

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- | | |
|--|--|
| <input type="checkbox"/> Coloured covers/
Couverture de couleur | <input type="checkbox"/> Coloured pages/
Pages de couleur |
| <input type="checkbox"/> Covers damaged/
Couverture endommagée | <input type="checkbox"/> Pages damaged/
Pages endommagées |
| <input type="checkbox"/> Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée | <input type="checkbox"/> Pages restored and/or laminated/
Pages restaurées et/ou pelliculées |
| <input type="checkbox"/> Cover title missing/
Le titre de couverture manque | <input checked="" type="checkbox"/> Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées |
| <input type="checkbox"/> Coloured maps/
Cartes géographiques en couleur | <input type="checkbox"/> Pages detached/
Pages détachées |
| <input type="checkbox"/> Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire) | <input checked="" type="checkbox"/> Showthrough/
Transparence |
| <input type="checkbox"/> Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur | <input checked="" type="checkbox"/> Quality of print varies/
Qualité inégale de l'impression |
| <input checked="" type="checkbox"/> Bound with other material/
Relié avec d'autres documents | <input checked="" type="checkbox"/> Continuous pagination/
Pagination continue |
| <input checked="" type="checkbox"/> Tight binding may cause shadows or distortion
along interior margin/
La reliure serrée peut causer de l'ombre ou de la
distorsion le long de la marge intérieure | <input type="checkbox"/> Includes index(es)/
Comprend un (des) index |
| <input type="checkbox"/> Blank leaves added during restoration may appear
within the text. Whenever possible, these have
been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées. | Title on header taken from: /
Le titre de l'en-tête provient: |
| <input checked="" type="checkbox"/> Additional comments: /
Commentaires supplémentaires: | <input type="checkbox"/> Title page of issue /
Page de titre de la livraison |
| | <input type="checkbox"/> Caption of issue /
Titre de départ de la livraison |
| | <input type="checkbox"/> Masthead /
Générique (périodiques) de la livraison |

Pagination is as follows : p. [405]-446, XI-XII.

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
									J		



MINING RECORD

ESTABLISHED 1895

VOL. XIV.

NOVEMBER, 1907.

No. 11

BRITISH COLUMBIA MINING RECORD

E. JACOBS, Manager and Editor

Devoted to the Mining Interests of the Pacific Northwest.

PUBLISHED MONTHLY BY

THE BRITISH COLUMBIA RECORD, LIMITED

VICTORIA, B. C.

Office—Province Building. Telephone 243. P. O. Drawer 645.

ADVERTISING AGENCIES:

London, England: E. Henderson & Co., Billiter Square Buildings.
 Denver, Colorado: National Advertising Co., 423-424 Quincey Building.
 San Francisco, California: E. C. Dake's Advertising Agency, 1004 Masonic Avenue.

SUBSCRIPTIONS PAYABLE IN ADVANCE:

Canada and the United States, per year - - \$3.00
 Great Britain and Foreign, per year - - - \$2.50

Advertising copy should reach Victoria office by 5th of each month
 Rates on application.

Correspondence to be addressed to the Manager or Editor.

CONTENTS.

	Page.
Notes and Comments	405
Convention of Kootenay Boards of Trade....	408
Mineral Production of B.C. in 1907.	409
Power Development at Bonnington Falls.....	413
Coal Resources of Alaska	418
Star Mining & Milling Co. vs. B. N. White Co.	419
Mining in British Columbia (By H. M. Lamb)	426
Yukon Territory—Reports of Officials.....	430
Canadian Mining Institute—Nelson Meeting..	435
Canadian Camp—Dr. Bell the Chief Camper..	436
Portland Canal Mining and Development Co..	437
Coal Mining News	439
Company Meetings and Reports—	
Hastings (B.C.) Exploration Syndicate....	440
Cascade Water Power and Light Co., Ltd....	442
North Star Mining Co., Ltd.	442
Company Cables and Dividends	442
Trade Notes and Catalogues	443
Books Reviewed	443
Mining Men and Affairs	445

NOTES AND COMMENTS.

The Westmont is stated to be a "coming" mining property in Slocan City mining division.

About 29,000 tons of ore have been shipped to the Crofton smelter this year from the Mt. Andrew mine, southeast Alaska.

More than 800 men have lately been employed in construction work on the extension of the Great Northern railway from Fernie to Michel, southeast Kootenay.

The place chosen for holding the fifth annual convention of District 18 of the United Mine Workers of America on December 11, was Lethbridge, Alberta.

Owing to low price of copper, shipment of ore from the Marble Bay mines, Texada Island, has been temporarily suspended, but development work is being continued.

The ninety-fourth meeting of the American Institute of Mining Engineers, for the reading and discussion of papers, will be held in New York City, beginning Tuesday evening, February 18, 1908.

Inadvertently an omission was made of a footnote on page 413 of this number of the *MINING RECORD*, explanatory of the fact that the article commencing on that page had been reprinted from the *Canadian Electrical News and Engineering Journal* of Toronto, Ontario, of an abstract of a paper read at a joint meeting of the Mechanical and Electrical Sections of the Canadian Society of Civil Engineers, held last May in Montreal, Quebec.

The output of the Crow's Nest Pass Coal Company's collieries during four weeks ended November 29 totalled 84,486 tons. This gave an average per day for 24 working days of 3,520 tons. The daily average for the last week of November, 1906, was 2,289 tons. The increase in output is therefore about 54 per cent. The aggregate of the company's payrolls for October at its three collieries—Coal Creek, Michel, and Carbonado—was \$205,416.

The Vancouver *Province* states that the Vancouver-Nanaimo Coal Mining Company is about to commence shipping coal to Vancouver and that the output for the present will be about 70 tons per day. It is asserted that "according to engineering authority there is one seam in which men are working that will furnish at least 1,500,000 tons, and the owners claim another seam will be brought to development of equal magnitude." The mine is about a mile from Nanaimo.

The dispute between the owners of Galt mine and their employees regarding the interpretation of the clause concerning the time of their work, has been settled. The board found in favour of the contention of the company, but Manager Naismith announced that offers made to the men previously still hold good. By the agreement the men will work eight hours at the place of work, but will be allowed pay for half-an-hour a day extra for the time taken going to and from work.

The wages dispute between the Hilerest Coal Company of Frank, Alberta, and its men, which was investigated by the board of conciliation appointed under the Industrial Disputes Investigation Act, has been amicably adjusted by F. H. Sherman, district president of the United Mine Workers of America, and J. R. McDonald, superintendent of the Hilerest mine, and an agreement has been signed on behalf of both parties. The members of the board of conciliation failed to agree upon a report that would be their unanimous presentation, so the dispute continued and a strike was threatened, but this has now been avoided and trouble of long standing removed.

The Tyee Copper Company is building a wharf 210 ft. long with fixed and movable ore bunkers, and installing unloading appliances to be electrically operated. These are to facilitate the transfer to the smelter storage bins of ore arriving by sea from northern British Columbia, Yukon, and Alaska. An incline trestle runs from the wharf to ore bunkers near the sampling mill and blast furnace house, these having a storage capacity of 5,000 tons. A winding engine will haul ore, in trains of five cars each, about 1,200 ft. up to the top of the bunkers, the difference in elevation being about 80 ft. The improvements have been designed by Mr. W. J. Watson, manager of the smelter.

The members of the Miners' Union at Rossland, and of the Smelters' Union at Trail, have by more than the two-thirds vote requisite to authorize such change, voluntarily agreed to accept lower wages than have been paid at these places, respectively, since last July. This action has been taken by the unions to ward off a probable suspension of work had there not been a reduction in operating costs, it having been generally understood that the mining and smelting companies would not long continue opera-

tions under prior existing conditions of high prices of labour and materials, and lower market values for copper and silver. The action of the men in voluntarily meeting the situation in such a practical way, appears to warrant confidence that there will not be the general shut-down of the larger mines in the Kootenay district that had been feared.

Following the general description of the mining property of the Portland Canal Mining and Development Company, Limited, printed in the *Mining Record* for September last, a copy of the report on that property of a well-known mining engineer appears on pp. 437-9 of this issue. This will serve to indicate the conclusions of an acknowledged authority on such matters. Unfortunately, when the claims were visited quite recently, the surface outcrops of mineral were hidden by snow, and the development work done was not extensive; still it would seem that sufficient was seen by the visiting mining engineer to warrant him in concluding that the property is a promising one and meriting further development. This is encouraging for such a comparatively new and unproved mining field as the Bear River section of the Portland Canal district necessarily still is.

A handsome souvenir of the Ontario meeting of the members of the American Institute of Mining Engineers held in Toronto last July and their subsequent tour through the districts of Cobalt, Sudbury and Moose Mountain, has been published by the *Canadian Mining Journal*, of Toronto. The stated object had in view in preparing the volume was to commemorate an important and pleasant event. In addition to a summary of the proceedings of the three days' session in Toronto, an account of the tour through the districts above-mentioned is included, together with historical sketches of Cobalt and Sudbury. The volume is freely illustrated with half-tones of numerous well-known men and of places visited; also with maps and several beautifully-finished representations of specimens of ore depicted in natural colours. The souvenir is one worthy of the occasion, and the spirit and enterprise that prompted its publication merit hearty commendation.

Two sections of what has for years been known as the Geological Survey of Canada have been transferred to the "Mines Branch" of the new Dominion Department of Mines, the higher officials of which are: Hon. W. Templeman, minister of mines; Dr. A. P. Low, deputy minister of mines; Dr. Eugene Haanel, director of the mines branch; Mr. R. W. Brock, acting director of the geological branch. Several months ago what was known as the "Section of Mines" of the Geological Survey, which dealt chiefly with mineral statistics, was transferred to the new mines branch. Now the sections of chemistry and mineralogy have been similarly dealt with. The staffs of these several sections are not being maintained at their former strength, though, for Mr.

Elfric Drew Ingall, who had long been mining engineer to the Geological Survey, and Mr. Robert A. A. Johnston, assistant chemist and mineralogist, both remain with the geological branch, to hereafter to geological work.

Official announcement has been made of the appointment as acting director of the Geological Survey branch of the Dominion Department of Mines of Mr. Reginald W. Brock, who has been employed in connection with the Survey since July, 1891. While the illness of Dr. A. P. Low is deeply regretted, there is much satisfaction, especially in the West, in which Mr. Brock has been actively engaged during the field-work seasons of seven or eight years last past, at this appointment to the vacancy caused by absence of the deputy minister of mines on sick leave. In the Crow's Nest Pass section of East Kootenay, in the Lardeau and Rossland sections of West Kootenay, and in the Boundary district Mr. Brock has done much useful and valuable geological work, so that British Columbia in particular is to be congratulated upon having so good a friend at the active head of the Survey. The *MINING RECORD* joins in the hearty congratulations extended to Mr. Brock.

Speaking at Winnipeg, Manitoba, of his visit to the collieries of the Crow's Nest Pass Coal Company at Michel, Coal Creek, and Carbonado, the late president of the company, Hon. Senator Cox, said: "Four additional mines are now being opened. Every effort will be made to as soon as practicable double the present output of the company's mines, which is between 3,000 and 4,000 tons a day. The company is just now handicapped by not having sufficient men, but we are endeavouring to bring more in from various parts. We have in Wales an agent who is engaging all the available men he can obtain for us, and these are being sent to British Columbia under contract for so many months. We do not employ any Oriental labour; not a single Oriental is to be found among the 3,000 men employed in and about our mines. There is scarcely any of our coal sold east of the Rocky Mountains. Almost all of our entire output is used by the Canadian Pacific and Great Northern railways and in making coke for the smelters."

The approximate production of the several mines and the smelting works of the Consolidated Mining and Smelting Company of Canada, Limited, during the calendar year 1907 (December estimated) was as follows: Centre Star-War Eagle group, Rossland, 132,316 tons of ore of an average assay value of gold 0.4 oz. per ton, silver 0.38 oz. per ton, and copper 0.7 per cent. Snowshoe mine, Boundary district, 125,000 tons of ore of an average assay value of gold 0.06 oz. per ton, silver 0.3 oz. per ton, and copper 1.4 per cent. St. Eugene mine, East Kootenay, 23,324 tons (practically all concentrate), containing 27 oz. silver per ton and 58 per cent. lead. About 6,500 tons of

lead-silver concentrate was shipped to Europe, and nearly 17,000 tons to the company's own smelter at Trail. The approximate total value of the metals produced at this smelter was \$4,982,000, as compared with \$3,786,146 for the fiscal year ended June 30, 1907. These totals include value of metal contents of custom ores as well. The grand aggregate of production of the smelter from March, 1898, to date is about \$28,000,000.

After having spent five months, chiefly on Vancouver Island, in examining claims on which the occurrence of iron ore had been reported, Mr. Einar Lindeman, the Swedish iron expert employed by the Dominion Department of Mines to investigate the iron resources of Vancouver Island and vicinity, has returned to Ottawa to prepare his report to the minister of mines. While before leaving British Columbia Mr. Lindeman did not give out for publication much information regarding the results of his labours, he did not hesitate to say that he had seen four properties he considered promising. More than this he would not commit himself to for, as he explained, the ore deposits have not been sufficiently developed to warrant him in giving assurance that they are large enough to be considered of much commercial importance. The properties he regarded as promising were one at Head Bay (Nootka Sound), one at Klanch River, one at Quinsam River (Campbell River district)—all three on Vancouver Island—and one on Texada Island. The last is owned by the Puget Sound Iron Company, which during 1907 had taken out from its Lake claim about 1,000 tons of iron ore for shipment to the furnace at Irondale, near Port Townsend, Washington. The quality of the ore from several of the properties was pronounced by Mr. Lindeman to be excellent for the manufacture of iron and, in some instances, of steel, but as to the other indispensable requirement—that of quantity—only extensive development can prove its existence. The foregoing seems to sum up about all there is warrant for saying definitely concerning commercial iron ore on the Coast under existing conditions.

From a published abstract of the annual report of the Le Roi Mining Company, prepared for submission to the eighth ordinary general meeting of its shareholders, the following information has been taken: During the company's last fiscal year, ended June 30, 1907, there were mined and shipped to smelters at Northport and Trail 131,696 tons of ore of an average value of \$10.49 per ton, from which a net profit of £3,582 (approximately \$17,900) was derived, after writing off £22,690 for development and £7,766 for depreciation (together approximately \$152,000). The balance sheet shows the liabilities of the company at the close of the fiscal year to have been £45,329 and the value of the liquid assets £119,581, thus showing an excess of assets over liabilities of £74,252. The balance to credit of profit and loss, including £150,927 brought forward, was

£154,509, and the cash in hand £10,360. Comment was made as follows: "The falling off in the metallic contents of the ore was particularly noticeable in regard to the gold values in certain portions of the mine, but, as Mr. McMillan (the managing director) points out, fluctuating values in ores of apparent similarity have been frequently experienced in the property. An important work undertaken during the year has been the sinking of the main shaft from the 1,350- to the 1,650-ft. level. This will enable the lower levels of the mine to be thoroughly explored and opened up, and already large bodies of ore have been exposed at these lower depths, leading to the hope that higher grade ore will be encountered as work proceeds. It is satisfactory to note that operating costs have been reduced from \$10.50 to \$10.02 per ton—a noteworthy achievement, having regard to the labour troubles that have been experienced in every British Columbian mining camp."

The second annual report of the Consolidated Mining and Smelting Company of Canada, Limited, was submitted to a general meeting of shareholders held in Toronto, Ontario, on November 28. The accounts cover the company's financial year ended June 30, 1907. The managing director's report shows that after writing off \$91,705.50 depreciation upon plant and equipment, there remained an operating profit of \$484,676.07. Adding the sum of \$70,914.93 brought forward from the preceding year the balance at credit of Profit and Loss was \$555,591, which was disposed of as follows: Held for claims awaiting adjustment, \$20,000; in payment of four quarterly dividends at the rate of 10 per cent. per annum, \$480,005; balance carried forward, \$55,586. It was explained that the profits of the company for the year under review had been unfavourably affected by two strikes in the coal fields which shut off the fuel supply from the mines and smelters, the very severe winter of 1906-7, and the unsettled and unsatisfactory labour conditions, all of which greatly restricted the mining, smelting and refining operations of the company, and resulted in increased costs as compared with the previous years. The production of the several mines of the company was as follows: Centre Star and War Eagle, Rossland, 81,788 tons of ore containing 32,306 oz. gold, 27,808 oz. silver, 1,030,529 lb. copper, total value \$893,249; St. Eugene mine, Moyie, 127,645 tons of ore (making 24,737 tons of concentrate) containing 675,959 oz. silver, 29,391,389 lb. lead, total value \$1,713,933; Snowshoe mine, Boundary, 49,002 tons of ore containing 2,989 oz. gold, 16,171 oz. silver, 1,372,056 lb. copper, total value \$397,141; total value of production of all mines, \$3,004,323. The quantity of ore, including custom ores purchased, smelted at the company's works at Trail was 222,573 tons, containing 69,168 oz. gold, 1,100,271 oz. silver, 20,383,083 lb. lead, 3,443,310 lb. copper, total value \$3,786,146. The report will be reprinted in the next issue of the *MINING RECORD*.

BOARDS OF TRADE CONVENTION IN SOUTHEASTERN BRITISH COLUMBIA.

THE ANNUAL CONVENTION of the Associated Boards of Trade of Southeastern British Columbia is to be held at Moyie, East Kootenay, about the third week in January. This annual gathering, which is attended by delegates from the various boards of trade of numerous towns in the most populous parts of the southern portion of the interior of the Province, deals with many matters of considerable importance, particularly to the commercial and industrial interests of the districts represented.

Among the matters more directly affecting the mining and smelting industries to be considered at the ensuing convention are the following: A recommendation that a change of the existing Dominion department of mines, which is associated with other departments under one minister, be made to an entirely distinct department having its own separate minister, a member of the Dominion cabinet; the continuance of the payment by the Dominion Government of bounties on iron, in western Canada even if discontinued in the East, the iron mining industry of the former not yet having been sufficiently developed to allow of its benefitting from the bounty system; the continuance of the lead bounty beyond the period now provided for, and the granting of similar aid to zinc mining; the establishment at Trail, British Columbia, of a gold and silver purchasing office, there being already in operation at the smelting works there of the Consolidated Mining and Smelting Company of Canada, Ltd., all plant and other facilities requisite for the smelting and refining of the precious metals; the offering of suggestions for adoption by the Dominion Parliament for making more effective the act for the settlement of industrial disputes, known as the "Lemieux Act"; and such other matters as shall be submitted by delegates in behalf of their respective boards of trade. The foregoing constitutes but a small part of the business to be brought before the convention, lumbering, fruit-growing, and other industries each having its own series of subjects to submit for the consideration and, if approved, action of the Associated Boards of Trade.

A recent visitor to British Columbia was Mr. Eugene Coste, mining engineer, of Toronto, Ontario, who is particularly interested in finding oil and asphaltum. Mr. Coste visited Vancouver, Victoria, and Nanaimo, and met in one or other of those cities a number of men well informed concerning the geology and mineralogy of the coast districts of this Province, among others Mr. W. Fleet Robertson, provincial mineralogist, and Mr. W. J. Sutton, the latter especially familiar with many parts of Vancouver Island. Mr. Coste intends returning to British Columbia later to further pursue his inquiries and investigations in this connection.

THE MINERAL PRODUCTION OF BRITISH COLUMBIA IN 1907.

By E. Jacobs.

IN MINERAL PRODUCTION 1907 appears to constitute a record year in British Columbia, estimates showing a higher total value than that of any previous year. Owing to the unavoidable lateness of issue of this month's number of the MINING RECORD, it is practicable to print in it a

cent. off the price of silver and 10 per cent. off that of lead. For coal and coke what was considered a fair market value in British Columbia was taken. Accordingly, the respective prices were as follows: Lode gold, \$20.67 per oz.; silver (net), 63 cents per oz.; lead (net), 4.8 cents per lb.; copper, 20 cents per lb.; coal, \$3.50 per long ton, and coke, \$6 per long ton.

For purposes of comparison, the following table, showing production over a period of four years, is submitted:

COMPARATIVE TABLE SHOWING QUANTITY AND VALUE OF MINERAL PRODUCTS FOR FOUR YEARS,—1904-1907 (LAST YEAR ESTIMATED).

	1904.		1905.		1906.		1907.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold, placer	Oz.	\$ 1,115,300	.....	\$ 969,300	.....	\$ 948,400	.....	\$ 700,000
Gold, lode	Oz.	222,042 4,589,608	238,660	4,933,102	224,027	4,630,639	199,770	4,129,246
Total Gold		\$ 5,704,908		\$ 5,902,402		\$ 5,579,039		\$ 4,829,246
Silver	Oz.	3,222,481 1,719,516	3,439,417	1,971,818	2,990,262	1,897,320	2,940,190	1,852,320
Lead	Lb.	36,646,244 1,421,874	56,580,703	2,399,022	52,403,217	2,667,578	48,309,660	2,318,864
Copper	Lb.	35,710,128 4,578,037	37,692,251	5,876,222	42,990,488	8,288,565	38,392,264	7,678,453
Total metalliferous		\$13,424,335		\$16,149,464		\$18,432,502		\$16,678,883
Coal	Tons, (2,240 lb.)	1,253,628 3,760,884	1,384,312	4,152,936	1,517,303	4,551,909	1,856,600	6,498,100
Coke	" "	238,428 1,192,140	271,785	1,358,925	199,227	996,135	227,000	1,362,000
Other minerals (building materials, etc.)		600,000		800,000		1,000,000		1,200,000
Total production		\$18,977,359		\$22,461,325		\$24,980,546		\$25,738,983

review of the year's progress and approximate production (that for December being estimated), so rather than defer its publication it is included herein.

