefinite, probably 3 ft.; assays gold, 0.04 oz. per ton; copper, 3.70 per cent. Strike is nearly east and west; cross-cut is in 308 ft. (Office note—Value of above ore at the present price of copper is slightly over \$14.)

*Le Roi No. 2.*—The mine manager cables: Diamond drill hole located continuity of H at 80 ft. east of porphyry dyke, 3 ft. in width. Two feet of drill core assays gold, 4.72 oz.; copper 1.6 per cent; remaining one foot assays gold, 0.24; copper, 0.7 per cent. Practically proves continuity of H and stope 28.

*Tyce.*—January: Smelter ran twelve days and smelted:—Tyce ore, 2,052 tons; custom ore, 244 tons; total 2,296 tons. Matte produced from same, 208 tons. Gross value of contents (copper, silver and gold), after deducting costs of refining and purchase of custom ore, \$31,023.

*Ymir.*—January: 20 stamps 29 days, crushed 1,740 tons ore, producing 223 oz. bullion; estimated realisable value (gross), \$2,300. Concentrates, 124 tons shipped; gross estimated value, \$2,525. Cyanide plant, 1,330 tons of tailings; estimated gross value of bullion, \$520. Sundry revenue, \$385. Total, \$5,730 Working expenses, \$8,500. Loss, \$2,770. Expended on development, \$4,000.

##### U. S. A.

*Alaska Mexican.*—January: 120-stamp mill 30½ days, 20,504 tons; estimated realisable value of bullion, \$26,386. Saved 395 tons sulphurets; estimated realisable value, \$26,552. Working expenses, \$35,372.

*Alaska Treadwell.*—January: 240-stamp mill 30 days, 340-stamp mill 21¾ days, 68,628 tons; estimated realisable value of bullion, \$91,782. Saved 1,210 tons sulphurets; estimator realisable value, \$60,282. Working expenses, \$77,129.

*Alaska United.*—January: Ready Bullion claim, 120-stamp mill 29½ days, 20,020 tons; estimated realisable value of bullion, \$26,026. Saved 375 tons sulphurets; estimated realisable value, \$13,035. Working expenses, \$23,250.

#### DIVIDENDS.

The directors of the *Le Roi* Mining Co., Ltd., have de-

clared an interim dividend of 1s. 6d. per share, payable February 28.

A dividend of 30 cents per share has been declared by the Alaska Mexican Gold Mining Co., payable February 28. This dividend takes the place of the regular quarterly dividend payable April 28 next. Total of dividends paid to date, \$1,347,381.

A dividend (No. 73) of \$1 per share has been declared by the Alaska Treadwell Gold Mining Co., payable February 28. This dividend takes the place of the regular quarterly dividend payable April 28, next. Total of dividends paid to date, \$9,460,000.

A dividend (No. 2) of 40 cents per share on its 180,200 issued \$5 shares has been declared by the Alaska United Gold Mining Co., payable February 28.

On February 24 the Bunker Hill & Sullivan Mining & Concentrating Co. declared dividend No. 102 of \$180,000, payable on March 3. This makes the total paid since January 1, 1906, \$540,000, and total to date \$6,066,000.

#### NOTES.

The directors of the *Le Roi* No. 2 have issued the following circular with reference to the cable appearing above from the manager stating that he had located the continuity of H ore body: It has been the hope of the board that in view of the fact that the strike of the H ore body was in a direct line for stope 28 on the same level the former might be continuous through the large tract of unexplored ground intervening, amounting to some 700 ft. If, therefore, the manager's suggestion of continuity should be realised, the importance of the development would be obvious as the length of the ore body would then be about 1,200 ft. Stope 28 has been and is yielding a large tonnage of ore of good value. On the same day (January 30), as the above cable was received, a postal communication came to hand, dated January 16, which better enables the shareholders to appreciate the significance of the cable. In this Mr. Couldrey, the manager, writes as follows: "The most important event since the beginning of the month has been the opening up of the H east ore body. We have always been accustomed to speak of the north cross-cut as following a fault line, but if this be so, it is a fault which has absolutely no effect on the ore bodies, for H is even more continuous on the east side of it than on the west, and is better ore, as can be judged by the following assays taken since the beginning of the month."

Gold, oz. per ton.	Copper per cent.	Gold, oz. per ton.	Copper per cent.
1.54	0.7	4.38	4.5
0.60	0.8	6.08	5.5
1.48	1.7	3.84	4.3
0.70	0.7	4.60	4.9
0.34	1.8	6.78	6.4
5.90	5.6	8.90	6.7

These assays represent a sample of 50 ft. of length, and a width of from 3½ to 4 ft. The strike is practically continuous with H. It will be noted that the cable refers to a point considerably further east. Mr. Couldrey adds that:—"The other working places in the mine continue to look well, and the western extension of stope 11 (700 ft. level) is now opening up some remarkably fine ore which gives promise of widening out. At the present time it is 4 ft. wide."