The official estimate of the total production of the Province for the year exhibits an increase over that of 1906 of \$758,437. The provincial mineralogist's published figures show production to have been, approximately, as under:

	Quantity.	Value.
Gold, placer		\$ 700,000
Gold, lode (oz.)	199,770	4,129,246
Total gold		\$ 4,829,246
Silver (oz.)	2,940,190	1,852,320
Lead (lb.)	48,309,660	2,318,864
Copper (lb.)	38,392,264	7,678,453
Total metalliferous		\$16,678,883
Coal (tons of 2,240 lb.) ..	1,856,600	6,498,100
Coke (tons of 2,240 lb.) ..	227,000	1,362,000
Other minerals—		
(Building materials, etc.)		1,200,000
Total production in 1907		\$25,738,983

In arriving at the approximate value of the several metals as shown above, the average market prices for the year, as published in the *Engineering and Mining Journal*, have been taken, with a deduction of 5 per

It will be seen that while there has been a succession of increases in value of total production over the four years covered by the foregoing table, the differences have not all been the result of fluctuations in market prices. Placer gold (which is calculated at the same average price every year), for instance, is estimated to have been lower than in any other year since 1898. That there was a general decrease in production of metalliferous minerals in the Province is evident, when the quantities of the respective products are compared with those of last year. To the considerable fall in the price of copper during the later months of the year, however, may fairly be attributed the decreased production of copper, and, in smaller degree, that of silver and lode gold, since these metals occur generally in the copper ores of the Province, so are produced together with copper when the last-mentioned metal is being smelted from its ores.

The approximate total value of the production of metalliferous minerals in 1907 was, with the exception of that of 1906, the largest in the history of metal mining in the Province. As compared with 1906, though, there was a decrease of \$1,753,619. This loss was, however, more than compensated for in the considerable increase in the production of non-metalliferous minerals, chiefly coal, although coke contributed \$366,000, and building materials, etc.,

\$200,000 of this increase, the balance (\$1,946,000) representing the proportion from coal.

Taking the various minerals separately, as shown respectively in the tables of production, the following comments are made:

GOLD.

As already mentioned, the production of placer gold in 1907 was smaller than in any other year since 1898, and this notwithstanding that water conditions seemed, early in the season, to promise a favourable year for hydraulicking. It is possible that the revised figures, when the official returns shall all have been received, will prove the estimate now published to have been too low, yet while some gain may be made it is unlikely it will be sufficiently large to bring last season's production up to that of 1906.

The districts which produce most placer gold in the Province are Cariboo and Cassiar. In the former the Quesnel division had the assistance of the production of the property of the Consolidated Cariboo Hydraulic Mining Company, taken over two years ago by a Guggenheim company which recovered about \$20,000 against nothing for 1906, while the Cariboo division was understood to have had several properties at work that had been idle several previous seasons, yet preliminary advices record a decrease of about \$150,000 in the total recovery throughout both divisions of this district. Atlin camp, in Cassiar district, for years the largest contributor of placer gold in British Columbia, is also reported to have made a smaller production than during the three immediately preceding years—1904-1906—its decrease, as compared with 1906, being shown as approximately \$100,000. The production of individual miners from Atlin creeks has been steadily becoming smaller for several years, yet it was expected that the operations of the Ruffner, Hamshaw, Guggenheim, and other companies would have in the 1907 season more than made up for such loss. It is understood that the creek gravels suitable for hydraulicking are by no means exhausted, so that, given favourable conditions for working them, returns may be expected to show a substantial increase next season. Dredge mining in this camp has proved a failure, and has been abandoned for the time. Possibly it may be tried again later; if so, it should be by men thoroughly experienced in that class of mining.

The \$500,000 decrease in the value of lode gold was due to the smaller production of the Boundary and West Kootenay districts, and chiefly owing to a suspension of mining and smelting operations during two or three months of the year. The bigger gold-quartz mines of the Province did not contribute nearly so large a proportion of the total as might reasonably have been looked for. In fact, the only one that made anything like a good showing was the Nickel Plate in the lower Similkameen, with a production estimated at between \$100,000 and \$500,000. In Nelson mining division the Ymir mine made a small output as compared with its production of several years ago. On the other hand, the Queen,

Second Relief, Kootenay Belle, and Arlington, all in the Salmo-Erie section of this division, together produced between \$200,000 and \$300,000, and the Fern and Granite-Poorman, both within a few miles of Nelson, also added to the total. In the northern Lardeau, the Eva mine, near Camborne, was the only gold mine that made a production worthy of mention.

SILVER.

The production of silver was practically the same as that of 1906—not quite 3,000,000 oz. In round figures, West Kootenay produced about 1,300,000 oz., East Kootenay 950,000 oz., Boundary something like 600,000 oz., and the Coast district about 80,000 oz. While the decrease in quantity was not great, the expectation was that the change would be the other way, since in Lardeau district the Silver Cup mine made an appreciably large increase over its 1906 output, in Ainsworth several mines together did similarly, and in the Sloean the Whitewater in the camp of that name, and the Rambler-Cariboo, Ruth, Standard, Hewitt, Vancouver group, and Arlington, among others, all made a higher production than in the year immediately preceding. These gains, however, were insufficient to offset the decreases in East Kootenay and the Boundary. It is pleasing to note that there is believed to have been a distinct improvement in the Sloean, which is a change for the better not generally known to have taken place.

LEAD.

The estimate of production made by the Dominion official who has charge of matters in connection with the payment of the Government bounty on lead gives a total production of about 46,547,000 lb. as against that of the provincial mineralogist of practically 48,310,000 lb. While the latter has been carefully calculated, the returns are not yet in from all the lead-producing mines, consequently there may be the necessity later of reducing the quantity now shown as the approximate production. On the other hand, the former appears to have been based upon information obtained from the lead smelters of the Province, the output of which and the estimated quantity shipped abroad are indicated in the following preliminary figures:

From.	Lb. of Lead.
Hall M. and S. Co.'s smelter, Nelson. . . .	6,329,243
Con. M. and S. Co.'s smelter, Trail. . . .	21,686,078
Sullivan Co.'s smelter, Marysville, and others	10,631,036
Exported to United States and Europe. . .	7,900,995

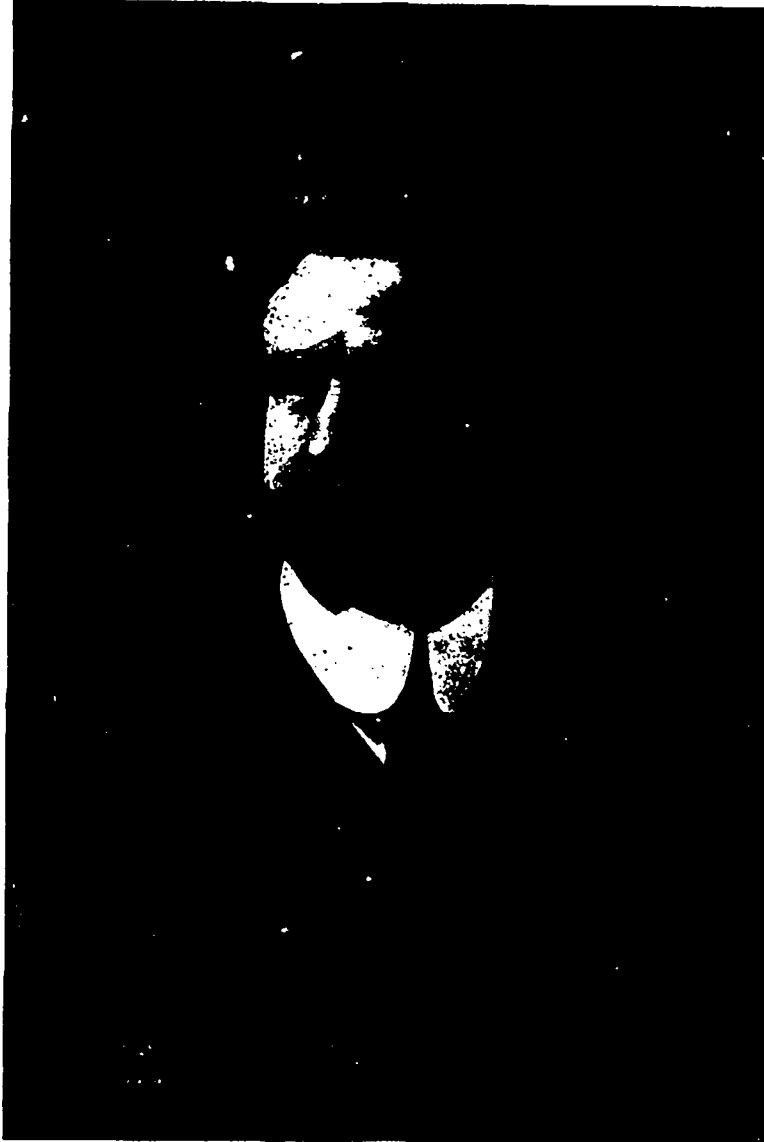
Estimated production in 1907 46,547,352

Even should the revised figures, when obtained, confirm the provincial mineralogist's estimate, there will still be a decrease in value of this metal of \$348,714, of which, however, \$140,000 is attributable to the lower average price in 1907 as compared with that of 1906.

East Kootenay's production of lead was about 38,000,600 lb., the larger proportion from the St.

Eugene mine; the Sullivan was the only other important producer in this district. In the Slocan section of West Kootenay, the Whitewater was the largest producer with something like 2,700,000 lb. The Rambler-Cariboo, Ruth, Reco, Batchelor, Slocan Sovereign, Standard, Vancouver group, and Hewitt

Company's smelter at Nelson, and a temporary suspension of smelting operations at the Trail smelter, during a period in which there were labour difficulties at the Crow's Nest Pass coal mines, whence comes the supply of coke, in a measure interfered with the production of silver and lead ores.



George Goldwin Smith Lindsey, K.C., of Toronto, Ontario, the new president of the Crow's Nest Pass Coal Company, Limited.

Mr. Lindsey has been actively connected with the Crow's Nest Pass Coal Company for about six years, in various official capacities. He has been on its directorate during practically the whole of that period and, as well has been the company's secretary and general counsel, third vice-president, general manager, and managing director successively. Recently he was promoted to the position of president in place of Hon. Senator Cox, resigned.

were other Slocan producers, while the Maestro and Spokane, in Ainsworth camp, the La Plata, in Nelson mining division, and the Silver Cup, in the Lardeau, also shipped a considerable tonnage of silver-lead ore.

The closing of the Hall Mining and Smelting

COPPER.

The closing of the Boundary district copper mines, and others in the Nelson and Coast districts, respectively, during several weeks of November and December, effectually prevented an increase in the year's production of copper over that of 1906. There was

also a restricted output during the spring, owing to a shortage of coke for the smelters and an occasional insufficiency of railway cars for ore and coke-hauling purposes. These adverse conditions resulted in a decrease of rather more than 10 per cent. in quantity of copper produced. If calculated at the average price for 1906 the loss in value would be nearly \$900,000, but as that for 1907 was about three-quarters of a cent a pound higher, the production for the latter year shows a net loss of only \$610,000. When it is remembered that nearly 75 per cent. of the year's production came from the Boundary district, the effect of the closing of its mines during two to three months becomes evident. Boundary's proportion of the total production of 38,392,000 lb. was nearly 28,000,000 lb.; Rosland and the Coast each produced rather under 5,000,000 lb.; Nelson division's share was somewhere about 400,000 lb. Of the 1,140,000 tons of copper ore shipped by Boundary mines those of the Granby Company contributed 625,000 tons, of the British Columbia Copper Company 235,000 tons, of the Dominion Copper Company 155,000 tons, and of the Consolidated Mining and Smelting Company 125,000 tons. Rosland camp's ore tonnage was about 280,000 tons, in the following approximate proportions: Consolidated Mining and Smelting Company's Centre Star-War Eagle group 132,000 tons, Le Roi 113,000 tons, Le Roi No. 2 223,000 tons, and sundry smaller shippers 12,000 tons. On the Coast the tonnage was approximately 100,000 tons, as follows: Britannia 57,000 tons, Tyee 12,000 tons, Outsiders 9,000 tons, Marble Bay 7,000 tons, Richard III 4,000 tons, Lenora 2,000 tons, and sundries 9,000 tons. The Queen Victoria, near Nelson; the Outsiders, at Portland Canal, and the Ikeda, on one of the Queen Charlotte Islands, were new producers, and the Richard III and Lenora, Mt. Sicker, Vancouver Island, resumed ore shipping after having been non-producers for several years.

IRON AND ZINC.

There was no considerable quantity of either iron or zinc shipped during 1907. On Vancouver and Texada Islands a few thousand tons of iron ore were mined and shipped to Irondale, Puget Sound, Washington, U.S.A. The most important event of the year in connection with the iron ores of the Province was the examination by Einar Lindeman, a Swedish iron expert, of a number of claims taken up for iron ore on Vancouver Island and vicinity, for the purpose of reporting on them to the Dominion department of mines, Ottawa, which engaged him with the object of ascertaining whether or not iron ores occur in suitable quantity, variety, and quality, on the Coast to warrant the expectation that an iron-manufacturing industry will eventually be established there. Mr. Lindeman's report has not yet been made.

Shipments of zinc ore and concentrate were not large, and those made were from Slocan mines, several of which are, however, continuing to store the zinc concentrates made in milling ores for silver and lead. The uncertainty as to the final decision regard-

ing the imposition of a duty on zinc ore sent to the United States remains an obstacle to much of this product being shipped to smelters in that country. A comparatively small quantity was exported to Europe from a Slocan mine. No recent progress appears to have been made in the direction of operating on a commercial scale the Canadian Metal Company's zinc smelter at Frank, southwest Alberta.

COAL AND COKE.

The production of coal in 1907 was the largest in the history of coal mining in the Province. The net increase over 1906 was 339,000 tons (2,240 lb.), this bringing the year's production of coal disposed of as such up to 1,856,600 tons. All three of the larger companies shared in this increase. There were about 357,000 tons made into coke. The respective approximate proportions of production were:

Company.	Gross. Tons of 2,240 lb.	Net. Tons of 2,240 lb.
Wellington Colliery Co.—		
Extension mines ..434,000		
Comox mines .....391,000		
	825,000	795,000
Western Fuel Co.—		
Nanaimo and Northfield mines	500,000	500,000
	500,000	500,000
Total for Vancouver Isl.	1,325,000	1,295,000
Crow's Nest Pass Coal Co..	877,442	550,600
Nicola Coal and Coke Co...	11,000	11,000
	888,442	561,600
Total production in 1907..	2,213,442	1,856,600

The Nicola Coal and Coke Company has been operating only about a year, and most of its comparatively small production was of coal taken out in opening its mine. Several other companies will shortly be in a position to mine coal in quantities up to a few hundred tons a day each.

The coke output of the year was 227,000 tons—210,000 from the Crow's Nest Pass Coal Company's ovens at Fernie and Michel, and 17,000 tons from the Wellington Colliery Company's ovens at Union, Vancouver Island. In this year's estimate coal has been valued at \$3.50 a long ton and coke at \$6. In other years the respective prices were taken as \$3 and \$5, but the former are now considered by the provincial mineralogist as average local market values for 1907.

BUILDING MATERIALS, ETC.

Activity in building operations in the larger cities of the Province had the effect of increasing the production of building materials—stone, brick and lime. An increase was also made in the quantity of Portland cement manufactured, the Vancouver Portland Cement Company's works near Victoria, Vancouver Island, having been enlarged and its output of cement considerably increased.

The official returns of exports of these materials to several Pacific Coast cities of the United States indicate a larger demand from that direction for the several varieties of excellent building stone occurring on the British Columbia coast.

Power Development of the Kootenay River for the West Kootenay Power and Light Company, Limited.

By Robert A. Ross and Henry Holgate, Members Can. Soc. C. E.

THE KOOTENAY RIVER rises in the northern part of Windermere, in British Columbia, a short distance east of the head waters of the Columbia River, and flows southerly parallel to the north-flowing waters of the Columbia for 50 miles, thence through Fort Steele and across the International boundary into United States territory, flowing south and northwest for a distance of about 120

nine miles below Nelson, was found to be 5,850 cu. ft. per sec. These measurements were taken in January, 1905, when the water in the river was lower than at any season previously observed. The variations in flow of the river are very great but no measurement of maximum flow has been made as far as is known. The periods of high and low water differ from those of rivers not situated in mountainous



Lower Bonnington Falls, on Kootenay River, before erection of Power Plant.

miles. It then enters Canadian territory again, and soon expands into what is known as Kootenay Lake, which receives a number of small streams in its northern arm. The lake discharges by way of the west arm, at the western end of which is the town of Nelson; the river keeps a southwesterly course to its junction with the Columbia River at Robson. The total length of the river is about 350 miles, and the area drained by it and its tributaries, above a point 10 miles below Nelson, is some 9,800 sq. miles, of which 2,500 sq. miles are United States territory. The minimum flow of the river, at a point about

country, and, in the case of the Kootenay River, which largely depends for its supply from the masses of melting snow on mountains of great altitude, the high water period is comparatively late in the season, highest water being in June and July.

The power development herein described was built at the Upper Bonnington Falls, the lower falls having been partially developed some years ago by the same company. The site for the development of the upper falls was chosen on the north bank of the river.

The channel between the Rocky Island and the north bank was made use of for approach and tail

race; the power house was built in the river, and a cofferdam was built from the bank to the island, thus unwatering the whole site and diverting the water to the south of the island. Although the natural channel assisted materially in the development work, yet about 40,000 cu. yd. of rock had to be removed to provide power house foundations and tail race. The removal of this rock was somewhat difficult, owing to the confined area in which the work had to be done, the difficulty of disposing of it, the nature of the rock (Nelson granite) and the irregularity in direction of the seams in the rock, some of which had to be excavated under water. As a large part of the concrete work admitted of the use of large stones, those most suitable for the work were piled up in convenient places for this purpose, and a large quantity was passed through crushers and used in the concrete.

The variations between high and low water above and below the falls do not correspond, the reason being that at present the flow of the river below the falls is restricted by a number of rocky islands. These hold back the flow of the stream, but it is the intention to improve this channel, so as to afford more channel area and more nearly equalize the rise and fall below the falls with the rise and fall above them.

Owing to these variations, which can never be entirely eliminated (except at a cost beyond commercial practicability), the vertical type of wheel setting was adopted, using all the head available at all stages of water, instead of adopting a head which would be nearly constant and which would involve the sacrifice of a large amount of power for periods when low water prevailed. Of course, when the natural head is least, the volume of water used is not important, as the quantity available is more than ample, but at periods of low water the head is greatest, and the vertical setting is an advantage, since it permits the use of the higher head. Had a horizontal wheel setting been adopted, the power house floor would have had to be set above highest water, and allowing the use of a draft tube of 24 ft. at this altitude, the tail water would have had to be maintained at a level above low water, which would involve the loss of head for a considerable period of every year when water was low and, consequently, when head was most valuable.

It is the intention to increase the natural head by building a timber dam across the river to a height that will drown the rapids above the fall, thus affording an increase of head of 10 ft., and the machinery and works are designed to meet this condition. This work will be done during the current year. There are no troubles from ice on this river.

It is possible to construct works at the outlet of the Kootenay lake to maintain the lake level more nearly uniform, and thus to assist materially in reducing maximum discharge and increasing minimum discharge of the river below this point. This will render working conditions much better and increase

the potentiality of the river considerably. However, the matter has not yet been considered by the Government, though it would afford advantages of public benefit in the navigation of the lake, which is now, and will perhaps always be, a part of the transportation system of this district, owing to the great difficulty of constructing a railway from Kootenay Landing to Procter, located 17 miles above Nelson.

The power house is entirely of monolithic concrete construction, reinforced wherever necessary; the reinforcement consisting of round steel rods, and in some places of steel rails, which were used in parts of the structure under severe strain.

The water enters the flume through the submerged openings between the piers, and can be shut off by gates or by stop logs, the latter being provided for, so as to render the gate accessible in case of emergency. Behind the gates are the screens, which are thus rendered accessible for repairs or cleaning, if necessary. The water flows down the tube formed in the concrete to the wheels, of which there are three on each shaft, two discharging into the upper draft tube and one into the lower tube, uniting in a common discharge, which is placed below low water. The draft tubes are moulded in concrete and have no steel lining, being built up with the structure, cored openings in the monolith. Care was taken to secure a very smooth surface on the inside of all passages for water, and their curves and cross sections were designed to offer as little resistance as practicable.

The exciter turbines are similarly arranged, but are made to operate under a constant head by having the discharge at a higher level, which level is maintained by a weir.

The pressure pumps, governors, and low tension cables are all located in the chamber below the power house floor, the only machinery on the floor being the generators, controlling board and the low tension switches. The crane travels the length of the power house and over the railway track, so that all machinery can be handled from the car to place by the crane. Any leakage through the up-stream wall is taken care of in the air space and drained off.

The tail race openings are also provided with gates and stop logs, which can be closed, and any chamber can be emptied of its water by a system of drains and valves, leading the water from any one chamber to a well at the south end of the building, where a centrifugal pump throws it out into the tail race. The head water is admitted through a by-pass. The whole scheme provides the greatest facility for inspection and making of repairs when necessity arises.

In the transformer house the floor of the transformer room is at such a level as to permit of the transformers being wheeled on their own trucks from a flat car on the railway siding into place. The transformers are entirely separated from the switch room by a concrete wall, and the whole building is of concrete, including the partitions and barriers.

Owing to the peculiar location necessary for the

transformer and switch building in relation to the power house, it was necessary to throw arches over a gap in the rock to provide foundation for the building.