The following circular has been issued from the London office of the *Ymir* Gold Mines, Ltd.: In view of the great discrepancy between the value of the ore milled as shown in the January cabled return and the assay results obtained in the course of development—as reported in the recent cables from the mine manager—the directors considered it advisable to instruct Mr. Gilman Brown to again visit the mine. That gentleman is now on the property, and the following cablegram has been received from him: "I am of opinion that it is very desirable to shut down the mill until the raise in the 1,000-ft. back level reaches 700-ft. level. It is not possible at present to keep separate ore (from) waste (rock). There is at present no prospect of any improvement (in)

the returns from ore milled under the present conditions. F. Faithful Begg agrees; will occupy at least 90 days' time. Estimated cost monthly for general expenses, \$2,250. 1,000-ft. level upraise \$800—West drift \$500—700-ft. level West drift \$500—new vein tunnel \$400. Have not yet discovered new vein.—R. Gilman Brown." In view of this emphatic recommendation, endorsed by Mr. Faithful Begg, the chairman of the West Australian Gold Fields, Ltd., who was on the property at the same time as Mr. Gilman Brown, the directors have decided to adopt the suggestion of shutting down the mill for the 90 days to enable the connection to be made between the 7th and 10th levels, and the mine manager has been instructed accordingly. Mr. Edward Hooper has resigned the position of consulting engineer to the company, which has been offered to and accepted by Mr. Gilman Brown, whose business as consulting engineer in California will enable him to visit the mine at frequent intervals. As stated above, Mr. Gilman Brown is now making a thorough inspection of the recent developments on the property, and his report will be communicated to the shareholders in due course. Meanwhile he has stated, in reply to a cabled enquiry from the directors, that the assumed new parallel vein has not yet been discovered, but that he is continuing the drive with the object of locating it.

The annual general meeting of the Laborers' Co-operative Gold, Silver & Copper Mining Co., Ltd., which is operating near Golden, B.C., was called for January 31, ulto., to be held in Chicago, Illinois. No report of the meeting has been received.

The third annual meeting of the Richard III. Mining Co., Ltd., has been called for March 9, at Duncan.

The annual meeting of the Silver Band Mining Co., owning Crown-granted mining property in the Slocan, was held at the company's office, Victoria, on 14th inst.

During February the Tyee Copper Company's smelter at Ladysmith, Vancouver Island, ran 13 days and treated 2,224 tons of Tyee ore, giving a return, after deduction of freight and refining charges, of \$34,402.

CERTIFICATES OF INCORPORATION.

- Similkameen Mining and Smelting Co., Ltd.*, with a capital of \$2,000,000 divided into 200,000 shares of \$10 each.
- Black-MacKay Mining Co., Ltd.*, with a capital of \$1,000,000 divided into 1,000,000 shares of \$1 each.
- Tel-Kwa Mines, Ltd.*, with a capital of \$200,000 divided into 400,000 shares of 50 cents each.
- Burrard Power Co., Ltd.*, with a capital of \$10,000 divided into 1,000 shares of \$10 each.
- Vancouver Stock Exchange, Ltd.*, with a capital of \$10,000 divided into 10,000 shares of \$1 each.

RESULTS OF TESTS OF CROW'S NEST PASS COAL CO.'S COAL.

Mr. R. W. Coulthard, general sales agent of the Crow's Nest Pass Coal Co., has returned to Fernie from an extensive business tour. He was present at some of the coal tests made by Northern Pacific railway officials on the run between Livingstone and Billings, Montana. These were practical tests on one of the large locomotives with a dynamo-meter car attached. They have already made tests of several of the available western coals with the result that the Crow's Nest Pass Coal Company's fuel showed up much superior to any of the others in its efficiency for steaming purposes.

The following results were obtained from Crow's Nest coal:

- Lb. water evaporated per lb. coal at feed temperature (33 degrees F.) . . . . . 8.1
  - Lb. water evaporated per lb. coal from and at 212 F. . . . . 9.95
  - Lb. coal burned per 1,000-ton-mile on up grade of 0.25 per cent for 115 miles . . . . . 120.19
- These efficiencies are more than double those obtained

from some of the other coals tested, and superior to the best of them by a large percentage, and they also show up as well as any coal on the continent.

Quite recently the O. R. & N., running out of Spokane, made tests of this coal for their own information, a representative of the Crow's Nest Pass Coal Co. not being present, with results even better than those above stated. This speaks well for the quality of coal produced from the collieries of the Crow's Nest Pass Coal Co.

Mr. Coulthard found the various agencies he visited in good condition, the agents being highly pleased with the manner in which the coal is being accepted by consumers, and reporting sales to be particularly good.

COAL NOTES.

Foreign shipments of coal from Nanaimo by the Western Fuel Co. in January totalled 25,127 tons. Of this quantity 18,071 tons were consigned to San Francisco; 5,944 tons to San Diego, also in California; 1,093 tons to Alaska, and 19 tons to Seattle, Washington.

January was the best month the Canadian-American Coal & Coke Co. has had since the great rock-slide on April 29, 1903, destroyed its surface plant. An output of about 600 tons of coal a day was maintained. The company is now employing more men than at any other time since the slide, and its affairs are stated to be in a most satisfactory condition. The company's colliery is at Frank, Alberta.

The construction of the tippie at the Grassy Mountain colliery of the West Canadian Collieries, Ltd., has been completed and the shipment of coal from that entry will be begun at once. This colliery is in the Blairmore-Frank district, Southwest Alberta.

It is announced that owing to the great increase in the demand for coal lands situated in the two new western Canadian provinces (Alberta and Saskatchewan) and in parts of British Columbia known as the railway belt, the Dominion Department of the Interior has decided to revise the method heretofore in force in dealing with applications for such lands. Hereafter if the first instalment of the purchase price be not paid before expiry of the period allowed an applicant when an application for coal lands is accepted by the department, such applicant's right under his application will be held to have absolutely lapsed. When payments have been made on account the rule will be, on and after April 1 next, that if further payments are not made on the dates fixed by the terms of sale, the rights of the purchasers will be forfeited. If a purchaser does not wish to complete the payment on the whole of the tract covered by his application, and he so notifies the department before April 1, next, he may be permitted to apply the amount which he has paid on the whole tract to a portion thereof, in such a way that this amount may complete the purchase of such lesser portion of the original tract.

The manager of the Western Fuel Co. is quoted as authority for the statement that at the company's Departure Bay mines, near Nanaimo, Vancouver Island, the actual coal in sight is sufficient to permit of an output of 1,000 tons per day for at least 18 years. A slope recently entered the upper seam of coal in these mines and made accessible 5½ ft. of coal of excellent quality. Two seams of coal, the upper known as the Douglas seam and the lower as the Newcastle, occur here and have for many years been worked at Nanaimo and seawards from Protection Island. The development of the Northfield or Departure Bay mines has been in active progress, except during the period of last year's strike of the miners, for two or three years. Nos. 3 and 4 mines were opened at Northfield Point, Departure Bay, where a shaft was sunk 60 ft. and from the bottom of it a haulage slope was driven in the Newcastle seam under the channel to meet levels driven from Newcastle Island towards Northfield Point. A counter slope was driven from the surface at Departure Bay in the same seam, for a return air-way. At first the Douglas (or upper) seam was too near the bottom of Departure

Bay to allow of its being mined, but at some distance in connection was made from the Newcastle seam by a drift to the rise. As the Douglas seam had faulted this drift did not encounter it where expected, but it was located by boring, and lately it was entered and, as above indicated, found to consist of a workable seam of coal of excellent quality. In connection with the opening up of the Departure Bay mines extensive hoisting and screening works have been erected and substantial wharves and storage bunkers constructed.

#### COUTLEE, NICOLA DISTRICT.

The following notes have been received from Coutlee:

The Diamond Drill Contracting Co. of Spokane, is placing one of its large drilling machines in position on the property of the Nicola, Kamloops & Similkameen Coal & Railway Co., situated about four and a half miles south of Coutlee. Mr. E. A. Jukes of Toronto, who will have charge of the work, states it to be the intention of this company to do considerable prospecting the ensuing summer.

The sale of the Sovereign group of copper claims in Aspen Grove camp has been made for a good round sum to Mr. R. P. Ingles of Montreal. The properties have been examined by J. H. Williams, M.E., who has reported on the best method of development. Trial shipments of ore are being made *via* Spence's Bridge.

It is reported that Messrs. W. H. Armstrong and C. F. Law, of Vancouver, will shortly commence development work on their coal properties here.

#### ALASKA AND YUKON GOLD.

The following table shows the amount and value of the Alaska and Yukon gold bullion deposited at the United States Assay Office, Seattle, Washington, during the calendar year 1905:

Origin	Standard Ounces		Total Coining Value.
	Gold.	Silver.	
Nome. . . . .	222,564.915	23,726.61	\$4,168,351.76
Tanana. . . . .	235,323.666	36,097.34	4,420,118.89
Balance of Alaska. . .	46,319.849	6,884.75	\$69,775.98
Yukon Territory . . .	416,431.999	99,125.78	7,862,916.71
Total . . . . .	920,640.429	165,834.48	\$17,321,163.34

#### MACHINERY NOTES.

The Canadian Forty-Mile Dredging Co., the headquarters of which are at Toronto, Ontario, has ordered a special gold dredge equipped complete with 5 1-3 cu. ft. buckets. The order covers the entire machinery equipment complete, ready for operation, including electric light plant, two boilers 100 h.p. each, engines, pumps, etc. The dredge is to be ready for use early in May.

A 7-drill air compressor has been received at the Dominion Copper Co's Rawhide mine, near Phoenix. This engine which will be operated by electricity, is being installed at the mine.

Mr. Geo. H. Robinson, managing director of the Britannia Copper Syndicate, Ltd. says the *Engineering and Mining Journal*, has made the following statement as to the Hancock jig installed at that company's property at Howe Sound, B.C.: The material passes over the jig after passing through the various crushing rolls and is reduced, by which all of the slime and very fine material, finer than 40-mesh, is extracted. The balance of the material is sent over the jig. Of all the concentrates recovered from our ore I think I am safe in saying 70 per cent comes from the jig. No. 1, 2, 3 and 4 compartments are mineral; No. 5 is returned to the re-crushing rolls; No. 6 is sent to the grinders; No. 7 is a comparatively rich slime that is sent to the vanners. We have not had the slightest difficulty in operating the jig. It requires the attention of one man and is operated by about 5 h.p. Its capacity is something over 500 tons. The

concentrates are higher grade than table concentrates.

An advertisement on another page offers for immediate sale a bucket dredge which can be seen at Tranquille Creek, near Kamloops, B.C.

The British Columbia Copper Co., of Greenwood, Boundary district, has for sale, as advertised in this issue, some small steam locomotives, stationary steam engines, blowers, electric generator, etc.