As this work is the largest single piece of concrete construction yet built in the Province, it is satisfactory to be able to say that the whole of the cement used was manufactured in British Columbia, and successfully passed the rigid tests of the engineers prior to acceptance.

Hydraulic Machinery.—Each main unit is capable of delivering to its electrical generator 8,000

approximately 88 parts copper, 10 parts tin, and 2 parts zinc. Each is made in one piece, cast in cores and bolted to the hub. The hubs are made by enlarging the shaft at the points where the runners are attached, and heavy flanges are turned on the shaft above the hubs, to which the runners are securely bolted.

The upper and intermediate runners discharge in opposite directions into a common draft tube, the upper one discharging downward. The lower runner, like the upper one, discharges downward also, but into its own individual draft tube. The chamber



General View of Bonnington Falls, on Kootenay River, before erection of new Power House. Lower Falls, with Power House erected in 1897-8, shown in foreground; Upper Falls in distance.

mechanical horse-power when operating under a head of 70 ft. of water and when running at a speed of 180 rev. per min. The quantity of water required per unit is 1,260 cu. ft. per sec. or a volume equal to the flow of a river 100 ft. wide, 5 ft. deep, and moving with a velocity of 151.2 ft. per min.

Each 8,000-h.p. turbine consists of three inward-flow Francis runners mounted on a vertical shaft, each runner being equipped with its own distributor and movable guide vanes. These distributors are bolted to heavy cast iron base rings secured to the masonry. The runners are thus mounted in concrete pits, which form the turbine wheel casings and the draft tubes for carrying the discharge water to the tail race.

The runners are made of special turbine metal of

above the upper runner is by-passed to the draft tube, which relieves the pressure in the chamber, and thus eliminates the hydraulic thrust of this runner. As the other two runners discharge in opposite directions, the total resultant thrust on the shaft is theoretically zero. The thrust bearing, however, has been designed to take care of a generous amount of thrust over and above the dead weight of the revolving parts. The revolving parts consist of the rotor of the generator, the shaft in three sections, three runners weighing 4,000 lb. each, couplings and bolts, making a total of 170,000 lb. The thrust bearing consists of two specially close-grained cast iron discs. The lower disc is supported by a ball seat, while the upper is securely held in place by an adjusting nut on shaft. The discs have raised

lips on the outside and inside circumferences, so as to form an annular pressure chamber, into which the oil is forced under a pressure of 250 lb., which lifts the revolving parts. When these parts are lifted the oil escapes between the surfaces of the discs, by this means supporting the total weight on a film of oil.

The thrust bearing is covered with a cover, fitted with glass peep holes. The oil is supplied to the bearing from a high pressure triplex pump, capable of working under a pressure of 500 lb. per sq. in. This pump is directly driven from the main turbine shaft by bevel gearing and counter shaft. Each turbine has its own pump, oil tank, piping, gauges, etc., which, in fact, is a complete system in itself, and independent of the governor system.

An extra motor-driven pump, with piping, has been provided, which is arranged to act as a spare for any one of the main units or exciters, but its primary use is to supply oil to the turbines when starting up.

The main turbine shaft is kept in alignment by three guide bearings. The upper guide bearing is built in conjunction with the thrust bearing. It is lined with Parson's white brass and is lubricated by oil supplied under pressure.

The intermediate and lower guide bearings, the former situated above the upper runner, and the latter between the intermediate and lower runners, are of lignum vitae, made by driving lignum vitae into the dovetail spaces in the bronze boxes. As these bearings are submerged, they are well lubricated with water and require little or no attention.

The water is distributed to the runners through malleable iron movable guide vanes finished smooth, so as to offer little resistance to the water. These vanes are operated by means of links from one side of the vane. The links are connected up to the vane operating ring. The rings are operated by rods and levers from a vertical shaft which leads to the operating deck, where the governor is located.

The revolving balls of the governor control a pilot valve attached to an equalizing lever. This valve operates a relay valve, which in turn controls the main operating piston, which is connected to the vane operating shaft.

An oil pump, a pressure tank, and the necessary piping is furnished with each governor.

In order to control the speed of the turbines from the switchboard, each governor is furnished with remote electric control.

The two upper sections of the main turbine shafting are joined together by a cast steel coupling 4 ft. in diameter. The brake mechanism is fitted about the coupling, the outer edges forming the brake band. Two brake shoes are applied on the brake band, and a hand mechanism is arranged so that a force of 10,000 lb. is brought on each brake shoe.

Each turbine is guaranteed to give an efficiency of at least 80 per cent. when delivering 8,000 h.p., and operating under a head of 70 ft. running at a speed of 180 rev. per min.

The hydraulic machinery is all the product of the I. P. Morris Company, whose hydraulic engineer, Mr. W. M. White, designed and carried out the work so successfully.

Electrical Development.—The general scheme of electrical distribution is so arranged that power can at present be delivered to Grand Forks, 69 miles distant, at 60,000 volts; Phoenix, 79 miles distant, at 60,000 volts; Greenwood, 83 miles distant, at 60,000 volts, and to Rossland, 32 miles distant (in the latter case over the existing lines of the old plant), at 22,000 volts.

It will be seen that owing to the complication involved in tying-in to the old plant two transmission voltages were required, and therefore transformers, switching apparatus, etc., had to be provided for both.

The whole of the power so far sold is used for mining work for large motor equipments, for the lighting and power of the mines, and the lighting requirements of the various mining towns above mentioned.

In addition, it is thought that the company will be able, at some time in the not distant future, to sell power to the railways in the vicinity of Rossland for operating, especially on the heavy grades necessary in attaining the elevation of the Rossland camp. The haulage over those grades at the present time is operated by steam locomotives of special type. In some cases these are geared, and switchbacks are established along the route in order to ease grades and for safety. As the heaviest grade does not exceed $4\frac{1}{2}$ per cent., this is quite within the capacity of a modern electric locomotive of considerably less total weight than the present steam machines, and as the advent of the single phase motor has rendered it possible to operate without the use of rotary converters or dynamo motor sets, the problem is much simplified.

Generators and Exciters.—The generators are four in number, each at 4,500 kw. capacity at 2,200 volts and 80 per cent. power factor, at a frequency of 60 cycles, being of the umbrella type and directly connected to vertical water wheels. Two units only are at present installed.

The exciters are two in number, each of a capacity sufficient to excite the entire equipment when finally installed. These are also of the umbrella type and directly connected to vertical wheels.

Generating Station Switchboard.—The current is carried at 2,200 volts to the bus bars, in compartments elevated above the station floor, and formed entirely of concrete, all parts being thoroughly barriered with the same material. The top of this bus bar compartment, in which all operating transformers are placed, forms the base of a platform, upon which are mounted nineteen 2,200-volt oil switches, all being motor-operated by distant control from the bench board.

The bench board, which contains the controls for the whole of the station, including the 2,200-volt switches, 20,000-volt switches, 60,000-volt switches,

together with the speeders for the water wheels, is situated in front of the instrument panel at the end of the station, all connections thereto being reduced to a pressure of not over 110 volts for safety.

The general switching arrangement has been worked out on the basis of two separate and distinct plants, which may be coupled together or run separately on any transmission line or any bank of transformers.

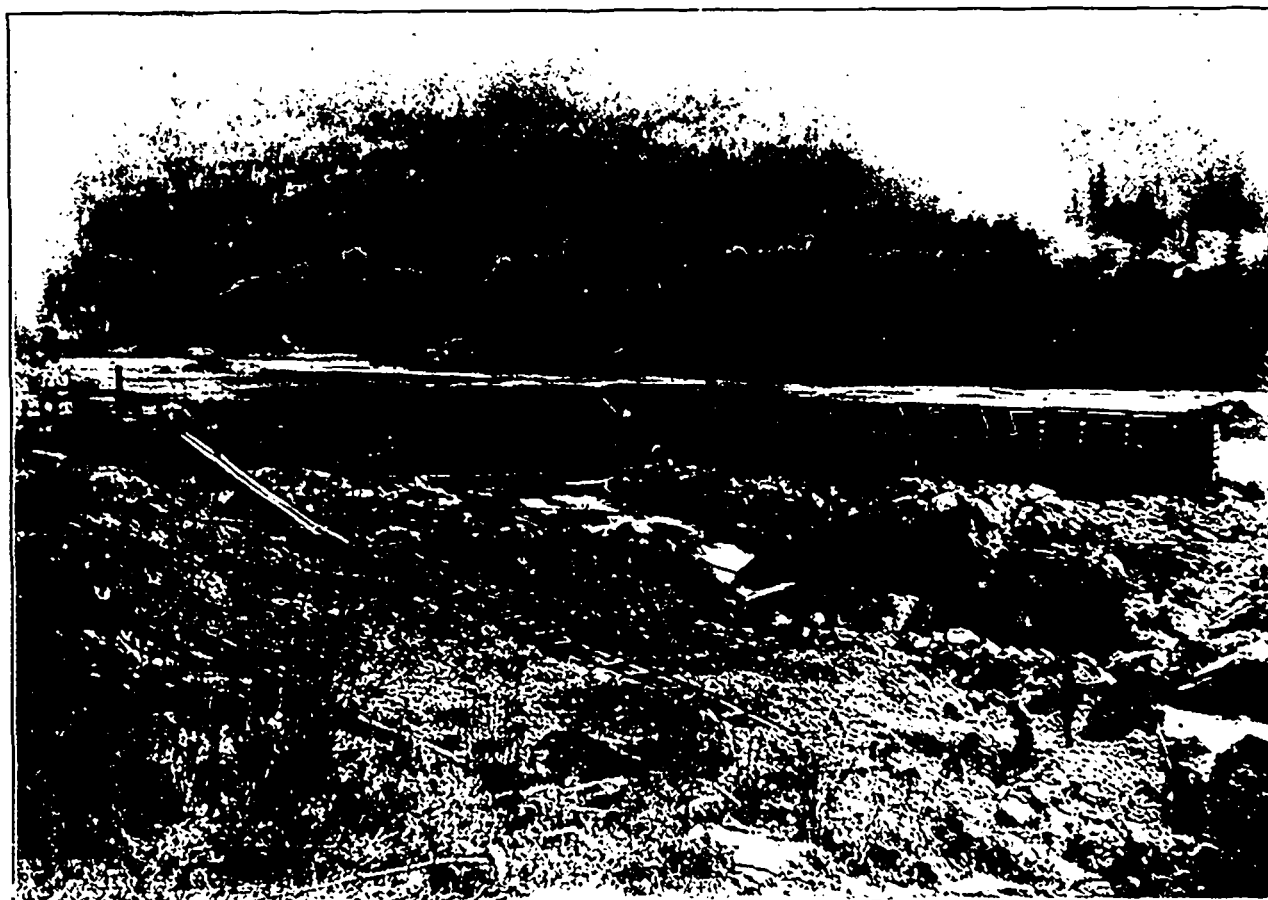
The cables for connecting to the low voltage bus bars, and from thence to the transformer station adjacent, are all rubber covered and drawn into bituminous fibre ducts, which are embedded in the concrete floors, partitions, etc.

riers, and mounted on 60,000 volt insulators. The transformers are oil-filled and water-cooled, and have all the necessary connections for natural circulation of water and for handling of oil into and out of storage tanks by means of oil pumps.

Sub-Stations: Grand Forks, Phoenix, Greenwood.

The design of all these substations is alike.

Both the transmission lines enter the tower through special entrances, consisting of plate glass and porcelain tubes; from whence the lines pass through the choke coils and disconnecting switches, and from there into the high tension distant control oil switches, and finally into the main transformers,



At Upper Bonnington Falls,—Coffer Dam and Site of Excavation for new Power Plant.

Transformer Station.—The transformer station is arranged for four banks of 60,000-volt transformers, each transformer being of 1,875 kw. capacity, at 60,000 volts, and one bank of three transformers, each of 1,000 kw. capacity, at 20,000 volts, for interconnecting between the station herein described and the old development, which is distant about one mile; of these, two banks of 60,000-volt and one bank of 20,000-volt transformers have been installed.

All of the switches throughout the transformer house are motor operated and controlled from the bench board in the same station.

In every case live parts, such as wires, etc., are kept 3 ft. apart and 18 in. from all walls and bar-

being transformed in pressure from 50,000 to 2,200 or 440 volts, as required by the motor service.

The transformers of 1,000 kw. each are located in banks of three in separate compartments, the necessary cooling water and oil piping and tanks being supplied. The transformers are mounted on trucks and arranged so that they can readily be run out of the compartments.

High Tension Switch Room and Tower.—In this compartment are installed all the high tension apparatus, lightning arresters, switches, etc. The floor of this compartment is raised 4 ft. above the general level, this space thus rendered available being used for carrying the high tension lines connecting be-

tween lines and switches. For convenience in inspecting and cleaning the lightning arresters, etc., an elevated walk way has been provided in this compartment. All low tension cables are carried in fibre conduit set in concrete.

Low Tension Switchboard Room.— This room contains all the control apparatus for the high tension switches, etc., as well as feeder panels for low tension lines, also the storage battery for operating the motor-operated switches, motor generator set for charging the batteries, etc. One end of this compartment is reserved as a store room for supplies.

The construction of this entire plant was done by



Glimpse of part of Upper Bonnington Falls

day labour under the supervision of the engineers. It was commenced in June, 1905, and water was admitted to the forebay December 24, 1906. Exciters were operated on December 29, and one of the power units went into commission on the following day.

We desire to acknowledge the assistance of Mr. John L. Allison, member Canadian Society of Civil Engineers, and of Mr. J. N. Smith, for the able assistance given in designing this work, and also the services of Mr. Geo. E. Revell, A.M.C.S.C.E., Mr. Walter J. Francis, M.C.S.C.E., and Mr. A. C. D. Blanchard, A.M.C.S.C.E., who at various stages of the work directed its construction.

According to Swedish newspapers, E. L. Rimman, of Upsala, Sweden, has lately made an invention by which aluminum can be extracted from blue clay, the process reducing the price of the product four times. The silicic acid, which is latent in the clay masses, will also be utilized by the new method.

THE COAL RESOURCES OF ALASKA.

COAL IN ALASKA is receiving the attention of the United States Geological Survey. Some published notes on the progress made this year with the work of gathering information relative to the coal resources of that country are here reprinted:

The United States Geological Survey's investigations of the coal resources of Alaska have just been completed for the 1907 season and their results will probably be incorporated in a report on the coals of the Territory.

The work this year was in charge of W. W. Atwood, who was assisted by H. M. Eakin, and the investigation included an examination of the coal fields of Washington, made for the purpose of comparing the coals of that state with those of Alaska.

Work was begun in southeastern Alaska in May, on Kupreanof and Admiralty Islands. A topographic map was made of each field and careful geologic notes were taken. The structure and structural relations of the coal-bearing formations were determined and large collections of fossil plants and animals were shipped to Washington, D.C., for further study.

The remainder of the season was occupied in examining the coal in the interior of Alaska. This work was begun in the upper Yukon basin and continued to the head of the great Yukon-Kuskokwim delta. From Dawson to Holy Cross, a distance of nearly 1,300 miles, the party travelled in a canoe, making frequent stops and examining all coal deposits accessible from the Yukon River.

Coal has been mined at more than a dozen places along the Yukon, and at some of these places the mining has been profitable; but no extensive development of the coal fields in the interior has been undertaken and no work was being done on the coal claims of this region during the past summer.

Collections of fossil plants and shells from the Yukon Valley were made and forwarded to Washington.

Certain physiographic studies that were begun last year in connection with the coal fields were continued this season. These studies have now been carried from Seattle to Skagway, among the islands of British Columbia and southeastern Alaska, and thence over the mountains and through the interior basin to the mouth of the Yukon. Their results will probably be published in connection with the report on the coal resources.

There are good prospects of early development of the coal fields in the coastal districts west of Mount St. Elias, and it is probable that Alaskan coal will soon be shipped regularly to many ports on the Pacific coast.

The gold output of the Australian Commonwealth for the half year ending June 30 amounted to 1,594,859 oz., a decrease of 141,000 oz. as compared with the half year ending June 30, 1906.

STAR MINING AND MILLING COMPANY
VS. BYRON N. WHITE COMPANY.

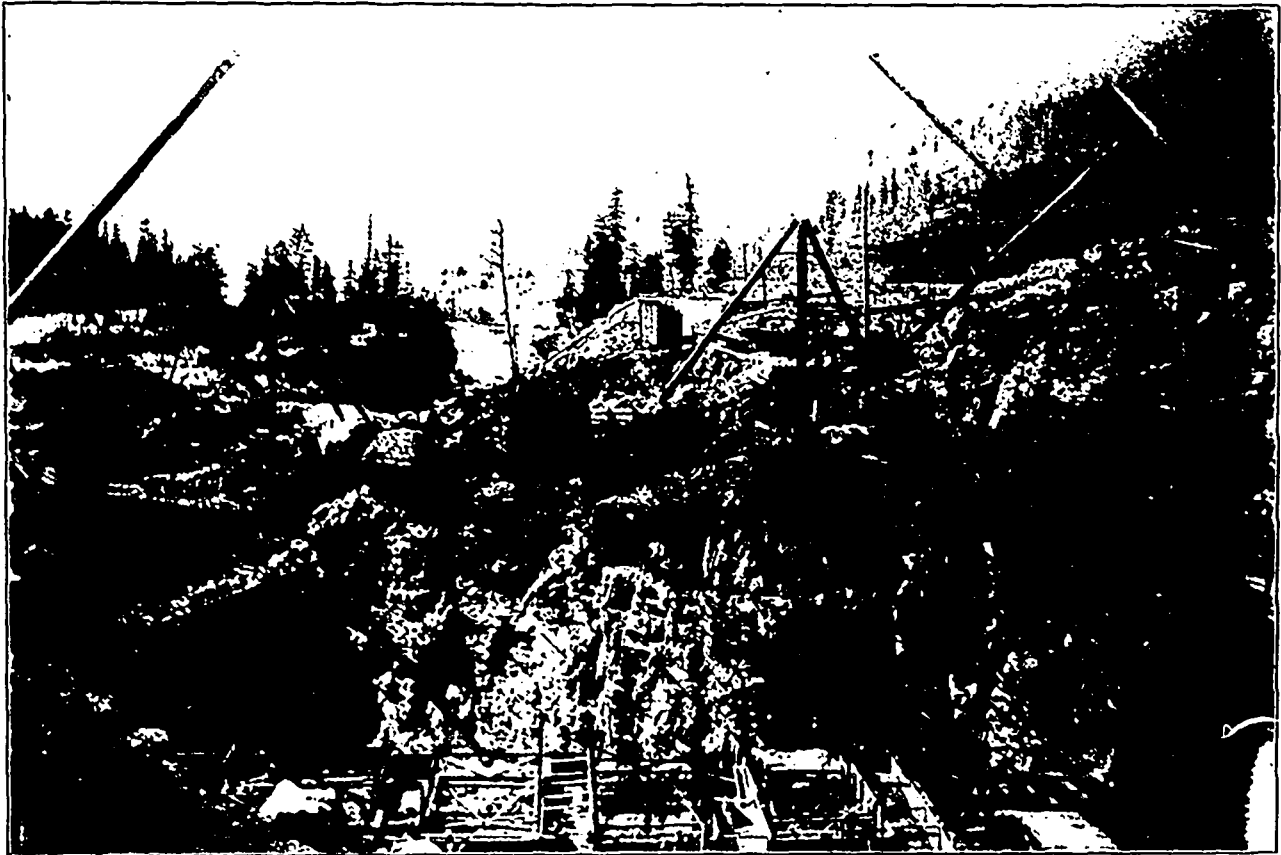
Decision of Full Court in Important Extra-lateral
Rights Case.

EXTRA-LATERAL RIGHTS have occasioned much litigation in the United States. Fortunately the mining industry of British Columbia has not been hampered to any considerable extent by a similar experience. At least two *causes celebres*, in this province have, however, attracted wide-spread attention among mining men, both here and in the United States, viz., the Iron Mask-Centre Star case,

The decision of the Full Court has been awaited with more than ordinary interest. The case was before this court, sitting in Victoria, last April. The separate judgments of the three Supreme Court judges who constituted the court follow, with this exception that space restrictions have prevented the reprinting in these columns of the whole of that of Mr. Justice Irving.

JUDGMENT OF MR. JUSTICE IRVING.

"This is, in one sense, an appeal from the chief justice, but owing to the turn events took after he had delivered his judgment, we are called upon to



At Upper Bonnington Falls—New Power House in course of construction. Looking down stream.

which was before the Supreme Court of British Columbia in April, 1899, and that now under notice.

The history of the Star vs. White case is shown in the judgment of Mr. Justice Irving below. It would, therefore, appear unnecessary to here state more than that the Byron N. White Company owns two 600-ft. mineral claims, situated near Sandon, Sloean district, and that these claims are separated by two fractional claims owned by the Star Mining and Milling Company, represented by John M. Harris. The former were acquired under the old law, referred to on another page in this number of the *MINING RECORD*, which confers upon the owners of mineral claims located under it what are known as "extra-lateral rights."

decide the case upon evidence not adduced before him.

"The plaintiffs, who are the owners of the Rabbit Paw and Heber Fraction mineral claims, issued a writ on July 31, 1901, to restrain the defendants from trespassing on their claims, and for damages.

"The defendants justified the trespass complained of under the authority of Section 31 of the 'Mineral Act, 1891,' which conferred upon them certain extra-lateral rights in respect of a vein which extended through their two claims called the Sloean Star and Silversmith, respectively.