#### GIGANTIC TESTING MACHINE.

Messrs. W. & T. Avery, Ltd., of the Soho Foundry, Birmingham, England, have now under construction for the Engineering Section of the Birmingham University a huge machine for testing whole members of constructional work, such as complete girders, columns, roof principals, and every part in the construction of bridges, roofs and machinery, in fact, the machine will test any and every part that can possibly be used in engineering work.

The machine is designed to test specimens for tension, compression and transversely. The maximum capacity is 300 tons, the total length 70-ft. and the weight of the metal in the machine about 85 tons.

The strain is applied by a hydraulic cylinder and ram and is arranged to test specimens in tension up to 25 ft., in compression up to 30 ft., and transversely up to 20 ft. long.

The machine is one of the largest testing machines ever made, and is specially comprehensive in order to give a wide range of tests. It is so arranged that an official can govern from one position the hydraulic power applying the strain and the recording steelyard. It will be a great acquisition to the University and to the City of Birmingham.

Messrs. Peacock Bros. of Montreal, Que. are the Canadian representatives of Messrs. W. & T. Avery, Ltd.

#### WESTINGHOUSE AUXILIARY-POLE MOTORS, DIRECT-CURRENT, 4 to 1 VARIABLE SPEED TYPE SA.

In many classes of work a wide speed variation is required and to meet the demands of such service the Westinghouse Electric and Manufacturing Company has developed a line of direct-current motors having a speed range of four to one on a single voltage. This wide speed variation is obtained by field control, and the type SA motors compare favourably in every respect with the best direct-current constant-speed machines.

The new motors are exactly similar mechanically and electrically to the Westinghouse type S motors except for the addition of auxiliary poles and coils. These are introduced in order to control the field form during the variation of field strength necessary to obtain so wide a range of speed. The cast steel poles with machine-formed coils are placed midway between the main poles and securely bolted to the frame. The construction is very simple and introduces no complications whatever, nor does it make difficult the removal of the main poles and field coils, as is evidenced by the fact that an auxiliary pole and coil can easily be taken out, without in any way disturbing the main field winding, by simply disconnecting the coil connections, withdrawing the bolts which hold the pole to the frame and sliding the pole and coil out parallel to the shaft.

The auxiliary field is connected in series with the armature and therefore produces a magnetizing effect which is proportional to the armature current. The auxiliary coils are placed as close to the armature surface as mechanical considerations will permit and their turns are concentrated at that point. This arrangement adds materially to the performance of the motors as it applies to the corrective influences of the auxiliary winding directly at the points where the distorting effect of the armature current is strongest. This arrangement is much more effective than the distribution of the ampere turns along the length of the auxiliary poles. The magnetic field of the auxiliary winding acts in direct opposition to that produced by the armature

current. The resultant field is made up of three components—that due to the shunt winding, that due to armature reaction, and that due to the auxiliary windings. The field distortion usually produced by armature reaction is therefore overcome and the shape of the magnetic field at the point of commutation is maintained as formed by the main poles, and good commutation is made possible over a wide range of speed.

Type SA motors are shunt wound, which gives a definite speed for each point of the controller, which is nearly constant for all loads. Heavy overloads may be momentarily developed without injurious sparking. The motors are reversible without danger and without readjustment of the brushes, and, as the armature and auxiliary windings are connected permanently in series, it is only necessary to change the external armature connections to reverse the direction of rotation.

These motors develop their full rated output throughout their entire range of speed. They will carry full rated load at any speed within their range for six hours with a temperature rise not exceeding 40 degrees Cent. in armature and field, and not exceeding 45 degrees Cent. on commutator, as measured by thermometer. At all loads and all speeds commutation is excellent, and an overload of 25 per cent may be carried for one hour without injurious sparking. All motors are thoroughly ventilated, running cool and at a uniform temperature. Their efficiency is high and their speed regulation practically exact. With the exceptions noted, type SA motors are mechanically identical with the type S, and corresponding parts are interchangeable.

#### TRADE NOTES AND PUBLICATIONS.

Fairbanks, Morse & Co. has issued its Catalogue No. 101A, Sheffield Gasoline Motor Cars, which gives illustrated particulars of a variety of these cars.

The Pinder Ore Concentrator is the subject of a descriptive publication which also contains an article on the Theory of Concentration.

Gas Power for High-Pressure City Fire Service, showing the equipment and experience of the Philadelphia high-pressure fire system, is fully dealt with in a 43-page pamphlet issued by the Westinghouse Companies' Publishing Department, which has also sent out a 53-page pamphlet on Gas Power in Electrical Railway Work. Both publications are illustrated and contain much valuable information, which all interested can obtain without charge upon application at any of the company's agencies.

The following illustrated circulars have been received from the Canadian Westinghouse Co., Ltd., of Hamilton, Ontario: No. 1107, Westinghouse Automatic Circuit-Breakers Carbon Break.

No. 1119, Motor Generators.

No. 1126, Type C Transformers.

No. 1127, Control Apparatus and Trolleys for Single-Phase Railway Systems.

The Jeffrey Manufacturing Co., of Columbus, Ohio, U. S. A., has published its Bulletin No. 11, which is on the subject of The Application of Electricity to Mining. It is freely illustrated with half-tone representations of numerous machines and appliances and is of particular interest to both electricians and mining men.

#### PATENT OFFICE REPORT.

The following patents have been granted to British Columbia inventors during the past month through the agency of Mr. Rowland Brittain, patent attorney, Vancouver, B. C.:

A Mexican patent to the Braim Patent Switch Co. on an improved device by which a street railway switch may be operated from the platform of the car while the car is in motion. This invention of one of their own motorneers has been adopted by the B. C. Electric Railway Co., both in Victoria and Vancouver, and is giving general satisfaction.

To Hugh Condren a United States patent was issued on a bevel attachment for a hand saw. This invention is de-

signed to enable the back edge of a saw blade to be either used as a square or for marking off any angle of bevel. It consists of light bars pivotally mounted on one or both sides of the blade adjacent to the handle, the upper ends of which bars may be set to and secured at any desired angle in relation to the back of the saw blade.

To J. M. Tuller of Seattle, Washington, a Canadian patent on an axle cutting and threading machine designed to cut off and rescrew the ends of road vehicle axles when such have become worn through use.

To Phillip Magnus, of Victoria, Australia, and assigned to the Rubberized Leather Co. of the same State, a Canadian patent on an improved method of treating leather whereby the structure of the leather is thoroughly permeated with pure rubber so as to impart to it the waterproof and elastic properties of that material without impairing the strength and wear-resisting qualities of the leather.

To R. Truswell of Trail, B.C., a Canadian patent on an improved mould for the casting of anode plates such as are used in the electrolytic refining of metals. This invention is designed to provide a plate of more uniform thickness and of greater soundness than are made under the existing practice. Truswell's mould is a closed one and the plate is cast on end with the head down, so that any impurities rising to the top of the mould will be in the lower end of the plate when in place in the trough, and the metal forming the body of the plate is correspondingly sound and free from flaw. Being cast in a closed mould, and on end, the plate when withdrawn from the mould does not require straightening before being ready for use. The mould is also mounted on trunnions in a wheeled frame so that it may be run from the room in which it has been poured and readily inverted for removal of the plate direct to the refining trough.

#### BOOKS, ETC., RECEIVED.

*Institution of Mining Engineers*, London, England—

Paper No. 1142, *Cinnabar-Bearing Rocks of British Columbia*. By G. F. Mouckton; with discussion. Pages, 9; illustrated.

Paper No. 1,216, *The Mickley Conveyor*. By J. W. Batey; with discussion. Pages, 7; illustrated.

Paper No. 1,234, *The Conveyor-System for Filling at the Coal-Face, as practised in Great Britain and America*. By W. C. Blackett and R. G. Ware; with discussion. Pages, 7; illustrated.

*North of England Institute of Mining and Mechanical Engineers.—Report of the Committee upon Mechanical Coal-Cutting*. Part II.—Heading Machines. Pages, 169; illustrated.

*Department of the Interior, Canada.—*

*Standard Topographical Map*. Windsor Sheet, Ontario.

*Relief Map of Canada*, tinted to show Elevations.

*Resource Map of Canada*, with Statistical Tables.

*Geological Survey of Canada.—*

*Report of the Klondike Goldfields*. By R. G. McConnell. B.A. Pages, 71; illustrated by half-tones, diagrams and maps.

*Recent Mineral Discoveries on Windy Arm, Tagish Lake, Yukon*. By R. G. McConnell. B. A. Pages, 12.

*Bureau of Mines, Ontario.—Report of the Bureau of Mines, 1905*, giving voluminous information relative to the mineral industry in Ontario. By Thos. W. Gibson, Director of the Bureau. Pages, 355; illustrated by numerous half-tones, diagrams and maps.

*Economic Geology Publishing Co., U.S.A.—Economic Geology*, Vol. I., No. 3—for December—January.

*United States Geological Survey.—*

*Weir Experiments, Co-efficients, and Formulas*. By Robert E. Horton. Pages, 186; illustrated by half-tones and diagrams.

*Twenty-Sixth Annual Report of Director of U. S. Geological Survey, 1904-5*. By Charles D. Walcott, Director. Pages, 303; with maps and a comprehensive index.



*The Triassic Cephalopod Genera of America.* By Alpheus Hyatt and James Perrin Smith. Pages, 214; with 85 excellent plates illustrating hundreds of specimens.

*The Copper Deposits of the Clifton-Morenci District, Arizona.* By Waldemar Lindgren. Pages, 364; illustrated by diagrams, maps, and 25 plates.

*The Southern Appalachian Forests.* By H. B. Ayres and W. W. Ashe. Pages, 282; illustrated by 36 well-executed half-tones and map.

*Status of Mesozoic Floras of the United States.* Monograph, Vol. XLVIII.) Second paper by Lester F. Ward, with the collaboration of William M. Fontaine, Arthur Bibbins and G. R. Wieland. Part I., Text, pages 599; Part II., Plates, pages 572. This work is profusely illustrated, having 130 figures and plates. The first paper appeared in the *Twentieth Annual Report of U. S. Geological Survey*, Part II., 1900.

*The Configuration of Rock Floor of Greater New York.* By William Herbert Hobbs. Pages, 96; illustrated by maps and diagrams.

*Geology of the Boulder District, Colorado.* By N. M. Fenneman. Pages, 98; illustrated by half-tones and maps.