"The plaintiffs' case, as put forward at the trial held in February, 1904, was that this vein in respect of which the defendants claimed that extra-lateral

rights had been faulted by a fissure vein near the westerly end line of the Slocan Star mine, and that the defendants' vein, instead of being a continuous vein, consisted of two separate and distinct veins, viz., the Slocan Star vein, broken as already stated at the westerly end of the Slocan Star claim, and the Silversmith vein; the connecting or intermediate portion running north and south, they said, was a fault fissure, which from the colour of its filling they called the 'black fissure.'

"There is also another section of the defendants' alleged vein to be mentioned, viz., that portion lying to the west of the so-called 'black fissure,' and connecting it with the Silversmith vein. This portion, the plaintiffs say, is not vein matter, nor mineralized in any way.

"The trespass complained of was committed in June, 1900, and consisted of taking ore from the stopes to the west of the end of the Slocan Star mineral claim.

"The defendants alleged in evidence that they were not aware that they had gone beyond their end line until October, 1900. At that date little or no work had been done on the Silversmith claim; on the Slocan Star claim the apex pits had not been continued to the northwest beyond pit 19; levels 1, 2 and 3 were as they are today; No. 4 tunnel had not been run into the Silversmith, nor had the upraise to pit 19 on the surface from No. 4 been run. No. 5 level had only reached a short distance into the Heber Fraction, say about station 21, and the winze was being sunk from the No. 5 level, below, for prospecting purposes.

"When therefore, the Slocan Star people were informed that they were outside of the westerly end line of the Slocan Star in an ore-bearing vicinity, we can assume that there was some consideration given as to how this apparent trespass was to be justified. The statute conferring extra-lateral rights which would justify them going outside of their side lines gave them no excuse for going beyond the end line of their claim. Their justification must therefore be sought in showing that they were following down on the dip of the Silversmith vein through the side lines of that claim; with a view to establishing this connection they, in the spring of 1901, commenced to trace the outcrop by digging the surface pits from pit 19 on, in a northwesterly direction so as to connect up, on the surface, the Slocan Star vein with the Silversmith vein, and in June they started to run No. 4 Silversmith tunnel in from station 48 in a southwesterly direction, and they continued to drift on their No. 5 level so as to connect the two claims underground.

"At the date of the issue of the writ, July 31, 1901, No. 4 level of the Star had reached station 18, the face of No. 5 level was at 21, No. 4 tunnel on the Silversmith would be in only some 100 ft. or so. Looking at case, as of that date, I cannot see that the defendants had at that time any evidence upon

which they could substantiate the defence which they subsequently set up, viz., that they, as owners of the Silversmith mineral claim, were entitled under the extra-lateral rights given to that claim by Section 31, to the veins or lodes in the Heber Fraction lying to the west of the Slocan Star end line. I think this is a fact of some importance, because work done after writ issued, or after trespass committed, should be scanned with some degree of suspicion. I do not want to press this principle too far, but in considering an argument put forward by the defendants' leading exponent, Mr. Elmendorf, in support of his contention that the Slocan Star was a continuous vein, viz., that the best proof of continuity was that the ore bodies in the Silversmith had been reached by the miners running No. 5 drift without any connection from above to guide them and no knowledge of where the ore existed (at 52-3 on No. 5 Silversmith) notwithstanding the very irregularity of form of the drift itself, one should remember that although the workings in a mine (Morrison, p. 417, cap. 318) made in mining operations and not in support of litigation, are generally important as evidence of any facts which may be inferred from them, that inference cannot be drawn with confidence where the work has been done after litigation for purposes of the action.

"After the writ was issued there was an application for an injunction and some affidavits filed. Those proceedings have been referred to in connection with Mr. Oscar White's credibility; as that matter will be dealt with later, it will be sufficient to state now, that in resisting that application, he, Oscar White, on August 31, 1901, made an affidavit that the total amount of ore taken from the ground claimed by the plaintiffs did not exceed the net value of \$500; and that Byron White in an affidavit of same date said the amount of ore excavated in all from the ground of the Rabbit Paw and Heber Fraction amounted to, in his belief, the sum of \$500. This statement by Byron White, as to value, was based on information furnished by Oscar White.

"In the autumn of that year the defendants discovered considerable ore in No. 4 Silversmith about 140 ft. from the portal, between stations 11 and 13. At that time the drift which was being run in a northerly direction from the Heber Fraction had reached station 29, on No. 5 level.

"The pleadings closed on November 25, 1901. They were of the most general character and gave no indication of the theory that the plaintiffs intended to set up at the trial, but, during the examination of Mr. Harris, for discovery, in October, 1903, before trial, an indication of the plaintiffs' line of attack was given. He then expressed an opinion that the Slocan Star vein instead of turning to the north continued on in a straight line across the porphyry dyke, and that the Rabbit Paw claim had in this way caught the Slocan Star vein. According to his theory the Silversmith vein was an independent

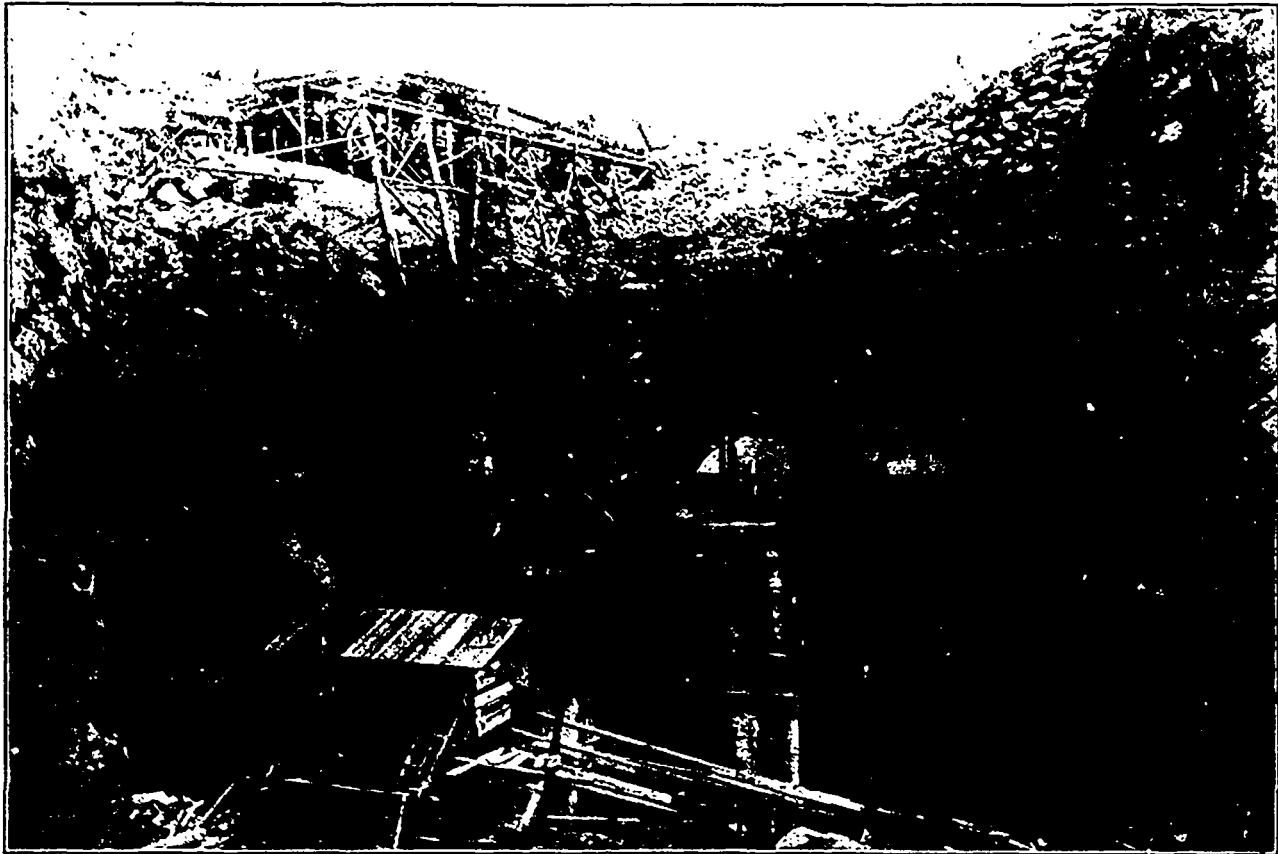
parallel vein some 850 ft. to the north. After the plaintiffs' experts had obtained inspection of the mine (viz., on February 4, 1904) the theory that the Slocan Star vein continued straight on westerly was abandoned, and at the trial which opened on February 12, 1904, the new theory of a fault fissure occurring at the bend was set up.

"Their theory is that the defendants have, by turning the levels, run on the Slocan Star vein proper into the black fissure at the south turn, and at the north by following non-ore-bearing planes and the stratification of country rock have given to their No. 5 level an appearance of continuity on ore or in vein matter between mineralized walls from east to west where in fact there is no real continuity.

necessarily prevent the vein from being continuous.

"When the trial opened on February 12, 1904, the defendants (upon whom the onus of proof is) began, and gave evidence of the stopes in question being on the dip of their vein and of the continuity of their vein; but the pleadings being vague, Mr. Bodwell found difficulty in dealing with his witnesses on re-examination.

"He examined on behalf of the defendants, Mr. Bruce White, the first superintendent of the defendants' mine; Mr. Oscar White, who succeeded Mr. Bruce White in October, 1898, and who was superintendent when the trespass complained of was committed; Mr. Cavanaugh, a relative of the Whites and an assistant in the defendants' mine;



At Upper Bonnington Falls—New Power House in course of construction. Looking up stream.

"The plaintiffs say that the wall of material in which the defendants ran their drift between the winze and station B on the 5th level is the filling of the 'black fissure.' On the other hand the defendants say the drift on No. 5 level, between the winze and B, is in their vein, that the Slocan Star vein continues from the winze to B, and there turns. The filling, they say, is vein matter, and that its crushed appearance is the result of movement in the vein, but the movement has not interfered with the continuity of the vein, which they claim they have followed in their workings.

"The defendants contend that there may be a fault in the vein, but that a fault in the vein does not

Isaacson and Fox, two miners employed in the mine; Mr. W. S. Drewry, a land surveyor in the employ of the defendant company; Mr. Twigg, another land surveyor; two foreign experts—Mr. W. J. Elmen-dorf, retained in September, 1903, and Mr. Parks, retained in September 1901; and two local mine managers of experience in the Slocan district—Messrs. A. Sharp and M. S. Davys. With the exception of Mr. Twigg and two local mine managers, the others were interested, either by direct pecuniary interest or sympathy in the success of the defendants' case.

"The evidence of the defendants was directed to showing the unbroken continuity of the vein from

Sandon Creek to the westerly workings in the Silver-smith claim. They represented that the hanging wall of the vein could be followed on No. 5 level very plainly all through (evidence of Parks; Elmendorf, however, was more guarded); that coming north they were following their own vein; that their vein turns to the west at B.; that at point C, the hanging wall crosses the drift from the left or south side to the north or right-hand side and comes out at D, and that their drift continues all the way from E to station 52, between mineralized walls.

"The plaintiffs' contention was that the Slocan Star vein was cut off by the 'black fissure,' which extended to the south and beyond the hanging wall of the Slocan Star vein, and that it was the 'black fissure' the defendants were following; that the 'black fissure' does not turn at B., but continues on to X.; that the material difference from the country rock that the defendants saw in running from B. to C. was 'black fissure' material which they had to break through; and that there is no connection on ore between B. and 52; and that the walls followed by them from B. to 52 were mere non-mineralized planes.

"On the opening of the plaintiffs' case, counsel stated that he would show that from the winze or turn at the south end of No. 5 level to X., at the extreme north, there existed a separate and distinct fissure, separate from the fissure containing the Slocan Star vein and separate from the fissure containing the Silversmith vein. It was not an ore bearing fissure, but contained a filling having for its main constituent a soft crushed slate, of dark colour, on account of which they had designated it the 'black fissure'; that in this fissure there was a 1,200-ft. barren stretch; that the line run by the defendants as their vein was formed by uniting these three fissures into one; that this union brought about the peculiar contortions shown in the northern and western parts of their level; that the defendants had neither walls nor ore to establish the continuity of their vein.

"Then, after the cross-examination of Mr. Sizer had proceeded a certain distance on February 25, counsel for the plaintiffs, referring to the issue of fact which had been gradually developed during the trial, and fully stated by Mr. Sizer, proposed that certain work should be done and that that work should determine the issue. This was agreed to in a more or less indefinite way, but the examination of witnesses proceeded. Like the evidence on behalf of the defendants it was, in the main, the testimony of experts and persons interested in the result, and at the close of it the judge seems to have felt that he was not then in a position to give a decision and that therefore some further work was necessary. It was accordingly arranged that some work should be done under the superintendence of Mr. S. F. Parrish, but owing to illness, Mr. Parrish had to resign, and so matters remained at a standstill until December, 1904, when the chief justice himself, accompanied

by the leading experts on each side, paid a three days' visit to the mine. This inspection by the judge accompanied by the experts, I see by the decree, was a consent arrangement. I think it is to be regretted that counsel did not also attend, for, instead of adhering to the plan originally agreed upon, viz., that work should be done to test the soundness of Mr. Sizer's contention that there existed three separate fissures, the chief justice thought it would be sufficient to enable him to reach a conclusion if a drift was run from C. to a point 27 ft. east of D., or as it has been called D. minus 27, that is, instead of testing Sizer's 'black fissure' theory, which test required a drift through the Star hanging wall, with cross-cuts at the south and a cross-cut at X (two experiments which Sizer said would either prove or disprove his theory) a wholly different piece of work was done. As to this work and why it was ordered at this particular place, I shall refer later. To the substitution of this one piece of work for that originally agreed upon, objection was taken at once by the plaintiffs. In January, 1905, while this new work, i.e., the drift from C. to D. 27, was being run, an application for other work was made, and that application was renewed in May, 1905, about which date the chief justice, accompanied this time by Mr. Oscar White, the defendants' superintendent, and Mr. S. S. Fowler, an expert retained by the plaintiffs, made a second examination of the mine. To both of these applications there was a refusal, with the result that on July 25, 1905, when the case came on again for what has been called the second trial, the work, for the doing of which the hearing in February, 1904, had been adjourned, was still undone. Once more the plaintiffs applied for further experimental work, but this was not granted and the trial proceeded and judgment reserved.

"At the close of the trial the same application was made for more experimental work with the same result; and in the end judgment was given in favour of the defendants.

"The learned chief justice proceeded on the ground that the 5th level shows that the vein was continuous and that between C and D 27 there was a clearly defined hanging wall and the characteristic vein filling which was to be found in the Slocan Star and Silversmith was to be found in the cross-cut run between these points by his direction in December, 1904.

"From that judgment an appeal was taken to this court and at the same time an appeal from the interlocutory decision refusing to allow the experimental work to be done was also taken. After argument this court came to the conclusion that the plaintiffs should have been allowed to have the work done which they contended was necessary for the proper presentation of their case, and we therefore set aside the judgment of the learned chief justice and directed the work to be done, at the places mentioned by Mr. Sizer in his examination in February, 1904.

"The parties to the action selected Mr. W. E.

Zwicky as a proper person to have the management of the work and under him it was proceeded with, and finished about February, 1907, and the case came on before us in April last.

"Some question has been made as to the convenience of the course adopted. Perhaps it has thrown on this court a greater amount of work than we expected, but it seems to me to have been the only satisfactory solution of the problem we have had to deal with, and as for precedent we have our own action in *Hopper vs. Dunsmuir*, and also the *Stanley Park* case. And I see that the Judicial committee of the Privy Council has, instead of remitting a case to the court at Shanghai, allowed evidence (taken it is true on commission) to be presented to them in the first instance; see *Bank of China, etc., vs. American Trading company* (1894) A.C., 271.

"Looking back now, I feel that we would have experienced the very greatest difficulty in following the complicated details of this case, if we had proceeded in the ordinary way.

"Before proceeding with the statement of facts of the case as developed before us, I would like to observe with reference to a contention mentioned by Mr. Bodwell, that he had a judgment in his favour and that it was for the plaintiffs to upset it. I do not look at it in that way. In our opinion the case before the learned chief justice had not been fully tried and therefore, we directed that there should be practically a new trial. It would be altogether out of reason to regard a judgment which had been reached, at any rate in our opinion, without full opportunity to plaintiffs to establish their case, as a judgment shifting the onus from the defendants, on whom it was originally cast, on to the plaintiffs.

"From the reasons for judgment given by the learned chief justice it is apparent that he relied very much on his own inspection of the premises and he was, after having made such an examination, able to decide which of the experts was right and which was wrong.

"Now, since then we have had the advantage of the additional work and verbal evidence on both sides, and although we should pay due regard to the opinion of the witnesses formed by the chief justice yet it is for us to form our own opinion as to their credibility.

"The new work consisted of three separate undertakings—one at the south where the plaintiffs had said the Slocan Star vein was cut off and terminated by the 'black fissure', the middle piece where the defendants had asserted the No. 2 vein would be found, to which vein they attributed certain ore found in the 'black fissure', and the northerly piece of work which the plaintiffs had said, would demonstrate that the wall of crushed material did not stop or turn at B, but continued on to X and beyond.

"The new work at the south, in my opinion, completely established the theory contended for by the plaintiffs as to the separate existence of the 'black fissure.' It showed positively beyond question that

the hanging wall on No. 5 level and the stopes immediately above it, was not continuous but that the fissure with a filling similar to that found in the 'black fissure' ran out to the south. Mr. Elmendorf admitted that the plaintiffs had exposed by the new work a fissure 28 ft. broad and some 98 ft. in length, running through the hanging wall of the Slocan Star vein. This fissure was exposed at a point where a certain amount of ore had been left in a corner, and where Mr. Elmendorf had pointed out to the chief justice on his first visit that there was no evidence of a fissure extending out to the south.

"The new work at the north, in my opinion, demonstrates beyond question that a fissure extends from B to X, and as it confirms the testimony given by the plaintiffs' experts on that point, I see no reason for not accepting their opinion that it is the same fissure which is exposed by the new work to the south. It completely disposed of the evidence given by the defendants' witnesses that the cross-cut B to X was driven in country rock.

"Had the chief justice heard the testimony adduced before us I feel sure that he would not have felt confident in accepting Mr. Elmendorf's expert testimony as more reliable than that of Mr. Sizer. Mr. Elmendorf's action in persuading the chief justice not to accede to Sizer's request to have certain work done, in my opinion is cogent evidence of partizanship. An opinion on a technical matter formed under such guidance can be of little value and when in the light of subsequent evidence that guide admits he was mistaken, still less. I have no hesitation, therefore, in saying that in these circumstances we are not bound, in any degree, by the opinion formed at the view taken by the learned chief justice.

"The contention put forward by the defendants at the trial that the vein turned at B was also in my opinion disproved. Mr. Max Boelmer, a new expert introduced by the defendants on the hearing before us, thought that the real turn was at station 38, and that the vein indications seen in the neighbourhood of B, C and D 43 were foot-fractures of the same vein; but his evidence has not shaken my confidence in Messrs. Sizer and Fowler, a confidence reached after hearing their oral testimony before us, and reading their evidence before the learned chief justice.

"In view of some of the expressions used by the chief justice in his reasons for judgment, I thought it proper to go through the evidence taken before him with very great care and to make some observations with regard to the witnesses examined before him.

"In considering that testimony it will be necessary therefore to refer to the evidence given at the trial before him in February, 1903, and again before him at what has been called the second trial, held in July, 1905, and also to the evidence given before this court in April, 1907.

(Note.—Here follows a long critical review of parts of the evidence of several of the chief witnesses. In the course of this review Mr. Justice Irving

states that he can place no confidence in Mr. Oscar White's testimony, giving reasons for this conclusion. Regarding Mr. E. L. Sizer he says: 'Before us Mr. Sizer gave his evidence in a satisfactory way and the conclusion I have arrived at with reference to him is that he is a close and accurate observer of facts and of good memory and not desirous of misleading the court.' The closing paragraphs of his lengthy judgment are as follows:)

"Mr. Fowler, a mining engineer residing in this Province since 1889, with nine or ten years' experience in the Slocan country, and who at one time was familiar with the workings of the Ruth mine, a mine only a few hundred feet to the north of the mine in question in this action, of all the witnesses, except Mr. Oscar White and Mr. Harris, whose experience in the Slocan country is also considerable, is, by virtue of his long familiarity with the surrounding country, entitled to speak with most weight.

"For these reasons, I think the defendants' case has failed. Judgment should therefore be reversed, with costs here and below. The judgment should direct an enquiry as to the amount of ore taken, and contain a declaration that the Slocan Star location does not give to the defendants any rights to the west of the west end line of that claim, and that the vein or lode on the Silversmith location has not been shown to extend to the Rabbit Paw or Heber Fraction. There should be an injunction also, but the term of the judgment had better be spoken to later."

JUDGMENT OF MR. JUSTICE MARTIN.

"Two questions are submitted by the plaintiff company (appellant) for our consideration, one of fact and one of law. If the former is determined in its favour the latter becomes immaterial; therefore I shall first deal with the former.

"At the outset I find myself in an unusual position, for though nominally sitting as a judge of appeal, yet this court has for many days been discharging the functions of a court of first instance, of a jury in fact, during the hearing before us (from April 8 to 23 inclusive) having taken a great mass of oral evidence, amounting, when extended, to 675 type-written pages.

"This from every point of view undesirable, and I trust not-to-be-repeated departure from the practice in the case of non-reception of evidence by the trial judge, places the parties and the court in a peculiar position, for we have no finding of fact to assist us because the evidence we took, and which is quite inextricably interwoven with that taken at the trial was not before the trial judge so the issues are open and must be found by us. Such an unusual state of affairs affects the case seriously because the usual onus thrown upon the appellant to 'show the judgment appealed from is wrong' is absent (see *Inverarity vs. Hanington*, April 27, 1907, not yet reported, and the authorities therein cited), and, on the other hand, the original onus cast upon the defendant in actions of this pecu-

liar class to justify its encroaching workings is as strong as ever, and as important.