*The Drumlins of Southeastern Wisconsin.* (Preliminary Paper.) By Wm. C. Alden. Pages, 43; illustrated by half-tones and maps.

*Development of Underground Waters of Southern California.* By Walter C. Mendenhall. Irrigation Papers Nos. 137, 138 and 139; illustrated by maps and half-tones.

*Destructive Floods in the United States in 1904.* By Edward Charles Murphy and others. Pages 193; illustrated by half-tones and maps.

*The Hydrology of San Bernardino Valley, California.* By Walter C. Mendenhall. Pages 117; illustrated by half-tones and maps.

#### BOOKS REVIEWED.

*The Economics of Mining.*—By T. A. Rickard, W. R. Ingalls, H. C. Hoover, R. Gilman Brown, and other specialists. Edited by T. A. Rickard. Published by *The Engineering and Mining Journal*, New York, U.S.A., and London, England. Pages, 413. Octavo Cloth. Price \$2, post paid.

In presenting in compact form the contents of this book the publishers have made them readily accessible and consequently far more useful than they were when scattered through the pages of four or five volumes of *The Engineering and Mining Journal*. The work is described as the natural outcome of a discussion on an important phase in practical mining by eminent international experts which appeared in the columns of the journal above mentioned. The material embodied in the book is useful and suggestive. The various contributions and opinions have been minutely revised and greatly augmented in numerous instances from their original sources by competent authorities, and the records of their working experiments cover in detail the entire range of mining operations. Among the many subjects authoritatively treated are mining investments, finance, accounting, valuation, equipment, operation, ore reserves, ore treatment, mining in various parts of the world, gold dredging, etc., etc., the volume abounding in illustrative examples reproduced from actual conditions and containing much accurate and important data, the whole comprising quite a cyclopedia of information invaluable to all greatly interested in the mining industry.

*The Mineral Industry During 1904.*—Prepared by the Editorial staff of *The Engineering and Mining Journal* under the particular supervision of Edward K. Judd. Published by *The Engineering and Mining Journal*, New York, U.S.A., and London, England. Pages, 546. Price \$5 (£1:0:10).

This is Volume XIII of the well known annual publica-

tion, *The Mineral Industry*, its Statistics, Technology and Trade in the United States and other countries. It is claimed by the publishers that this is a technical encyclopedia, incorporating the most recent developments and advances evolved in the mining and metallurgical world; embracing the latest statistics relating to the production and prices of the various minerals and metals throughout the Globe; and including, in addition, exhaustive reviews compiled by authoritative international experts on the technical progress made in the metallurgical field, together with detailed accounts of new processes. That these claims are amply supported by its varied contents is evidenced by the long-continued popularity and widely acknowledged usefulness of this standard work among all classes concerned in the important developments and steadily increasing expansion of the mining, milling and smelting industries. It is invaluable alike to the prospector and miner in the mining camp, the metallurgist in the reduction works, the merchant and manufacturer in the store or factory, the investor and banker in the office, and the legislator in Congress or Parliament. Its named contributors number forty, and its subjects cover a wide range, including all minerals of known commercial value, the progress and condition of mining in different countries, and tables giving much information relative to mining companies and stocks and to imports and exports of minerals.

*Mineral Resources of the United States.* Calendar Year 1904.—By David T. Day, Chief of Division of Mining and Mineral Resources, United States Geological Survey (Charles D. Walcott, Director.) Pages, 1234.

The United States Geological Survey has issued the 21st volume of this series of official reports, each of which records the development of the mineral industries of the United States since the time covered by the immediately preceding number of the series. Each chapter is a census of the productive features of the industry under discussion. The statistics of the imports and exports of minerals, which form an essential part of the volume, have been obtained from the U. S. Bureau of Statistics, Department of Commerce and Labour. All other available sources of information known to those contributing have been drawn upon in order that facts and figures might be accurately stated. From the technical press much matter relating to new mining enterprises, new technical processes, prices, market reports, etc., has been taken. While much of the information contained in this volume had previously been published in advance in pamphlets its issue in book form makes it more valuable for reference purposes. The contents of the volume generally, making as they do a comprehensive official record, are of particular service to those actively connected with the mining industry, and prominent among the useful features is the Summary showing the mineral products of the United States for each calendar year over a period of 25 years—from 1880 to 1904, both inclusive.

The gold yield of Australia for 1905 amounted to 4,127,991 oz., valued at £17,544,000, as compared with 4,215,239 oz., valued at £17,915,000 in 1904. The value of the year's export of gold was £5,000,000 below that of 1904.

A new invention for gold sluicing has been made by Mr. G. T. Heinecke, manager and one of the shareholders of the Union Jack Hydraulic Sluicing claim, Tumberumba creek, New South Wales, Australia. The *Sydney Mail* states that the invention is in the shape of an improved hydraulic jet for ground sluicing purposes, which, it is stated, carries a larger amount of wash and water than anything yet invented. It is driven with a head or jet of water, with 170 ft. pressure, the ground being broken down by a nozzle, and other water overflowing the working face, which is carried to the jet and lifted 36 ft. into large sluice boxes, the dimensions of which are 5 ft. by 18 in., with a fall of 1 ft. in 12 ft., where the gold is saved. Mr. Heinecke states that this jet treated over 16,000 yards in one week at the Union Jack, where it has been at work on a trial. He has applied for a patent.

## MINING MEN AND MATTERS.

Mr. J. C. Drewry, of the Canadian Goldfields Syndicate, was in Montreal, Quebec, early in the month.

Mr. J. B. Tyrrell of Dawson has been inspecting some silver properties at Cobalt, Northern Ontario.

Mr. D'Arcy Weatherbe, of the editorial staff of the *Mining and Scientific Press*, has been visiting British Columbia.

Mr. A. Fournier is now superintendent of the Cork concentrator on south fork of Kaslo Creek, Ainsworth mining division.

Mr. F. W. Rolt, formerly of Rosslund, has returned to British Columbia from London, England, and will probably reside in Nelson.

Mr. E. C. Senkler, gold commissioner for Yukon Territory, is returning to his post at Dawson, Y.T., after a four months' tour in Europe.

Mr. R. P. Butchart, managing director of the Vancouver Portland Cement Co., Ltd., has returned to Victoria, B.C., from a visit to the East.

Mr. D. G. Forbes, of Victoria, visited the Britannia mine and concentrating works at Howe Sound and the Britannia smelter at Crofton, during the month.

Mr. E. E. Nicholson, formerly in the Boundary district of British Columbia is now superintendent of the Carrizo Copper Co. at Autlan, in Jalisco, Mexico.

Mr. R. H. Stewart, general superintendent of the Canadian Consolidated Mines, Ltd.'s Centre Star and War Eagle mines at Rosslund, has gone East on a vacation.

Mr. R. H. Anderson, manager of the Sullivan Group Co's mines in the Fort Steele mining division, East Kootenay, was in Spokane about the close of the month.

Mr. John H. Mackenzie, late general manager for the Le Roi Mining Co., Rosslund, was in Seattle, Washington, lately, returning thence to San Francisco, California.

Mr. Wm. M. Brewer, ore buyer for the Tyee Copper Co., Ltd., of Duncan, Vancouver Island, B.C., has been visiting Tonopah and other mining camps in Nevada, U.S.A.

Mr. J. M. Turnbull, of the Canadian Pacific Railway Co's mining and metallurgical department, has returned to Trail, B.C., after an absence in the East of two or three months.

Mr. Geo. H. Robinson, managing director of the Britannia Copper Syndicate and the Britannia Smelting Co., is again in British Columbia, having lately returned from New York.

Mr. Arthur L. Walker, manager of the Perth Amboy smelter, has been at the Tacoma smelter in his capacity as consulting engineer to the Guggenheim Smelter Securities Corporation.

Mr. Thos. W. Gibson, director of the Ontario Bureau of Mines, has been appointed deputy minister of the newly established Mines branch of the Lands and Mines Department of Ontario.

Mr. John L. Howard, of San Francisco, California, president of the Western Fuel Co. of that city, spent the early part of the current month at the company's colliery, Nanaimo, Vancouver Island, B.C.

Mr. F. M. Tweedie, manager of the Princess Royal Gold Mines, Ltd., working a copper-gold mine on Princess Royal Island, Northern British Columbia, has gone to New Brunswick for a couple of months.

Mr. D. Davies, comptroller for the Crow's Nest Pass Coal Co., East Kootenay, has returned to Fernie after an absence of two weeks during which he attended the company's ninth annual meeting held at Toronto, Ontario, on 9th inst.

Mr. George L. Mackenzie, formerly in charge of the Van Anda mines, Texada Island, B.C., is reported to have returned to America from Scotland, and passed through New York on his way to the West on professional business.

Mr. E. J. Wilson, who has been superintendent for the

Arizona Smelting Co., at Humboldt, near Prescott, Arizona, having completed the construction of that plant, has resigned his position there and removed to Spokane, Washington.

Mr. J. E. Boss, several years since actively connected with the Brooklyn mine at Phoenix, Boundary district, and now manager of the Leadville group of mines near Junction, Idaho, U.S.A., was a recent visitor to the Pacific coast.

Mr. H. W. Turner, manager of the Omar Mining Co., of Portland, Oregon, came down to Victoria from the company's mine at Kiam, Prince of Wales Island, South-east Alaska, late in February and proceeded thence to Portland.

Mr. E. Philip Gilman, who early last year retired from the firm of Pellew-Harvey, Bryant & Gilman, provincial assayers, to give his attention to mine examinations and consulting practice, left New York on 10th inst. for London, England.

Mr. Geo. F. Ransom, of Sandon, Slocan, manager of the Payne Consolidated Mining Co., had his hand injured at a curling bonspiel at Nelson and blood poisoning resulted. After a few days' treatment at the Kootenay Lake hospital he returned home to Sandon.

Mr. Walter S. Keith, well known in the Boundary Creek section of the Boundary district, is now smelter general foreman for the Mammoth Copper Co. at Kennett, Northern California. Mr. Keith's many Boundary friends will be interested to learn that he was married lately.

Hon. W. W. B. McInnes, commissioner of Yukon Territory, was in Victoria, Nanaimo and Vancouver for a few days before proceeding to Ottawa to there submit to the Federal Government a number of recommendations concerning the administration of the affairs of the Yukon.