"The extent to which this latter onus goes in cases of this nature has been considered in many American cases to which we have referred and which we must look to for guidance since this difficult and distinct branch of our mining law came direct from that country, and there has been some difference of opinion in applying it to various circumstances. But in a case such as the present I adopt the following remarks of Hallett, J. in *Leadville Mining Co. vs. Fitzgerald* (1879) 4 Morr. Min. R., 381, cited in *Lindley on Mines*, 2nd edition, Vol. 2, Sec. 866, wherein the whole question is ably considered: 'Within the lines of each location the owner shall be regarded as having full right to all that may be found, until some one can show a clear title to it as a part of some lode or vein having its top or apex in other territory. In other words, we may say that there is a presumption of ownership in every locator as to the territory covered by his location, and within his own lines he shall be regarded as the owner of all valuable deposits until some one else shall show by preponderance of testimony that such deposits belong to another lode having its top or apex elsewhere.'

"In *Snyder on Mines* (1902) Vol. 2, Sec. 783, it is, I think, accurately stated after a review of the cases: 'While, as we have seen, this extra estate is given to every locator of a mineral vein and confirmed by the patent, if he obtains one, it is strictly upon the condition that he so establish his lines upon the surface as to include whatever portion of his vein he desires to mine outside the vertical planes of his surface ground, for however right or wrong the law may be, and notwithstanding there is a severance of estate, as we have seen, the rule is firmly established that the common law maxim applies, and that agreeably hereto until a better right is shown, he who owns the surface is presumed to own all beneath.'

"And in *Barringer & Adams on Mines* (1900) the conclusion is reached (pp. 442-3) that: 'The presumption in the first place is that all minerals found within his boundary planes belong to the owner of the claim. And upon a stranger claiming the right to mine inside of these planes rests the burden of proving that he is mining upon the dip of a vein whose apex is outside the claim, and within a claim belonging to him. That is, in order to establish his right and justify the apparent trespass, he must prove that he is the legal possessor of the vein which he is following. If he fails to establish both of these points he is a trespasser.' And see also p. 458.

"The circumstances of the case at bar are such that, as Lindley says, Sec. 866, p. 1592, 'It devolves upon the defendant company to establish: (1) the existence of an apex within the boundaries; (2) the identity and continuity of the vein from its top or apex within such boundaries to the point of dispute.'

"In regard to No. (2) Lindley observes, Sec. 615,

p. 1112: 'The legal identity or continuity of a vein on its downward course, as well as on its longitudinal course underneath the surface of adjoining lands, presents at times the most serious questions encountered in the administration of the mining law. It is impossible to prescribe any definite rule as to what degree of continuity or identity in a legal sense the miner must establish when he invades property adjoining the location containing the apex of the vein. Each case presents its own peculiar features. Reports of adjudicated cases rarely present general discussions of this feature of the mining law, nor are the facts usually stated with such detail as to enable the practitioner to utilize the case as a precedent. The infinite variety of structural conditions encountered in the practical operation of mines renders it highly improbable that a case in one locality can be safely relied upon as a precedent in a case arising in another place.'

"And he goes on to discuss certain general principles as illustrated by leading cases. At a trial of this kind in the American courts three questions of fact are left to a jury, and the judge's charge is frequently given in full in the law reports. Our duty therefore, acting as a jury, is to charge ourselves on the facts before us and return a verdict thereon. In such circumstances, as I have before now stated, I do not think it is a good practice or otherwise profitable to attempt to give here a critical analysis (and anything short of that would be quite useless) of all the great mass of conflicting evidence of fact and theory that has been adduced, and on this point I refer to *Leadbeater vs. Crow's Nest Pass Coal Co.* (1904) 2 M.M.C., 145, wherein I said in a coal mining case: 'In support of these conflicting theories a great body of evidence was adduced in a trial lasting more than three consecutive weeks, and even if it were desirable for me to do so when discharging the functions of a jury on pure questions of fact (and I do not think it is) it would be almost an impossibility to attempt to review in detail all the evidence which I have listened to and weighed in a trial of such duration and complexity of fact, though not of issue.'

"All, therefore, that I propose to say in the present case is that the defendant company has failed to discharge the onus cast upon it to satisfy me, as a jury, regarding the identity and continuity of the vein in question. Though Mr. Bodwell presented his case to the best advantage, yet his able argument did not carry me beyond the doubtful stage, and consequently I think the only safe course to adopt is to confine the defendant to its own ground as against the plaintiff.

"The appeal should, in my opinion, be allowed."

JUDGMENT OF MR. JUSTICE MORRISON.

"This is an action for damages and an injunction against the taking of ore from the plaintiffs' mineral claims known as the Rabbit Paw and Heber Fraction.

'Markedly divergent theories were advanced at the trial, and when it was deemed advisable that the workings and condition of the mines should be inspected, the learned trial judge, accompanied by two engineers, selected by the two parties hereto, visited the mine, ordered certain additional work done, and then had a second view. From the voluminous evidence before us, I gather that a thorough inspection was made. At the close of the evidence following this view of the *locus in quo* counsel for the plaintiff requested that further work be done on the ground that not enough had been done to establish his theory, and that without additional work as indicated by him, it was useless for him to proceed with his case. This was refused, and the learned judge then gave the judgment appealed from, which is a result mainly of his inspections. Upon appeal to this court, however, such leave was given the plaintiff to have certain further work done and to advance if necessary, such further evidence as the parties might be advised respecting the issues as developed at the trial. Pursuant to this leave, the work was done by Mr. W. E. Zwick, and in due course, his evidence and that of the chief witnesses at the trial, as well as the evidence of Mr. Max Boehmer, an American expert, was given before us on this appeal.

"From a close reading of the proceedings on appeal, I cannot discover any tangible evidence. It is all highly theoretical, not to say rhetorical, and the arguments of counsel were equally vituperative.

"With regard to the position in which the plaintiff's counsel considered he stood at the close of the trial, it seems to me necessary for him to adduce evidence of a nature much stronger than before to establish his theory. If this new evidence does not add to it, but simply reaffirms the previous evidence it is not enough.

"Otherwise, giving the fullest effect to both sides, apart from the question of onus, which I submit now is on the plaintiff, the net result would be as before, one theory opposed to the other. But with this difference, that the defendant is supported by the opinion of the learned trial judge, based mainly upon his inspection and so should prevail with us.

"I joined in the order for the performance of the new work solely in the belief created by the strenuous argument of counsel that the new work would clearly demonstrate the contention of the plaintiff, and had I anticipated that the result would be to afford a breathing spell for a resumption of the wonderful display of theories as to the formation of the earth's interior by clever experts, I should have hesitated before concurring.

"The leading respective experts appear to be men of ability who advanced diametrically opposite scientific theories. They assumed that position before the trial judge and maintained it steadfastly in giving their evidence on appeal.

"The trial judge, however, not only heard their theories, but, as it were, saw those theories worked out. One who hears a man tell how he performed a

certain piece of work is not in so favourable a position to determine the nature of the work performed as if he saw him do it or saw the work after it was done.

"For my part, I find it as difficult to appreciate the value of the voluminous evidence in this case, as it is to understand the extent, trend and course of the different subterranean formations by handling the small fragments of 'rock' produced as exhibits, and about which there is such a hopeless divergence of scientific opinion.

"The proof must be clear and unmistakable. And in respect to this new work ordered by us to be done, I do not think it is either. The evidence is so perplexing that taking it alone one must arrive at the conclusion urged upon us by the plaintiff by a process of guess work and surmise. Indeed, so inconclusive is this new evidence that a view by this court is as necessary as it was by the trial judge.

"This may not be an inopportune time to emphasize the necessity for a change in the law whereby a view by the judge and two assessors shall be conclusive as to questions of fact, leaving an appeal only on questions of law.

"I would dismiss the appeal."

DEFENDANT COMPANY WILL APPEAL TO "THE COURT OF LAST RESORT."

A press despatch from Spokane, Washington, in which city Mr. Byron N. White resides, says: "With regard to the recent decision in the Star-White case, Byron N. White says he will contest the claims of the plaintiff to the court of last resort. He thinks there is little doubt that the Privy Council will be asked to sit finally on the case. His company believes that a more dispassionate consideration of the case can be had in England than in Canada. He adds: 'We have not been making this fight for six years for the fun of it, and we will not continue spending money just to keep the case in court. We believe we are in the right, and that in the end the highest court of jurisdiction in Great Britain will not fail to deal out to us the justice which we have so long sought. To that end we believe that the first favourable decision of Chief Justice Hunter and the recent dissenting decision of Judge Morrison will not be without influence.'"

In view of recent reports concerning the proposed establishment of iron and steel works in British Columbia, the following excerpt from a recent report of the Canadian commercial agent at Sydney, New South Wales, Australia, may be of interest: The first blast furnace operated in Australia upon commercial lines was opened on May 13. Iron has been produced for a week or two, and it is claimed that its quality is excellent. Bar iron has been made from the product in puddling furnaces and steel in open-hearth furnaces, and both are pronounced to be of a high grade. So far as can be seen, there is no reason why Australia should not produce its own pig-iron and steel.

MINING IN BRITISH COLUMBIA.

A Review by Former Editor of MINING RECORD.

ON MINING in British Columbia, Mr. H. Mortimer Lamb (formerly editor of the *MINING RECORD* and now secretary of the Canadian Mining Institute, with headquarters in Montreal, Quebec.), lately wrote for *Mines and Minerals*, of Scranton, Pennsylvania, U.S.A., the following interesting article:

Your correspondent recently returned from a visit, covering a period of some weeks, to British Columbia, after an absence therefrom of three years or thereabouts. The question was frequently put to him by old friends, "Well, do you find much change; how do you think we've gone ahead?" To which he would reply, "Yes, I find change and you have gone ahead." But the change that has taken place in British Columbia in the last year or so is a remarkable one, for it is a change of heart, of sentiment, and almost of character. The sort of change, in fact, that bridges manhood from youth in individuals and is bred of responsibility and a sense of fitness. The Province is not the British Columbia of ten years ago, exuberant, enthusiastic, bubbling over with froth and fume: nor is it the same country of five, or even three years ago, in the throes of reaction, depressed, disappointed, lacking in confidence, almost in courage. There has been a reawakening, a stimulation to life and energy and a realization of heritage. In short the country is on a different footing altogether than before: it has come to see that it has a splendid stock in trade in great natural advantages, but that to turn these to full account business methods must be employed and followed. It is largely as a result of this that conditions have so entirely changed; that the position of the mining industry in particular has so greatly improved, and that capital is again finding encouragement to invest in western undertakings.

Thus, in almost every district, the Slooan alone perhaps excepted, signs of material activity and progress are everywhere apparent; and but for the one disturbing factor, the high price and shortage of labour, the industrial outlook of the Province would be extraordinarily bright. Under the circumstances it is nothing short of marvellous that progress has been made at all, and that such is the case strikingly attests to the natural wealth and rich resources of which the Province is possessed.

I am informed, meanwhile, that at many of the mines, the labour item represents quite 80 per cent. of the cost charges—surely an unduly high percentage. This high cost of labour falls, of course, more heavily on the smaller properties, not at present profitably productive, than it does in the case of the larger mines, equipped with the very latest labour-saving machinery and handling large tonnages; but even these latter, which are chiefly to be found in the copper-mining sections, cannot stand the strain now

that the price of metal has undergone so considerable a decline.

Mining in the Coast districts is steadily expanding and growing in importance, and quite recently some valuable finds of copper in large deposits and averaging from two to six per cent., have been found both along the mainland coast and on the several groups of islands adjacent thereto, notably a deposit on Moresby Island and others near Observatory Inlet. In some cases shipments of ore have already been made to local smelters, while in others development work is in progress. There is also considerably more activity on the west coast of Vancouver Island, one property in particular at Sidney Inlet showing up remarkably well, while the erection of another smelter at the head of Alberni Canal is under contemplation. Again, copper properties on the Queen Charlotte Islands are beginning to attract a deal of attention, several claims having been recently bonded at high figures there.

The potentialities of the country through which the line of the Grand Trunk Pacific is projected are very enthusiastically regarded by men who have prospected in some of these northern districts, notably those of the Skeena and Telkwa. Coal is distributed in widely separated localities in the Skeena watershed, and is reported to have been found on the lower reaches of the Telkwa River and its tributaries; the headwaters of the Morice River; the Bulkley River; Driftwood Creek; the Kitsequeela River; the Kispox and Tzesatzakwa Rivers; the head of Copper River and near the head of the Skeena itself. Unfortunately, however, none of these coals appear to be coking, which in view of the occurrence in the neighbourhood of large bodies of refractory ores is a matter of some concern, although systematic prospecting in the future may have a more successful issue. Minerals of economic importance have been discovered in various sections. These include deposits of galena and copper pyrites at the head of Kitimat Arm; iron near Port Essington, and copper ores in the Bulkley Valley series. Many of these deposits are of great extent, and while in most cases little more than surface prospecting has been attempted, promise exceedingly well.

Conditions in the Cariboo district are also satisfactory, despite the fact that operations were prematurely discontinued this season at Bullion, where is situated the largest productive hydraulic mine in British Columbia. Good clean-ups have, however, been made from claims on Mosquito Creek, from the Forest Rose, the Lowhee, and Stout's Gulch. At the last named some 300,000 cu. yd. of gravel were piped off during the season. The Slough Creek Company, engaged in mining the deep ancient river channels at Slough Creek, is now proposing to abandon steam power for pumping, and install electric pumps with a capacity of 5,000 gal. per min. The richness of the deep channels has been fully demonstrated, but heretofore the tremendous inflow of

water has proved an insurmountable difficulty to profitable mining.

But of all the mining districts of the West, the Boundary is undoubtedly the most interesting and important. The progress made here in the last few years is most remarkable, and the success achieved is due not only to a peculiarly favourable combination of natural circumstances, whereby it has been found possible to mine and smelt the ore at a cost so low as to challenge comparison in this respect with any copper mining district in the world—I was informed, by the way, that this summer Granby was even treating 0.8 copper at a profit, although I am inclined to think this an overstatement—but it is also due in no small degree to the ability of the individual mining engineers and metallurgists, who have charge of the big properties of the district, and who have been responsible for working out and solving the complex problems in connection with making ore averaging certainly not over 1.5 per cent. copper and \$2 to \$3 in gold and silver, pay to mine. How well they have succeeded may be ascertained by a glance at the recently published balance sheets of the principal companies operating in this field. The factors contributory to the low costs of mining and smelting in the Boundary are fairly well known. They are first, the great size of ore bodies, in consequence of which operations may be conducted on a large scale, while the conditions are such that little timbering is required; secondly, cheap power; thirdly, the utilization of machinery and the employment of methods designed to cut down the expensive item of labour to a minimum; fourthly, the practically self-fluxing character of the ore itself, and lastly, the abundance of cheap fuel available for smelting purposes. It is safe to say that if almost any of these factors were withdrawn, mining in the district could not be continued. Operations at present are to all intents and purposes confined to the working of a half dozen big, low-grade properties. The methods of mining employed at these mines are largely identical, and include open pits and rock pillars and stopes. The workings in pit No. 1, the Granby, now resemble more than anything else the cloisters or aisles of some mighty abbey or cathedral.

In a recent paper, Mr. Frederic Keffer, of the British Columbia Copper Co., describes at length, and most comprehensively, the methods of mining employed at both the Granby and Mother Lode mines, from which I abstract the following information: In opening up the deposit for glory hole work, a tunnel or drift is run under the ore at a depth, if possible, below the point where the perpendicular wall and foot-wall will come together. Raises are now run near the foot-wall from this drift, or from its branches to the surface, which raises are provided with chutes at the bottom. Having filled the raises with ore the rock can then be blasted around their collars, funnel-shaped openings being formed which grow deeper and wider as the work progresses. The drill holes are run from 6 to 20 ft. deep. By

keeping the sides of the tunnels sloping about 45 deg. the ore may be carried into the raises with little or no shovelling; but occasionally instead of funnelling the ore into the raises it is loaded in cars and dumped. At one time the Granby Company used steam shovels for loading ore in one of the glory holes, but at the time of my visit I was informed that this method had been abandoned. In the case of deposits of low dip, the plan usually employed is to open stopes above a roof supported by pillars of ore, and when the dip exceeds 60 deg. it is the practice to run several approximately parallel drifts under the ore. From these drifts raises are made at intervals of from 25 to 35 ft., each being provided with timbered chutes lined with 1/2-in. steel plate. About 10 ft. over the backs of the drifts, stoping is commenced and ultimately all the ore is broken down between the intervening spaces until one large stope remains. The stope is carried the entire width of the ore, pillars being left at intervals to insure the safety of the roof, stoping being then carried on up to the next level, and so on. In the Granby mines it is usual to run three or more drifts under the ore, and as the stope grows higher a drift in the barren foot-wall is driven and raises made to reach the ore which will not fall on the footwall, the whole object being to avoid shovelling.

The report of the Granby Consolidated Mining, Smelting and Power Company, Limited, for the year ending June 30, 1907, recently issued, is on the whole satisfactory. This is due, however, rather to the high price of copper than to industrial expansion since mining and smelting operations show a falling off, in consequence, it is alleged, of fuel shortage. Thus the eight large furnaces could only be operated intermittently, and during the month of May both mines and smelter were closed down for a period on this account. At the beginning of the year it had been estimated that in consequence of the increase in furnace capacity, it would be possible to make a production of 25,000,000 lb. of copper; but the actual production only reached 16,403,749 lb. According to the president's statement the cost per pound of copper produced, after deducting the value of the gold and silver, was .1014 during the past year, as compared with .0835 in 1905-06, and while this increase is attributed to the causes already mentioned, the increase of wages may also very probably be responsible. The report states that the smelter is now equipped to treat over 1,000,000 tons of ore per annum, which should produce in the neighbourhood of 30,000,000 lb. of copper.

Of the more important new work undertaken and completed, mention is made of the new three-compartment shaft, by which connection will be obtained with the different levels; and the installation of a complete electric haulage system on the 400-ft. level. The ore reserves have also been considerably increased during the year.

Last year's operations are briefly summarized in the following returns and figures: Copper produced,

16,410,576 lb.; silver, oz., 257,378; gold, oz., 35,083; Granby ore smelted, 649,022 tons; foreign ore smelted, 16,893 tons; mine development, 9,701 lin. ft.; diamond drilling, 7,279 lin. ft.; total amount realized, \$4,521,549; charges of all kinds, \$2,672,529; net profit, \$1,924,937; dividends, \$1,620,000; surplus, \$2,775,757; new construction, \$317,677; new mining properties purchased, \$68,164; cash and copper on hand, \$853,280.

Production from the Boundary is at present being maintained at the rate of about 35,000 tons a week, and if this is kept up the output for the year, notwithstanding the curtailment of shipments this last spring and summer in consequence of coke and car shortage, will rather exceed that of 1906. During the year the machinery equipment both of mines and smelters in the district has been considerably augmented, and other improvements and additions are now either in progress or contemplated. Mention in this regard may be made of the new shaft house at the head of a three-compartment incline shaft, now in use, and connecting with the lower levels, whence the ore is hoisted to bins and passing through powerful jaw crushers is carried over a conveying belt to the railway bins. In the head-frame is placed a rotating bin near the top of the frame into which the ore or waste falls from the skips, and which by rotation delivers the contents of the skips into any one of the three chutes as may be desired, two of the chutes communicating with the bins above the crusher, the third being for waste. At the company's smelter, the furnaces, eight in all, are being enlarged by an additional 4 ft. in length with a view to increasing the tonnage capacity of the works from 3,200 to 4,500 tons daily; new coke bins are being built; the converter plant is being doubled, three more stands being added while an addition of 80 ft. is being made to the steel building; and other improvements include the construction of a new flue chamber and the installation of another blowing engine and two blowers. At the Snowshoe, under lease to the Consolidated Mining and Smelting Company of Canada, a 30-drill Rand compressor is being installed, while the Dominion Copper Company is reconstructing its smelter plant at Boundary Falls, and is substituting for the two small and out-of-date furnaces one large 750-ton furnace of similar design to that already installed. The British Columbia Copper Company's smelter at Greenwood has also been completely remodelled within the past year, and is now regarded by men competent to form an opinion as one of the best designed plants of the kind in the world.

One's first impressions of Rossland are disappointing. On the streets of the little town all the bustle and go which was one of the characteristics of the boom times has disappeared and instead there is an air of peace and calm, which to one accustomed to the old state of affairs is somewhat disconcerting. As a matter of fact, however, Rossland was never in a better condition from a business standpoint. It

is true all speculation has ceased, but what mining is being done is on a strictly business basis, costs in several important directions have been reduced, and generally speaking, work at the mines is being ably and well directed. Possibly the best thing that ever happened in Rossland's interests was the consolidation effected a year or so ago, by which the War Eagle and Centre Star were acquired by the Consolidated Mining and Smelting Company of Canada, which also owns the Trail smelter, the St. Eugene silver-lead mine at Moyie, and other properties. As a result of this consolidation, these two mines have not only been placed on a regularly profitable footing, but the mistakes and vicissitudes of the past are being forgotten in the successes of the present and in the bright promise of the future. At the Le Roi the outlook is not quite so favourable. The mine itself, may still be considered the premier property of the district, but the company is working at a great disadvantage in that it continues to ship ore to its smelter at Northport, Washington. This smelter is badly situated in that it is difficult to secure a supply of custom ores at that point, and consequently, in order to keep the furnaces running the Le Roi ships a great quantity of nearly valueless rock, which considerably reduces the average of the grade of the output of the mine and heavily handicaps its earning possibilities. In contrast to this policy, the Le Roi No. 2 has for some years past shipped only ore of high grade to the smelters and has steadily declared substantial profits. The Le Roi No. 2 in fact is one of the best managed mines in the West—the one notable exception in the long list of mismanaged British-owned properties.