Mr. Edward Hooper, who has several times visited the Ymir mine, Nelson district, in the capacity of consulting engineer to the Ymir Gold Mines, Ltd., has returned to London, England, from a trip to Western Australia on a visit to the Great Boulder Perseverance mine, Kalgoorlie.

Dr. F. D. Adams, professor of geology in McGill University, Montreal, Quebec, has been awarded the Lyell medal by the Geological Society of London, England. Dr. Adams is the second Canadian to receive this honour, the first having been the late Dr. Geo. M. Dawson, to whom it was given in 1881.

Mr. Rudolf Liden, at one time assistant superintendent at the British Columbia Copper Co's smelter, Greenwood, B. C., and afterwards with the Alaska Smelting & Refining Co. at Hadley, Prince of Wales Island, South-eastern Alaska, in a similar capacity, is now with the Shannon Copper Co. at Clifton, Arizona, U.S.A.

Mr. Theodore Dwight, who made many friends in British Columbia during the visit to the Province last summer of the members of the American Institute of Mining Engineers, has resigned the position of assistant secretary to the Institute and has become president of the Mineral Development Co., owning mines in Mexico.

Mr. Walter G. Perkins, smelter superintendent for the Nevada Consolidated Copper Co., is spending a few weeks in San Francisco, California. Mr. Perkins was with the Granby Con. M. S. & P. Co., at Grand Forks, B.C., some time since, and afterwards at the Northport Smelting & Refining Co's works at Northport, Washington.

Mr. James Roe, who has been superintendent of the Le Roi No. 2 Co's mines at Rosslund for two years, left that camp lately for Goldfield, Nevada. He has been succeeded at the Le Roi No. 2 by Mr. Harry Finch of Clear Creek, Colorado. Before leaving Rosslund Mr. and Mrs. Roe were presented by Le Roi No. 2 employees with a handsome oak chest containing a silver service of 85 pieces.

Hon. Warner Miller of New York, president of the Dominion Copper Co., paid a visit of inspection to the company's mining properties and smelter in the Boundary district recently. He was accompanied by Mr. Maurice M. Johnson, of Salt Lake City, Utah, the company's consulting

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engineer. Before returning to New York ex-Senator Miller spent two or three days in Victoria, where he appeared before the committee of the Provincial Legislature to whom had been referred for consideration the bill to sanction the extension to the Boundary district of the operations of the West Kootenay Power & Light Co.

#### OBITUARY.

Mr. James H. Trevorrow, of Rossland, died at Los Angeles, California, on February 5. For several weeks immediately prior to his death he had been unable to carry out his duties as superintendent of the Le Roi mine and early in January went to Los Angeles in confident expectation that the mild climate of Southern California would have such a beneficial effect as to bring about his speedy restoration to good health. However, the pulmonary affection with which he was troubled was of so serious a nature that in less than a month from the time of his leaving Rossland he died, leaving a widow and six children. The late Mr. Trevorrow was 44 years of age and was a native of Cornwall, England. He was but a small boy when he arrived in Michigan, U.S.A., and after a number of years at school there he commenced work in the Calumet and Hecla mine. Later he was employed in the Drumlummon mine, at Marysville, Lewis and Clark county, Montana, where he became known to the late Captain Wm. Hall and Mr. J. W. Astley, both of whom, at different periods, had the management of the Le Roi mine. In 1901 Capt. Hall offered Mr. Trevorrow work in the Le Roi, so he removed from Montana to Rossland, where he remained until the spring of 1901, when Mr. Astley appointed him foreman of the Snowshoe mine, at Phoenix, Boundary district. In 1904 Mr. Astley took charge of the Le Roi Co's Rossland property as general superintendent and he at once made Mr. Trevorrow mine superintendent. There is little doubt that to the tirelessness of the deceased in the performance of his duties underground may in large measure be attributed his loss of health and eventual death, for he had been a strong man but never spared himself until compelled to do so by sheer bodily weakness. He was a member of the Odd Fellows' Lodge of Marysville, Montana, and of King Edward Lodge No. 36, A. F. & A. M., Phoenix, M.C. The interment took place at Rossland where the local Masonic lodge took charge of all arrangements and paid a fitting tribute of respect to their fellow member of the craft.

Mr. J. W. Westfall, of Trout Lake City, Lardeau district, who died at Nelson, B.C., recently, had been connected with mining enterprises in the Kootenay district since 1896. During recent years he had taken an active interest in the development of mining properties in the Trout Lake mining division, and with a view to attracting attention to that part of the Lardeau, got together a mineral collection illustrative of the variety of minerals occurring in that district. This collection was exhibited at Nelson and Spokane, Wash., last autumn and on each occasion was awarded first prize. In other ways he did good service in furthering the interests of the mining industry in the Lardeau and his death is a distinct loss to the district in which he lived and laboured for years.

The total value of minerals produced in Great Britain during the year 1904 was £97,477,639, a decrease of £4,330,765 as compared with 1903. This decrease is to be accounted for by a further fall in the average price of coal from 7s. 7.93d. per ton in 1903 to 7s. 2.58d. in 1904. The total output of coal was the highest yet recorded, viz., 232,428,272 tons, but the value was only £83,851,784, as against £88,227,547 in 1903, when the output was more than 2,000,000 tons less than that of 1904.

The Washoe smelter at Anaconda, Montana, of the Amalgamated Copper Co., turned out 16,000,000 lb. of copper during January, 1906.