On account of the shortage of coke, operations at the Trail smelter have been considerably restricted this summer; but it now seems that this difficulty is at an end and henceforward the furnaces will be operated at full capacity. Meanwhile a number of important additions to the plant have either been recently made or are in progress, including provision for an increased copper furnace capacity; the doubling of the capacity of the Huntington-Heberlein plant; the construction of a new sampling mill; the increase of the capacity of the electrolytic lead-refining plant to 75 tons daily, and the installation of plant for the manufacture of hydrofluosilicic acid used in the lead works. In connection with these works it may be noted that some slight modifications in the practice have been introduced, the washed slimes being now treated with sodium sulphide and then deposited out of the solution electrolytically.

I attempted to ascertain from various sources and authorities the reason of the "slackness" in the Sloean silver-lead districts, which is all the more unaccountable in view of the relatively high prices of these metals prevailing for some time past. Every view or expression of opinion was at variance. One or two attributed the absence of considerable activity to the fact that the district never recovered from the effect of the eight-hour law; others to the present

high price for labour; the failure of one or two of the better known mines, like the Payne, which had resulted in a general withdrawal of confidence; and finally, and this is probably nearer the mark, that never in the history of the Sloean had there been, except in one or two isolated instances, any really systematic development work carried out to provide for reserves, or in other words the district is now suffering from the effects of former unworkmanlike mining and prodigality. Again, there may be something in the contention that freight and treatment charges in the past have been somewhat excessive. But whatever the cause, the Sloean as compared with other mining sections in the West is decidedly dull, although happily signs of a revival of interest are not entirely wanting.

Around Nelson the outlook is by no means discouraging, there being more activity than for some years past, despite the closing down of the Hall Mines' smelter, which as a matter of fact has never, in part due to faulty design and arrangement, been operated with any great measure of success. In East Kootenay, both the St. Eugene and Sullivan mines are showing excellent results. A considerable proportion of the ore from the former property is being consigned at present to Europe, while the Sullivan's ore is treated locally at the smelter at Marysville.

At the Crow's Nest collieries operations are being steadily extended but the difficulty of securing labour both for the mines and coke ovens, has been very serious, and this and also the inability of the railway companies to meet car requirements, has been responsible for the coke shortage of which so much complaint was made this summer. Meanwhile the situation in these respects has recently improved, and as the Pacific Coal Company (a Canadian Pacific Railway Company organization), is opening new coal mines at Hosmer, it is hoped that henceforward metallurgical operations in the Kootenays will not be hampered as they have lately been on account of an inadequate fuel supply.

The following particulars as to the present demand for tale, and its marketable value, have been published in the *Engineering and Mining Journal* of New York: France is becoming an important centre for the output of tale, in block or in powder. Good white tale may be purchased at from \$9 to \$11 per metric ton (2,204 lb.), and a better quality is obtainable at \$15 per ton, ready cleaned. It is used largely for burners of acetylene-gas jets, and a contract with an American firm has lately been closed here for 1,000 tons at \$40 per ton for this and similar purposes. France may now be considered the first European country for the output of tale, having overtaken Italy, which was long the largest producer. It was finally adopted.

The price of lead has fallen to about that at which the Dominion Government lead bounty is payable.

YUKON TERRITORY.

Official Reports to March 31, 1907.

YUKON TERRITORY AFFAIRS are dealt with in several official reports for the nine months ended March 31, 1907, which have been published in the "Annual Report of the Department of the Interior," recently sent out from Ottawa. In reprinting these herein some detailed tables of statistics have been omitted, also such parts of the several reports as have not been considered of public interest.

REPORT OF THE ACTING COMMISSIONER.

"The production of gold in Yukon Territory, as taken from the official returns, for the nine months ending March 31, 1907, was 220,319.40 oz.; at \$15 per oz., which is the valuation fixed for royalty purposes, the value would be \$3,304,791.05. This, however, is below the actual value, but must be used for purposes of comparison. For the last nine months the gold production has been less in proportion than during any similar period since 1898. This is due to the fact that nearly all the claims on Bonanza, Eldorado and Hunker Creeks have been worked to such an extent by comparatively primitive methods, that it is no longer profitable to continue working them except by the introduction of a water system and the installation of dredges. A vast number of the claims on these creeks, and on the hillsides adjoining, have been acquired by purchase by the Yukon Consolidated Gold Fields Company.

"Dredging.—The above-mentioned company have installed three large dredges on lower Bonanza, and will have them in operation during the summer season of 1907. They are also constructing enormous ditches and flumes for the purpose of bringing about 5,000 miner's inches of water from Twelvemile River, a tributary of the Yukon, to the gold fields of Bonanza and Hunker. The proposed work will necessitate the construction of ditches and flumes some 50 miles in length. They have also installed on Little Twelvemile River, a power plant, to be operated by gravity water, which will provide by electricity the power to operate the dredges on Bonanza. This will enable the company to operate large tracts of ground which are not sufficiently high grade to be worked profitably by individual miners. The company are also constructing a large dam at No. 57 above Discovery on Bonanza Creek, which, when completed, will store 350,000,000 gal. of water. The difficulty in the past has been that the snow has melted on the hills during the latter part of April and early in May, and there was a surplus of water for a few weeks, but by June 1, generally, there was not sufficient for hydraulic work on the hills. The construction of this dam will conserve the water for a long period, and enable work to be carried on during the dry season, usually June, July and August. The magnitude of the work of this company can

hardly be overestimated, and when they shall have their ditch constructed and in full operation, the gold produced will be enormously increased, although I do not look forward to this result before the season of 1909.

"The operations of the Canadian Klondyke Mining Company on Bear Creek, where a large dredge has been at work for the last two seasons, have demonstrated that mining by this method can be successfully carried on.

"Bonanza Basin Gold Dredging Company operated a dredge at the mouth of Klondyke River, with such satisfactory results that they intend, I understand, installing another one early this season.

"The Lewes River Dredging Company, which have operated on Bonanza for the past five years, were very successful and will continue to work.

"The Ogilvie dredge was engaged during the summer months at work on the submerged bed of Klondyke River near its mouth. Arrangements have been made to transport this dredge to some claims on Indian River, where it will work during the summer of 1907.

"The Fortymile Dredging Company, which installed a dredge on that river late in the season, will begin work as soon as the ice has gone.

"The practicability of dredging for gold will be thoroughly demonstrated during the season of 1907, and if successful, in view of the conditions of the frozen ground, then we may expect a tremendous development along these lines.

"Individual Mining.—Much individual mining has been carried on at Granville, Quartz, portions of Dominion and Hunker, during the present winter with, it is believed, considerable success. It was felt that every effort should be made to assist and encourage the opening up of new creeks for the individual miner, and the local government expended a considerable sum in the purchase of two Cameron pumps and a boiler to enable the miners of Duncan Creek, in the Stewart River district, to sink to bed-rock and cross-cut the creek. It had been found that the water could not be successfully handled except by powerful pumps. The work this season was not altogether satisfactory, and it will require another winter's work to demonstrate the possibilities of this creek. The claim owners who were engaged in doing the representation work on one claim, are disappointed but by no means discouraged, and it is thought that next winter will thoroughly decide the value of this creek.

"Considerable work was done in placer mining in the Salmon River district, notably on Livingstone Creek, during the last season, and prospecting and mining on a smaller scale in the Klwane district. There has been great activity in the southern end of the Territory in quartz and copper. Many properties have been bonded, and it is confidently expected that considerable capital will be introduced and the enormous resources of this portion of the Territory thoroughly developed.

"Yukon Placer Mining Act.—The 'Yukon Placer Mining Act' has been in operation a sufficient length of time to enable us to appreciate the value of the present code. There may be occasion for some amendments and modifications, and at the next session of the Yukon council the matter will be thoroughly gone into, and recommendations made that will tend to remove any cause for friction, and will make the act as workable as possible, both in the interests of the individual miner and of the large companies now investing so heavily in the Territory.

"Yukon Council.—The Yukon council met on July 5, 1906, and prorogued on July 18. Fourteen ordinances were passed in connection with the local administration, and other necessary business transacted. The revenue of the Territory for the nine months ending March 31, was \$336,279.22, and the expenditure \$309,234.79.

"Schools.—The school system has been maintained in the same high state of efficiency as in the past, and has always given the greatest satisfaction to the people of the Territory.

"Administration of Justice.—Good order and the absence of crime have marked the nine months just closed, due to the splendid service of the Royal Northwest Mounted Police and the prompt and efficient administration of justice.

"General.—There is a feeling of optimism throughout the Territory, based on the splendid outlook for the future, which I feel cannot fail to be fully realized.

"J. T. Lithgow, Acting Commissioner."

REPORT OF THE GOLD COMMISSIONER.

"During the nine months ending March 31, 1907, 47 protests have been issued by the clerk of the gold commissioner's court. This is a slight proportionate increase over the previous twelve months, in which 53 protests were issued. The increase is due in the first place to the large number of locations recently made in outlying creeks with a view to joining groups of claims together for dredging purposes, the general opinion prevailing that the creeks formerly staked and found not of sufficient value to work under the ordinary placer mining methods, will carry sufficient gold to work profitably if worked by a dredge. Secondly, owing to the changes in the Placer Mining Code from the mining regulations in force prior to August 1, last, a number of new questions have arisen for consideration that are not settled by the cases heard under the old regulations.

"Only one case has been heard since August 1, last, under Section 60 of the Placer Mining Code, and the result has been unsatisfactory. In the first place, no provision has been made in the act for any procedure for hearing a dispute under this section; secondly, there is no provision for enforcing a judgment given by the arbitrators; and thirdly, the arbitrators being inexperienced in hearing disputes, do not take proper notes of the evidence, and the result is that the record is in such shape that it is impossible

for either party to appeal if they desire to do so. In the case heard the arbitrators were appointed and the parties appeared before them, but they did not take down notes of the evidence, and after they gave their decision it was found there was no means of enforcing the judgment, and the whole matter remained a nullity, as the parties who thought they were not properly treated would not adhere to the arbitrators' decision, and as far as I can learn, nothing further has been done in the matter. Considerable complaint was made at the same time over the costs of the arbitrators.

"To my mind, the settling of disputes under this section is costly, cumbersome and unsatisfactory.

"E. A. Senkler, Gold Commissioner."

REPORT OF THE ASSISTANT GOLD COMMISSIONER.

"Herewith I submit the financial report of the gold commissioner's office, at Dawson, for the period extending from July 1, last, to March 31, last, which embodies the revenues collected at this office from mining dues during the said period, and also the revenues received from the offices of the mining recorders for the Duncan and Sixtymile mining districts of Yukon Territory. The statement shows that the total receipts of mining dues amount to \$105,048.30, which is considerably in excess of the receipts for the corresponding period of the fiscal year ending June 30, 1906.

"The 'Yukon Placer Mining Act' of 1906, which came in force on August 1, 1906, has brought about an increase of work in connection with the provisions regarding the enlargement of the size of claims; also regarding the grouping of claims. On the other hand, the coming into force of the said act has done away with the necessity of certificates of work and free miner's certificates.

"The returns of the mining recorder for the Duncan mining district have kept up about the same as during the previous year, and those of the mining recorder for the Sixtymile mining district have been about the same as they were prior to the abolition of the said office on January 31, 1905, for the corresponding months.

"The returns of the offices of the assistant gold commissioner at Whitehorse, and of the mining recorders for the Klwane mining district and the Conrad mining district have been forwarded to the Department of the Interior direct from Whitehorse during the period herein above-mentioned, and therefore, there is no occasion for me to make any other reference than this to them.

"During the said period of nine months ending March 31, last, the following hydraulic mining leases were cancelled by the Department of Interior, viz.:

"1. Lease No. 38, issued on March 17, 1903, in favour of Andrew W. McConnell, covering a location situated on the right limit of the base-line of Indian River, in the Dawson mining district, two miles in length by one mile in width; cancelled on October 15, last.

"2. Lease No. 43, issued on November 5, 1902, in favour of the Klondike Consolidated Gold Fields, Limited, of London, England, covering a location situated on the right limit of Stewart River, and having a length of about five miles, more or less, commencing at a point about five and three-quarter miles below McQuestion River, and extending thence down stream the above-mentioned length; cancelled on March 1, last.

"No hydraulic mining leases were issued by the Department of the Interior during the said period.

"F. X. Gosselin, Assistant Gold Commissioner."
Financial Statement from July 1, 1906, to March 31, 1907.

Receipts.		Amounts.	Totals.
Dawson—Free Miner's Certificates ..			\$ 10,402.75
Dawson—Placer.			
To Grants	\$ 18,270.00		
Renewals	38,645.00		
Relocations	9,160.00		
Registered Documents	8,886.00		
Certificates of Partnership.....	254.00		
" Work	1,378.00		
Abstracts	74.75		
Amended Applications	30.00		
			\$ 76,697.75
Dawson—Quartz.			
To Records	\$ 1,125.00		
Certificates of Work	467.50		
" Partnership	35.00		
Registered Documents	387.50		
Lieu of Assessment	100.00		
Certificate of Improvements	60.00		
Crown Grants Acreage	1,254.32		
			\$ 3,429.32
Dawson—Sundry Accounts.			
To Water Grants	\$ 1,130.00		
Advance Deposit Account	1,907.98		
Hydraulics	1,764.50		
			\$ 4,802.48
Clear Creek.			
To Free Miner's Certificates	\$ 33.50		
Relocations	40.00		
Renewals	30.00		
Registered Documents—Placer..	17.00		
Certificates of Work " ..	6.00		
" Partnership " ..	4.00		
Water Grants	10.00		
			\$ 140.50
Duncan.			
To Free Miner's Certificates.....	\$ 476.25		
Placer Grants	230.00		
Renewals	4,270.00		
Relocations	720.00		
Certificates of Work—Placer....	126.00		
" Partnership "	44.00		
Registered Documents "	537.00		
			\$ 6,403.25
Sixtymile.			
To Free Miner's Certificates	\$ 86.75		
Placer Grants	1,130.00		
Relocations	280.00		
Renewals	1,170.00		
Certificate of Work—Placer....	46.00		
Registered Documents "	451.50		
Certificates of Partnership			
—Placer	8.00		
			\$ 3,172.25
			\$105,048.30

Disbursements.

Dawson.		
By Receiver General	\$103,016.07	
Gold Commissioner's Suspense		
Account	109.25	
Balance Account	1,922.98	
		\$105,048.30

The foregoing receipts show a net decrease of \$15,514.96 for the period of nine months as compared with the fiscal year immediately preceding, as under:

Comparative Statement of Receipts.

	Year ending June 30, 1906.	Nine months ending March 31, 1907.
Free Miner's Certificates	\$ 25,578.34	\$ 10,999.25
Placer Grants	7,515.00	19,630.00
Renewals	46,710.00	44,115.00
Relocations	8,940.00	10,200.00
Registered Documents—Placer	7,149.50	9,891.50
Certificates of Partnership.....	586.00	310.00
" Work	9,396.00	1,556.00
Abstracts	40.50	74.75
Amended Applications	5.00	30.00
Water Grants	905.00	1,140.00
Hydraulics	6,318.19	1,764.50
Quartz Records	2,265.00	1,125.00
" Registered Documents	815.75	387.50
" Certificates of Work	985.00	467.50
" " Partnership..	128.00	35.00
" In Lieu of Assessment....	400.00	100.00
" Certificates of Improvement.	22.50	60.00
" Acreage	705.50	1,254.32
Advance Deposit	1,922.98	1,907.98
No. 1 Hester	175.00	.....
	\$120,563.26	\$105,048.30

REPORT OF THE COMPTROLLER.

"The expenditure under the vote 'Administration of the Yukon' through the Department of the Interior, disbursed through my office, was \$124,299; statements, with vouchers, being forwarded to the department at the end of each month.

"The local revenues and expenditures of the Yukon Territory for this period were: Revenue, \$336,279.22; expenditure, \$309,234.79, administered through my office; quarterly statements, with vouchers, being sent to the auditor general as required by order in council.

"It was not considered advisable to change the fiscal year in the management of the local affairs of the Yukon Territory, as it is much more convenient to hold meetings of the Yukon council during the month of July, or August at the latest, when the business of the previous fiscal year can be wound up and presented to the council; consequently there is a difference between the Dominion fiscal year ending March 31, and the local fiscal year ending June 30, as formerly, of three months.

"The disbursement on account of the Department of Justice was \$20,859.27, for services in connection with this Territory, monthly statements being forwarded, with vouchers.

"The expenditure on account of the Department of

Indian Affairs, for the relief of sick and destitute Indians, etc., was \$2,496.39, and for schools, \$2,250.

"The management of the expenditure of the Department of Public Works 'buildings' has, as heretofore, been vested in the Superintendent of Public Works and myself; the expenditure was \$60,696.56.

"The royalty collected in the Territory for the nine months was \$82,622.42,—Dawson, \$80,530.38, and Whitehorse, \$2,092.04. There was nothing collected at Fortymile.

"The receipts from free certificates issued to exporters of gold from Alaska were \$215.50.

"The revenue from these sources was forwarded to the credit of the receiver general, drafts being sent to the department weekly, and statements monthly.

"The revenue from the sale of the Yukon territorial court law stamps was \$3,065.10, from mining court stamps, \$342.75; drafts and statements being sent to the Department of Inland Revenue.

"Monthly statements of the revenue received in the offices of the gold commissioner and crown timber and land agent have been checked each month as formerly, and the returns forwarded to the Department of the Interior. The suspense account in the gold commissioner's office has been checked and the cheques countersigned in payment of withdrawals.

"The management of the affairs of the City of Dawson has been vested in my office.

"Since January 1, the services of the assistant tax collector have been dispensed with, the city office having been transferred to my office.

"G. I. MacLean, Acting Comptroller."

REPORT OF THE CROWN TIMBER AND LAND AGENT, DAWSON.

"During the nine months ending March 31, 1907, the revenue has increased, over the same period of last year, in the Timber Branch \$1,129.07; in the Lands Branch, \$232.49,—\$1,361.56.

"During the period \$1,881.03 was paid in on account of the purchase of Dominion lands, \$1,534.31 on account of coal lands and survey fees therefor, and \$105.15 on account of the purchase of town lots.

"There is not much demand for Dominion lands, and the availability of these will hereafter be taken advantage of only by those whose vocation makes their residence on the land a necessity, the cultivating of the land being a profitable side issue. The farms already in cultivation in the vicinity of Dawson are quite capable of supplying the present market for products of agriculture. Chicken raising as an industry has developed considerably of late years. Ranch eggs sell at \$3 a dozen in the winter and \$2 in the summer. The first crops of light vegetables, such as lettuce, radishes and onions, are raised in greenhouses, and are usually on the market by about Easter. A number of farms along Klondike River last season suffered as a result of the high water carrying and depositing a heavy sediment over acres which had been seeded, and again, later, it was found that worms and insects had invaded entire crops. In

view of these difficulties and the fact that miles of the Klondike will soon be dredged for gold, the Klondike is being abandoned by the farmer. The best farming locations in the neighbourhood of Dawson are directly across the river, at Sunnydale and West Dawson, where the ground is high.

"As the figures show, the sale of coal lands figures largely in the revenue. There is a boom in coal lands and a large revenue will be derived from this source during the current year. Coal mines are now being worked on Coal Creek, below Fortymile, at Five Fingers, at Tantalus and at Tantalus Butte, at which latter place C. E. Miller, the discoverer, claims to have the best coal yet found in the Yukon Territory. Mr. Miller also discovered the Five Fingers mine and the Tantalus mine. All the steamers on the Dawson-Whitehorse run will consume coal this season, with the exception of the three new boats to be operated by the White Pass & Yukon route, which also will burn coal eventually. Thousands of tons of coal will be placed on the market this season.

"Homestead regulations were adopted by order in council dated July 23, 1906, which came into force on January 2, last, but owing to the fact that we have only now received advice to this latter effect, the several applications made to this office for permission to homestead were not dealt with.

"There are three saw-mills operating in Dawson district at the present time, all of which are located in Dawson and are run by steam-power. In addition to these there is a mill on Twelvemile River, operated by the Yukon Consolidated Gold Fields Company, at which they manufacture the lumber required by them for mining purposes. From this the department receives no revenue.

"The total sales of the three mills during the nine months are as follows: 1,624,689 ft. of lumber, 44,944 railway ties, 602½ cords of wood. The average price now obtained for all kinds of lumber is \$40 per thousand feet B.M.

"The new system of issuing permits for the cutting of saw-logs seems to work satisfactorily. Woodmen are enabled to cut small patches of logs which they find near their wood camps, and thus timber is saved which would otherwise be left or cut up into cordwood. The timber berths now in existence are getting to be pretty well denuded of timber.

"Wood for use on steamboats cannot be got less than a distance of two miles from the Yukon, and the necessity of going further back is opportunely relieved by the advent of coal. Wood is getting to be very scarce at a distance from Dawson which would pay, and in the near future wood will likely be entirely displaced by coal for fuel purposes. I believe there will be sufficient coal mined this season to operate all the steamers, as well as supplying Dawson with fuel.

"A great portion of the Dawson waterfront was relinquished by the lessees last year, but owing to the large shipments of coal which are to be made to

Dawson this summer and in future, nearly all of that abandoned has been taken up for the purpose of erecting coal docks thereon. No less than 750 ft. of frontage has been applied for, for this purpose, whilst in Dawson and Klondike City 550 ft. had previously been taken up and put to the same use.

"As you are aware, this office was placed in my charge last August, thus leaving me in the dual capacity of assistant gold commissioner and crown timber and land agent. This was done by the commissioner, under instructions from the minister of the interior. Although there is a considerable amount of work in connection with the administration of this office, all the clerical work, accounting and correspondence has been attended to by one clerk, W. F. Povah, since last August, and the inspection work has been done by one inspector. The staff has been steadily decreased from a total of seven to one clerk in the office, and one timber inspector, under my supervision, creating a saving to the department of more than \$1,000 per month.

"F. X. Gosselin, Crown Timber and Land Agent."

Receipts of Crown Timber Branch.

Royalty	\$ 7,250.64
Timber permits	7,549.82
Seizures	494.75
Hay permits	105.
Coal royalty	517.34

Total\$15,917.55

Receipts of Dominion Lands Branch.

General sales	\$ 3,420.49
Rentals	1,943.92
Registration fees	40.50
Survey fees	100.00

Total\$ 5,504.91

REPORT OF THE DIRECTOR OF SURVEYS.

Mr. Genest (draughtsman) was employed in this office until August 31, since that time Mr. Gibbon, D.L.S., and myself have been the only members of the staff.

"In August and September surveys of base lines, under the code, of the following creeks were made by Mr. Gibbon: Guysboro off Klondike, Belcher off Klondike, Rabbit off Klondike, 20 Pup off Hunker, 21 Pup off Hunker, Mattie Gulch off Hunker, 37 Pup off Hunker.

"These base line surveys include surveys of the end boundaries of the claims located on the creeks, and the system has proven very satisfactory. While these surveys are somewhat more expensive, much more information as to location of claims is obtained, and double staking of the same ground is largely prevented.

"On account of the office staff being so reduced Mr. Gibbon has considerable fieldwork for which returns have not been made, namely, the following surveys:—

"Clear Creek base line (spring, 1905). Photo-

topographical survey, Klondike watershed (1905). Barker Creek base line (spring, 1906). Traverse 40 miles Stewart river (1906).

"C. W. McPherson, Director of Surveys, Y.T."

REPORT OF THE ASSISTANT GOLD COMMISSIONER, WHITEHORSE.

"Only since July 1, last, has the Whitehorse division of the Whitehorse district made any real advance towards becoming a mining camp.

"During the past summer Mr. Byron N. White, of Spokane, started work on the Pueblo and Carlisle claims and met with such success that the Grafter, Arctic Chief and Valerie claims have changed hands and are now being worked with most encouraging results. In addition to the above Col. W. S. Thomas has, on behalf of eastern capitalists, purchased about 400 claims, including some of the best properties on the range. Col. Thomas is now arranging to spend a considerable amount in development.

"The prospects for this division are brighter than ever before, and it is now practically assured that, within a very few years, this division will be an important factor in the production of copper.

"The Big Salmon division of the Whitehorse district has produced about \$70,000 in gold during the past season, and promises to equal this for a few years to come at least. In this division Summit, Cottoneva and Livingstone Creeks are all producing.

"The Nisutlin division has not, up to the present, developed anything of value. Not more than ten men spent last winter in this division.

"The Kluane district has produced about \$20,000 in gold, but nothing new has been developed in placer. Several most promising copper areas have been discovered and there is little doubt that a railway through that district would develop many valuable copper mines.

"In the Conrad district about \$225,000 was spent in the development of silver-gold properties, with good results.

"Valuable ore in considerable quantities has been struck on the Montana, Vault, Venus and Big Thing claims, also on the T. M. Daulton properties.

"Between 500 and 600 claims were recorded in the Watson division, and about \$20,000 spent in development. Ten tons of ore from the Tally Ho group netted \$46 per ton over freight and smelting charges.

"L. T. Burwash,

"Acting Assistant Gold Commissioner."

Summary of Fees Collected.

At Whitehorse office	\$ 14,144.89
" Conrad "	2,461.75
" Kluane "	2,665.00

Total\$ 19,271.64

REPORT ON AGRICULTURAL PRODUCTIONS.

"This Territory has made wonderful strides in the past few years in agricultural productions. It was

considered in 1898 that it would be impossible to raise vegetables here, owing to the shortness of the summer, but the experiments of the last few years have shown us that we can produce nearly all the vegetables that are grown in other parts of the Dominion. The farming so far is principally confined to the river bottoms, where the soil is richer than on the hillsides. Native hay is largely grown, and the production the past season was about 200 tons, marketed in Dawson, which sold at \$60 a ton. There was also about 100 tons of native oats raised. This is cut green and used as fodder, and realized about \$75 per ton.

"The production of vegetables for the past year, taken from the figures furnished by the board of trade, is estimated as follows:—Lettuce and radishes of a superior quality sufficient to amply supply the wants of the Territory; cabbage and cauliflower, 40 tons; turnips, 40 tons; carrots, 20 tons; beets, 15 tons; potatoes, 75 tons; celery, 1,200 dozen.

"The home production of turnips, carrots, beets and celery is sufficient to supply all the local demands, and importations have ceased. The vegetables raised in the Klondike cannot be excelled, if equalled, anywhere else in the world in size and quantity. The forced growth through the summer under the never-setting mid-night sun allows no time for shrinkage or toughening in any way. All vegetables are free from pith, and are unmolested by any form of insect life or any other annoyance known to farmers in many other parts of the world. Many of the Dawson gardeners have stocked their cellars heavily, and will have turnips, potatoes, beets and celery for sale most of the winter. Some have extended greenhouses in which many vegetables are grown through the winter and early spring. Potatoes are grown most successfully in all parts of the Territory. They bring from 5 to 8 cents per pound on the Dawson market. Experiments are being made gradually with hardy grains, and doubtless the Yukon in time will grow far more of the supplies that it annually consumes than it has yet ventured to produce.

"J. T. Lithgow, Acting Commissioner."

At a meeting of shareholders of a mining company, held in England, Oliver Wethered, known in British Columbia as one of the directors of the Ymir Mines, Limited, stated that he was the deputy-chairman of the Dolcoath mine, Cornwall, in which, about a year ago, they had awakened to the fact that they had a vast amount of ore containing zinc, copper, arsenic, and tin. In their mine numerous tests had been made with the Elmore process. As a matter of fact, with that process they recovered 90.6 per cent. of copper and got 93.2 per cent. of zinc, while in tailings they got their tin oxide, which they treated in the ordinary way. The Elmore process had been tested in other mines with excellent results.

A post office, to be known as Riondel, is to be opened at the Blue Bell mine, Kootenay Lake.

CANADIAN MINING INSTITUTE.

A WESTERN BRANCH of the Canadian Mining Institute would, in the opinion of a number of members of that organization, be of benefit to those belonging to it but who cannot conveniently attend meetings held in Eastern Canada. Accordingly, it is proposed to organize such a branch, thereby following along lines already adopted in Ontario and the maritime provinces, in which the utility of local branches is also recognized.

Frederic Keffer, of Greenwood, Boundary district, engineer in charge of the several mines of the British Columbia Copper Company, Limited, in his capacity as president of the Institute has sent the following circular letter to the Western members:

"It being difficult for members residing in the western provinces and adjacent United States territory to attend the meetings of the Canadian Mining Institute, which are usually held in Eastern Canada, the council suggests that a branch of the Institute be formed to include this district with a view to holding regular meetings in the West, and thus more largely participating in the general work of the Institute.

"You are, therefore, requested to attend a meeting of the Western members, to be held in the city of Nelson on January 15, 1908, at 2 o'clock p.m., when steps will be taken to organize the said branch. A number of papers prepared for the regular annual meeting of the Institute will also be presented for reading and discussion at the Nelson meeting.

"I enclose herewith a list of names submitted to the council to constitute the officers of the Western branch for the year. Members are requested to make a cross opposite names of persons whom they desire to be elected; or to substitute in the blank space provided on the ballot slip the names of the persons other than those suggested. Western members now serving on the council of the Canadian Mining Institute will be *ex-officio* members of the Western branch.

"You are urgently requested to be present at this Nelson meeting, and, if possible, to read a paper as well. Members presenting papers at this meeting should send the MSS. to H. Mortimer Lamb, secretary, 413 Dorchester street W., Montreal, at the earliest date to admit of printing.

"The names submitted by the council as nominees for the Western branch, respectively, are as follows:

"For president—A. B. W. Hodges, Grand Forks, B.C.

"For secretary—E. Jacobs, Victoria, B.C.; J. W. Collis, and E. Cave Browne-Cave, both of Vancouver, B.C.

"For council—Paul S. Coudrey and R. Stuart, Rossland, B.C.; J. J. Campbell and Leslie Hill, Nelson, B.C.; E. C. Musgrave, Vancouver; W. M. Brewer, Victoria, B.C.; O. E. S. Whiteside, Blairmore, Alta.; J. C. Haas, Spokane, Washington, U.S.A."

THE CANADIAN CAMP.

DR. ROBERT BELL, chief geologist of the Geological Survey of Canada, was the guest of honour at the semi-annual banquet of the Canadian Camp, held at the Hotel Astor, New York, U.S.A., on November 18. The "camp" is a kind of social club which is rapidly growing in importance, and has already more than 1,000 members. The only qualification for membership is that the applicant must have camped in Canada. The Camp encourages and promotes this pastime, and is thus a means of sending much money into Canada that would otherwise be spent elsewhere. The banquet was noted for the variety of very unusual dishes which were served, among them being kangaroo, tiger, seal, salt horse, and Persian lamb. The tiger was the gift of H.S. Highness Prince Louis of Battenberg, while the other dishes were sent by various distinguished men. The coffee had been cached for a year at the most northern point of land in the world, and was brought back by Commander Peary, who gave a very interesting talk about his adventures in the Far North. Lord Minto had endeavoured to send a choice cut of elephant, but failed from want of proper means of cold storage; however, a cablegram was received from him during the banquet promising to have the elephant for the next dinner of the Camp.

DR. BELL THE GREATEST CAMPER.

Dr. Robert Bell was introduced by Mr. Cy Warman, the toastmaster, as follows:—

We've not only men who write things,
We have also men who do things;
Do things for the joy of doing,
For the very love of doing;
And among these, first among them,
I would write our guest of honour.
If men reap as they sow, and if
"Well done, good and faithful servant,"
Shall be spoken to the faithful
On our future final camp-ground,
Our distinguished guest of honour
Will get his. He'll get the glad hand
Where the great reward awaits him,
Where, says old Chief Hoskatinni,
"Rivers flow with milk and honey,
And tobacco grows like cactus—
By the springs of Happy-water."
That's a redman's sketch of heaven.

For full half a hundred summers,
And for half a hundred winters,
He has lived out in the open,
He has met old Mudgekeewis,
He has faced the fierce Kewayden,
He has tramped the trail unbroken,
Shooting wild and unknown rapids;
Giving names to unnamed rivers;

Slept upon the cold, bleak barrens;
Felt the bitter pangs of hunger.

Now, at last he is rewarded;
Now, lone letters, marks of honour,
Follow his good name, as children
Run behind a Quebec mother,
Most too numerous to mention.

He has sailed the Bay of Hudson,
Nine times through the Straits of Hudson.
And for good and "faithful service,"
Has been honoured by King Edward—
Had even a greater honour—
Honoured by the common people,
By the men who have worked with him,
By the men who worked beside him,
Walked and slept and starved beside him.

And the name of this explorer—
The Dominion's first explorer—
Will go down in song and story,
Stories written by our children,
Songs sung by our children's children.

I shall take no more of his time,
But, with real pride and pleasure,
Introduce our guest of honour,
Introduce the great explorer,
Doctor Bell, our greatest camper,
Doctor Bell.

Dr. Bell, in replying to the first toast, gave a number of entertaining experiences and some useful hints in regard to camping in the various regions of the Dominion. He said he generally moved camp every day, and during his long service to the Government calculated that he had made fully 6,000 different camps. On motion of General Miles, who is a prominent member, Dr. Bell was unanimously elected a member of the Advisory Board by a standing vote.

COMMANDER PEARY "IN THE GAME."

After it had been announced that Dr. William J. Long had written that owing to an injury to his eyes he was in a dark room with them bandaged, and that Mr. Ernest Thompson-Seton was suffering from a cold caught because he slept indoors one night, Commander Peary spoke. Having told of an Arctic hunt after musk oxen, when his party was famished for food, the explorer referred to his own hopes of reaching the North Pole. "I expect to sit in the game next summer," he said. "I have three deep-seated convictions. I believe that I shall win. Every time that I have played I have had a little better hand. I believe that the attaining of the pole is the work for which God Almighty made me, and I believe that the work has the scope to entitle it to the practical support of every man who has red blood in his veins. I believe that the object is worth the effort because of the scientific results, because of the national prestige, and because the North Pole is the actual northern boundary of the future of the United States."

PORTLAND CANAL MINING AND DEVELOPMENT COMPANY, LIMITED.

Mining Engineer's Report on Company's Property.

GENERAL INFORMATION concerning the Portland Canal district, and some particulars of the Portland Canal Mining and Development Company's mineral claims, were published in the *MINING RECORD* for September last. Since then that company's property has been visited and reported on by Mr. W. J. Elmendorf, whose report follows:

Property.—This company owns eight mining claims as follows: Gipsy, Herbert, Extension, Mayflower, Sadie, Mosquito, Barney and Richard II. It has also bonded the Lucky Seven and Little Joe mining claims for the sum of \$25,000 of which \$8,000 has been paid, the balance being due on December 15, 1908.

These claims are contiguous, and well located both as regards the mineral veins within their boundaries and the timber and creeks on their surface. They cover nearly 400 acres of well-wooded hillsides, sufficiently steep for advantageous mining by tunnel but not too precipitous for building sites, good trails and roads.

Water.—Glacier Creek crosses the Sadie claim and, with its tributaries, furnishes abundant water for all necessary mining purposes. This creek with proper improvement, is capable of developing an entirely adequate water power for extensive further operations.

Timber.—Abundant timber for all mining purposes is to be had in the immediate vicinity of the workings.

Railway Charter.—In addition to its mining claims, the company owns a railway charter for what is known as the Portland Canal Railway with building rights along the valley of the Bear River and its tributaries—Glacier, Bitter and American Creeks.

Situation.—The mines of the company are located in the Bear River district, Skeena mining division, about five miles in a northeasterly direction from the town of Stewart at the head of Portland Canal in British Columbia. They are about four miles east of the International Boundary line between Canada and Alaska. Glacier Creek, which flows through the land of the company, is a mountain torrent of considerable volume, fed from the eternal ice amphitheatre at the head of the Bear River valley. This valley is a continuation in a northerly direction of the great earth cleft which, at its lower level, forms Portland Canal. It is open, fertile and, for many miles, of easy grade between mountains.

Trail.—The trail from Stewart to the mines rises 2,450 ft. to the workings on the Little Joe claim, but almost this entire altitude is attained in the last $1\frac{3}{4}$ miles where the trail leaves the valley of the Bear and ascends the mountain side.

Geology.—At the time of my visit to the property there was about 2 ft. of snow on the ground and all

my work was done in very stormy weather, consequently but little of the general surface formation was visible. My impressions concerning it must not therefore be considered final. The country rock is slate or shale similar to that of the Slovan district, also in British Columbia. These sedimentary rocks are penetrated by dykes or bosses of porphyry. Ore bearing fissure veins with quartz gangue extend through the slates and possibly the porphyry, and may in places follow the line of contact between the sedimentary and igneous rocks. My examination, for the same reason, was confined to the Little Joe vein but I am informed that other good showings exist elsewhere on the property.

Little Joe Vein.—This vein is a fissure in slate and has been traced on the surface through the Lucky Seven, Little Joe, Gipsy, Mayflower, Mosquito, and Richard II claims, a distance of more than 6,000 ft. Its strike is approximately north and south and it dips to the west at an angle of 20 deg. to the horizontal. The normal gangue of this vein is quartz and, as is usual in slate veins, much of its filling consists of portions of the country rock re-cemented by the deposition of quartz or ore from the mineralizing solutions. The vein has an average width of about 8 ft. and is strong, apparently free from faultings and well mineralized.

Ores.—The most abundant ores are pyrite, pyrrotite, galena, blende and chalcopyrite carrying gold and silver values. Native silver is present in considerable amounts in those portions of the vein where conditions have been favourable to its deposition. While I do not attach much importance to its presence *per se*, in this particular its occurrence in quantities too large to be negligible may indicate the immediate neighbourhood of bodies of high-grade silver ores. The gold values are most persistent but irregular, and high assays, which have been obtained from quartz samples showing no mineralization, suggest the presence of tellurides.

Development and Assay Values.—Three tunnels have been driven on the vein on Little Joe ground and, in addition, several open cuts and shots on the surface expose its outcrop. The vein is comparatively flat and a steep gulch exposes the outcrop on one of its sides and almost along the dip of the vein. This rather unusual but favourable condition allows successive tunnels to be driven in the hillside on the strike of the vein. Necessity for cross-cutting through barren ground is thus done away with and every foot of work done is advantageous development of the property.

In the development of this mine undue prominence should not be given to the assumption that richer ore will be encountered with depth. There is no good reason for such a supposition and experience points to the fact that these veins rather decrease than increase in the grade of the ore as the lower level is attained. The pay ore is most likely to occur in shoots rather than zones and these shoots are usually richer nearer the surface. Depth is desirable in any

mine as opening *more* ore but it does not follow that it will be *better*.

Tunnel No. 1, the uppermost, was in a distance of 26 ft. at the time of my examination in November, 1907. The first 8 ft. from the portal is partly in the hanging wall and the remaining 18 ft. all in ore. An average sample of ore from this tunnel taken by me from the last 16 ft. of its length assayed: Gold 0.25 and silver 14.2 oz. per ton, and lead 5.2 per cent.; total value, \$18.88 per ton. When the manner of taking this sample is considered, this is a good showing, as the ore can be sorted to \$50 per ton by simply picking.

A roughly selected sample, taken by me from this orebody assayed: Gold 0.25 and silver 26.4 oz. per ton, and lead 23.2 per cent.; total value, \$44.20 per ton.

Tunnel No. 2, 150 ft. below No. 1, is in 126 ft. At a point about 65 ft. from this portal a short cross-cut is run to the east; a second cross-cut extends a distance of 12 ft. in the same direction from a point 100 ft. from the portal. Some good ore shows near the portal and 50 ft. in the main orebody is exposed extending to the second cross-cut, a distance of 35 ft., and showing a width of 12 ft. in this working. From this cross-cut to the face of the tunnel is too far to the west to follow the main orebody, although scattered mineralization shows in the face.

A general sample, taken by me from every 3 ft. of the walls and roof, for a distance of 35 ft., between the two cross-cuts, assayed: Gold 0.21 and silver 6.8 oz. per ton, and lead 3.2 per cent.; total value, \$11.62 per ton.

An average sample from the second cross-cut, of 10 ft. in width of ore, assayed: Gold 0.31 and silver 10.4 oz. per ton, and lead 2.9 per cent.; total value, \$15.54 per ton.

These ores are of the same general character as that in No. 1 tunnel and should easily be sorted to the value of \$50 per ton.

A sample of the ore from the face of No. 2 tunnel assayed: Gold 0.12 and silver 2.0 oz. per ton, and lead 0.4 per cent.; total value, \$4.08 per ton.

Tunnel No. 3, 180 ft. below tunnel No. 2, has a total length of 115 ft. This working leaves the vein about 30 ft. in from the portal and swings to the west along a local slip in the slates which might easily be mistaken for the vein. Veins in slate rarely show a well defined selvage or parting seam of gouge along their walls, and fissures in the wall rocks, more or less extensive, are often followed for short distances under the impression that the work is in vein matter. It seems plain in this case after a rough, compass survey of the tunnel, that the vein has not been followed for more than the distance mentioned. From the face of No. 3 tunnel a cross-cut has been driven 14 ft. in a southeasterly direction. A sample of slightly mineralized quartz from the face of this cross-cut showed practically no value.

Transportation.—There are no serious obstacles in the way of cheap transportation with proper facilities provided. Anticipating the development of orebodies of sufficient size and grade to warrant such construction, a tram from the mine to Bear River valley, a railway or good wagon road from its lower terminal to the head of Portland Canal, and a wharf at this latter point, suggest themselves as the best and most economical means of putting the ore on board ships or barges for delivery to any one of the Coast smelters.

Railway.—As above mentioned, this company owns a railway charter covering the valley of the Bear River and its tributaries. The proposed main line is 25 miles in length and the branch lines 15 miles each. On the tributary creeks are located many promising prospects. The ores in these properties are mainly those of lead and silver with some gold. There are some copper prospects in the district. With the facilities afforded by railway transportation and possibly a concentrating mill to handle such low grade ores as this process is applicable to a mining district of importance may be developed. During the development of these mines the railway should be operated profitably by hauling down logs from the larger timber areas of spruce which line the valleys. These timber limits are said to show 30,000 ft. to the acre, but cannot be utilized at present as the river is not suitable for driving.

Opinion—I have seen the certificates of assay of many samples taken by the management from these three tunnels but they cannot be properly embodied in this report. These results have, however, assisted me in coming to the conclusion that the ore now in sight can be sorted to a grade that will render it profitable.

The very high values shown by some of the samples, as well as the character of the vein and ore, point to the probability of high-grade ore bodies being found by future exploration.

The ores do not suggest that concentration by the ordinary methods would save any large proportion of their values and the mixed sulphides render any cyanide process of doubtful application.

Recommendation.—Tunnel No. 1 should be driven ahead on the vein as the showing on the face is most promising. A good orebody will, in all probability, be opened here by a small amount of work and expense.

Tunnel No. 3 should be continued from a point 30 ft. in from the portal, at an angle to the east about the same as it now swings to the west, and the vein followed. Ore should be encountered almost at once and no difficulty will be found in following the vein once the working properly enters it. This work is of the utmost importance and should be prosecuted diligently. Tunnel No. 2 may also be continued on the vein, but I do not consider the work at this point as important as that in tunnels Nos. 1 and 3.

Assay appliances should be installed at the mine in order that doubtful samples may be properly tested. This will enable ore sorters to do their work to the best advantage.

The outcrop of the vein should be explored with the intention of finding good orebodies at the surface if such exist.

Conclusion.—The stockholders of this company are to be congratulated upon their ownership of what I regard as mining properties of great promise and which have fully justified the work done on them. The present showing warrants the continuation of the development along the lines indicated.

It appears that both the mining and business branches of this enterprise have been conducted cleanly and conservatively and I find much to praise and but little to criticize in the undertaking.

(Signed) W. J. ELMENDORF,
Mining Engineer.

COAL MINING NEWS.

COAL MINING in the West is steadily increasing in importance. The following news notes tell of recent events and progress in connection with this industry:

C. A. Sandiford is in charge of drilling operations for coal in the Nanaimo district being carried on by A. C. Flumerfelt and associates.

It is reported that the differences between the Western Canada Coal Company and its miners have been satisfactorily adjusted.

The *Inland Sentinel*, Kamloops, says: The coal mine property at the Colbrooke ranch is to be opened up again at once, and a further effort made to develop a workable seam.

A press despatch from Fernie, Crow's Nest Pass, dated November 12, stated that "the coke-oven wharves are still piled high with coke owing to the failure of the railway company to supply cars."

The *Frank Paper* is authority for the following: "A. Price, general superintendent of the Canadian Pacific railway at Calgary, has assured the coal mining companies that the mines of the Blairmore-Frank district will be taken care of above everything else."

From the *Fernie Free Press* it is learned that "C. J. Digby has a contract for constructing a quarter-mile trestle to connect the Pacific Coal Company's incline at Hosmer with the tippie. This structure will take 500,000 ft. of timber.

Geo. E. Winkler and A. E. Thomas have secured licenses to prospect for coal on Power Creek, Okanagan. A syndicate has been organized, a diamond drill arranged for and money subscribed to pay for the prospecting work.

The right to mine coal on lands which are part of the A. J. Richardson estate, situated, near Nanaimo, Vancouver Island, in connection with which Mr. Justice Martin had directed that tenders be invited by advertisement, has been awarded to H. S.

Griffith who offered to pay a royalty of 26 cents per ton, with a minimum total payment per annum of \$2,000.

COAL MINING AT BANKHEAD, ALBERTA.

In his last annual report the Dominion superintendent of the Rocky Mountains Park, says of the Canadian Pacific Railway Company's coal mines near Banff, Alberta:

The mines of the Pacific Coal Company, Limited, at Bankhead in the Rocky Mountains Park have been in steady operation since last year's report, with the exception of about two weeks, during which time the employees stopped working, pending an agreement between the coal companies of Alberta and British Columbia and their employees. The tonnage produced is now more than twice that taken out at this time last year.

The briquetting plant, which was in course of construction at the time of last year's report, has been working continuously since March 1, and is producing 250 tons of briquettes every 24 hours. The demand for briquettes has been far in excess of the company's most sanguine expectations, so that the plant was put on two twelve-hour shifts on May 22, and has been running 24 hours per day since that time. The briquettes have been found to be a very desirable fuel for household use, as well as having given satisfactory results in passenger locomotives, and they are being used on the Pacific division of the Canadian Pacific Railway for the purpose. The machinery is now in order for an additional unit, after the installation of which the daily production of briquettes will be 500 tons.

Two additional boilers of 150 h.p. capacity each have been installed during the past year, and another one is now in order, which makes the capacity of the boiler plant 1,350 h.p.

PROGRESS AT NICOLA.

The Nicola Valley Coal and Coke Company is now shipping from its 'Middleboro' collieries, Nicola Valley, between 150 and 200 tons of coal per day. It is expected that before the close of the year No. 1 mine in the Jewel seam will be producing and that thereafter the company's output will be nearly doubled. Most of the coal as yet mined has been taken by the Canadian Pacific Railway Company for use in its locomotives.

Satisfactory progress has been made in sinking a second shaft on the property of the Diamond Vale Coal and Iron Mines Company. Bed-rock has been reached and there are indications that the shaft is in the vicinity of a workable seam of good coal, diamond-drilling operations having previously proved the occurrence here of bituminous coal of excellent quality.

The Nicola Coal Mines, Limited, working on Lindley Creek, reports that it has a 5-ft. seam of good coal and that the tunnel it is driving will cut this seam. Work is being continued through the winter, a contract for the further extension of the tunnel having recently been let.

COMPANY MEETINGS AND REPORTS.

HASTINGS (BRITISH COLUMBIA) EXPLORATION
SYNDICATE, LIMITED.

The tenth ordinary general meeting of the shareholders of the Hastings (British Columbia) Exploration Syndicate, Limited, was held in London, England, on October 22, ulto. The directors' report and balance sheet for the last financial year were submitted, as follows:

DIRECTORS' REPORT.

The directors beg to submit the ninth annual statement of accounts and balance sheet for the year ended March 31, 1907.

The issued capital of the company remains at 60,375 shares of £1 each fully paid up, amounting to £60,375.

The financial position of the company exhibits—Cash at bankers, London, and in British Columbia £1,683 14s. The administration expenses for the year at head office and Nelson amounted to £2,448 1s. 1d., which has been the normal expenditure for several years past, and includes ore tax and fire and accident insurance.

The cost of development work at the Arlington mine shows an increase of £556 13s. 9d. as compared with last year, but £258 11s. 10d. was incurred in connection with the acquisition of a lease of the Canadian King claim adjoining the Arlington mine.

The net result of the ore shipped to the smelter (that is, after deducting freight and treatment) was £9,574 9s. 1d., which compares with £10,070 5s. 8d. realized for the year 1906, and £10,099 16s. 10d. for the same period of 1905. There has been a marked decline in the grade of the ore and the cost of winning the gold has considerably increased.

The directors continue the procedure adopted by them on previous occasions (of which the shareholders have expressed their appreciation) by appending copious extracts from the annual report dated August 2 last, furnished to them by Mr. Leslie Hill, the company's local manager and consulting engineer in British Columbia, who continues zealously to perform his duties in the interests of the shareholders:

"Arlington Mine—The development work done comprised 998 ft. of drifts, 249 ft. of cross-cuts, 50 ft. of winzes, 132 ft. of raises and 85 ft. of old drift reopened, making a total of 1,514 ft. during the year.

"The total cost for labour on this work was \$11,284.53, making an average cost of \$7.45 per ft. The ground has been much harder, and the cost per foot is \$1.47 more than that of last year.

"From the mine were taken 1,533 mine-cars of ore and 9,538 mine-cars of waste. A large amount of waste was used in filling in the stopes, as several of the old stopes were cleaned up of ore and filled with waste. I should estimate that there were fully 10 tons of waste broken down to every ton of ore shipped.

"There were 32 earloads of ore, or 712.944 tons, hauled by wagon, and 29 earloads, or 695.986 tons by sleigh, making a total of 1,408.98 tons shipped during the year.

"The gross value of the ore shipped was \$64,837.93, equal to \$46.02 per ton, and the net smelter value, including lead bounty (\$53.32), was \$52,076.24, equal to \$36.96 per ton.

"The cost of mining and shipping was \$40,224.83, leaving a gross profit of \$11,851.41. The cost per ton of ore shipped was \$28.55, which would equal a cost of \$2.60 per ton mined.

"The cost of mining, sorting, and shipping was distributed as follows:—

	Total Costs.	Average per Ton.
Development (labour)	\$11,284.53	\$ 8.01
Stoping	11,868.23	8.43
Sorting and tramming	5,013.47	3.57
Timbering	428.75	0.31

Mine surface and general expense (including assaying and surveying)	2,501.56	1.72
Supplies	3,787.65	2.70
Hauling to Erie and loading on cars....	3,689.24	2.63
Insurance	524.03	0.38
Ore tax	853.42	0.61
Boarding house working (supplies on hand)	142.31	0.10
Miscellaneous expenses	131.64	0.09
Total cost of mining and shipping.....	\$40,224.83	\$28.55

"The cost of development per ton of ore shipped was higher and the cost of stoping lower than last year. The total cost for mining, sorting, and shipping was \$2.71 per ton lower than last year, but the net value per ton was \$5.85 less, making the gross profit \$3.14 per ton less than last year.

"The Dominion Government bounty on lead depends upon the London price of lead, and is not paid at the present price. As the smelter does not pay for the lead in this ore (it being below 5 per cent.), the bounty not now being paid has made a difference of 27 cents per ton of ore shipped.

"Development.—The No. 7 (779 ft.) north level has been driven through the Canadian King ground and continued in your ground. Very little ore was found in the Canadian King ground. I followed up the best showing, for a few feet, but it did not lead to any ore body. The principal development has been done in a northerly direction on the Nos. 8, 9, and 10 levels. The vein made another roll, which necessitated an intermediate level, called No. 9, and the ore stoped during the year was taken principally from the Nos. 8 and 9 levels. There are two pieces of ground on these levels to be stoped this summer, and a little ore above the No. 8 level to be cleaned up. There is at present no ore in the north faces of the Nos. 8 and 9 levels. There has been an improvement during the last few days in the No. 7 north drift and indications that ore will be found again in this direction.

"I have been endeavouring to locate the vein near the old Micawber workings, but without success up to the present. We drove one level, just above the old workings, 196 ft., and raised 15 ft., not finding the vein. We have started a second adit above the first one, where there was a showing of mineral. This ore looked very good, but assays showed it to be of very low grade, and the vein dipped in the wrong direction and went under the level. In this drift we have encountered a nearly perpendicular dyke of hard porphyry, similar and parallel to the dyke which cut off the Head Arlington ground to the east. We appear now to be getting through this dyke, and there is some quartz in the face of the drift. I am anxious to locate the vein in this direction, in order to decide which will be the most economical way to develop the mine at a lower depth.

"The wages of all classes of labour have increased during the year, and on June 1, I raised the wages of all men employed at the mine 25 cents per day. At the same time the prices of all supplies have been raised, which makes it very difficult to operate at a profit.

"East Kootenay Claims.—No work has been done on these claims during the year, and it does not appear that the developments exposed by the North Star Mining Company have increased the value of your properties, but prospecting in the neighbourhood is still being carried on."

Blairmore Coal Lands.

The third instalment on these properties, with interest to date, was paid to the Dominion Government of Canada on June 1 last, but the amount having to be remitted beforehand to Ottawa, the items appear in the present balance sheet. The final payment to the Government will be due on June 1, 1908.

A negotiation for sale of this company's interest in these coal lands was lately in progress, but your directors regret to state that the matter did not proceed, and accordingly a deposit and instalment, amounting together to \$3,300, became forfeited to this company.

BALANCE SHEET AS AT MAY 31, 1907.

Capital and Liabilities—

Capital Account—	£	s.	d.	£	s.	d.
Nominal	£100,000	0	0			
(100,000 shares of £1 each)						
Issued—60,375 shares of £1 each, fully called up.....				60,375	0	0
Blairmore Coal Lands—Amount of deposit received on option to purchase, and since forfeited				220	0	0
Sundry Creditors in British Columbia				554	7	11
				<u>£61,149</u>	<u>7</u>	<u>11</u>

Assets and Expenditure.—

Purchase Account				3,500	0	0
Property Account—						
Mining claims at East and West Kootenay, as per last balance sheet	10,481	6	3			
Canadian King—Purchase of lease	62	3	0	<u>10,543</u>	<u>9</u>	<u>3</u>
Blairmore Coal Lands (expenditure in respect of interest in), as per last balance sheet.	5,103	6	2			
Expended since	1,426	19	8	<u>6,530</u>	<u>5</u>	<u>10</u>
Plant, Machinery, Buildings, Live and Dead Stock (as per last balance sheet	9,623	2	5			
Expended since	107	4	4	<u>9,730</u>	<u>6</u>	<u>9</u>
Canadian Publishing Company, 10 shares of £2 each fully paid				20	0	0
Cash at Bank, London (Current Account)	234	12	8			
" " British Columbia (Deposit Account)	£1,447	16	0			
Less Current Account	2	9	8	<u>1,445</u>	<u>6</u>	<u>4</u>
Cash in hand, London				3	15	0
				<u>1,683</u>	<u>14</u>	<u>0</u>
Expenditure—						
Balance brought forward from last balance sheet, May 31, 1906	23,100	4	11			
Expenditure (London) from June 1, 1906, to May 31, 1907, and (British Columbia) from May 1, 1906, to May 31, 1907:—						
London Office expenses	350	0	0			
Audit fee, 1906 (London)	36	15	0			
Petty cash, stationery, cablegrams, and miscellaneous expenses (London)	58	7	8			
Income Tax	59	10	0			
Insurance, accident and fire (British Columbia)	104	16	1			
Government ore tax (British Columbia)	170	13	8			
Salaries in British Columbia and Nelson Office expenses	1,591	15	9			
General expenses (British Columbia)	76	2	11			
Development Expenses—						
Arlington group	7,020	19	8			
Fort Steele claims	15	16	0			
Sunlight	1	7	0			
Canadian King	258	11	10	<u>32,845</u>	<u>0</u>	<u>0</u>
Deduct—Interest and exchange	£166	6	10			
Transfer fees	2	6	0	<u>166</u>	<u>9</u>	<u>4</u>
				<u>32,678</u>	<u>11</u>	<u>2</u>
Less Bullion account, proceeds of ore shipped to smelters.....	£10,404	11	7			
Deduct Expenses	840	15	9			
	<u>£9,563</u>	<u>15</u>	<u>10</u>			
Lead bounty	10	13	3	<u>9,574</u>	<u>9</u>	<u>1</u>
					<u>23,104</u>	<u>2</u>
Dividend of 1s. per share on 60,375 shares (March, 1902).....				3,018	15	0
Dividend of 1s. per share on 60,375 shares (March, 1905).....				3,018	15	0
				<u>6,037</u>	<u>10</u>	<u>0</u>
				<u>£61,149</u>	<u>7</u>	<u>11</u>

The chairman, Mr. James Head, in moving the adoption of the report and accounts, said:—

"The report and accounts for the past year are not such as call for much comment by me. You will notice that, in common with other employers of labour in Western America, we have been obliged to increase the rate of wages to our miners, which has naturally resulted in an increased cost of winning our ore. This has been accompanied by a decline in the value of the ore sent to the smelter from \$42.81 per ton last year to \$36.96 during the period under review, or a falling off of our revenue of about £500—not a very serious matter, though one for regret. The difficulty, as I have often before explained, is not in the quality of the ore—which even at \$36.96 is abnormally rich—but to keep a grasp on the ore shoots, which are not only narrow, but elusive, and in order to follow them we are often put to much expense in doing dead work.

"The item appearing in the accounts as 'Amount of Deposit received on option to purchase our coal lands' refers to a negotiation which fell through, owing to the inability of the would-be purchaser to find the necessary funds within the stipulated time. In the present condition of the money market this is not to be wondered at, and shareholders need not feel alarmed that the failure to complete was due to an unsatisfactory condition of the coal fields. As a matter of fact, no examination ever took place, and your property has in no way suffered depreciation."

The report and accounts were adopted without discussion; the retiring director, Sir Edward Birkbeck, Bart., was re-elected; the auditors were re-appointed, and the meeting closed with the customary vote of thanks to the chairman.

CASCADE WATER POWER AND LIGHT COMPANY, LIMITED.

On November 7 the *Nelson Canadian* published the following:

"The consummation of a deal of more than passing importance was effected last evening when the shareholders of the Cascade Water Power and Light Company, Limited, met and authorized the issuance of a series of seven hundred and fifty \$500 gold bonds, bearing four and a half per cent. interest, aggregating \$375,000 guaranteed by the West Kootenay Power and Light Company, Limited, for delivery to the Cascade (1904) Power Company, Limited, in payment for the assets and undertaking of the Cascade Company.

"This gives the West Kootenay Company complete control of the power business in Yale and Kootenay districts, and is the outcome of the bitterly contested fight between these rival companies a year ago before the provincial legislature.

"The necessary documents affecting the transaction were authorized at the meeting held yesterday, which occupied several hours.

"S. S. Fowler, M.E., president, John Fraser, secretary, and LeBaron deVeber, as directors, will retire shortly and be replaced by the nominees of the West Kootenay Company.

"The English companies and trustees concerned were represented throughout by Mr. R. S. Lennie, of the firm of Lennie & Wragge, and the West Kootenay Company by A. H. McNeill, K.C., of Rossland.

NORTH STAR MINING COMPANY, LTD.

The directors report that during the summer diamond drilling was carried on over a small extent of the company's property, until operations were stopped by weather conditions. Some of this work was encouraging, but no new large bodies of ore were discovered.

The mining operations during the last six months have been fairly satisfactory. Additional small bodies of ore have been found in the old workings, from which ore has been shipped at the rate of about 300 tons per month. The value of this ore has averaged about \$14 per ton, after deducting freight and treatment charges, but not mining expenses. The company's manager reports that there is at present in sight about 1,500 tons, which will enable the company to continue shipping at the same rate during the winter months.

COMPANY CABLES AND NOTES.

CABLES.

British Columbia—

Le Roi—October: Shipped from the mine to Northport during the month 8,675 tons, containing 2,667 oz. gold, 4,250 oz. silver and 208,000 lb. copper. Expenditure on development work, \$11,500.

Le Roi No. 2—October: Josie mine report—Shipped 2,310 tons. The net receipts are \$31,670, being payment for 1,955 tons ore, and \$610 for 40 tons concentrates shipped, in all, \$32,280.

Le Roi No. 2—October: Vancouver mine report—Crushed 1,444 tons, yielding 90 tons lead concentrates and 154 tons zinc concentrates. Shipped 60 tons lead concentrates. The net receipts are \$5,662, being payment for 59 tons lead concentrates.

Snotshoe—October: Lessees shipped 25,000 tons. The preliminary royalties on this ore amount to \$4,750.

Tyce—October: Smelter ran 22 days, treating 502 tons of Tyce ore, value (after deducting refining charges) \$6,535, and 4,655 tons of custom ore, making a total of 5,157 tons, and producing 510 tons of matte.

U. S. A.

Alaska Mexican—October: 120-stamp mill ran 29½ days, crushed 19,920 tons ore; estimated realizable value of bullion, \$32,263. Saved 305 tons sulphurets; estimated realizable value, \$19,111. Working expenses, \$23,812.

Alaska Treadwell—October: 240-stamp mill ran 25¼ days, 300-stamp mill ran 27½ days, crushed 77,637 tons; estimated realizable value of bullion, \$68,209. Saved 1,400 tons sulphurets; estimated realizable value, \$56,532. Working expenses, \$81,244.

Alaska United—October: Ready Bullion Claim—120-stamp mill ran 29 days, crushed 19,540 tons ore; estimated realizable value of bullion, \$21,207. Saved 330 tons sulphurets; estimated realizable value, \$10,503. Working expenses, \$22,797.

DIVIDENDS.

The Directors of the North Star Mining Company, Limited, operating the North Star mine at Kimberley, East Kootenay, have declared a dividend at the rate of two cents per share, payable on December 20 to all shareholders of record at noon of December 10. The dividend list of the *Engineering and Mining Journal* shows that 1,300,000 shares have been issued and that the last dividend was at the rate of \$1 per share, paid in December, 1904.

The customary quarterly dividend of the Granby Consolidated Mining, Smelting and Power Company, Limited, will, it is understood, not be paid in December, owing to a suspension of operations at its mines and smelter.

The Consolidated Mining and Smelting Company of Canada, Limited, paid its quarterly dividend (No. 7) early in November, but this time the amount was at the rate of five per cent. per annum instead of ten per cent. as paid on previous distributions of profits. If none of the stock held in the treasury at the close of the last financial year has since been issued the total of the last-declared dividend is \$60,422.50. The widely-circulated statement that a total of \$133,880 had been paid in November is erroneous. In fact on no occasion has so large a sum been paid to the shareholders. It has been announced that the reduction of the dividend from the usual rate of 10 per cent. per annum has been thought desirable in view of large expenditures during the year on capital account for permanent improvements to the various properties of the company and to the fall in the prices of metals during the past few months.

The Canadian Gold Fields Syndicate, Limited, recently paid its fourteenth dividend. The amount is reported to have been seven-eighths of one per cent. on the capital stock of the company, which is \$600,000 divided into 6,000,000 shares of ten cents each. At this rate the total of this distribution would be \$5,250. The syndicate owns 4,260 shares in the Consolidated Mining and Smelting Company of Canada, and derives its revenue from dividends paid by that company.

TRADE NOTES AND CATALOGUES.

The Canadian Rand Company, Limited, of Montreal, Quebec, has published an illustrated booklet on "Pumping by Compressed Air," in which are briefly outlined three systems, viz., (1) The Air Lift Pump, (2) Return Air Pumping System, and (3) The Pneumatic Displacement Pump.

The Canadian Westinghouse Company, Limited, of Hamilton, Ontario, has issued three more of its interesting illustrated circulars, viz., No. 1096, Westinghouse Oil Switches and Circuit-Breakers; No. 1130, the Westinghouse Electrostatic Voltmeter, and No. 1146, Westinghouse Electrolytic Lighting Arrester Type E.

Mussens Limited, of Montreal, Quebec, have in stock for immediate sale some Impact Screens and Fittings. These screens are used for the efficient sizing of ores, wet or dry, in their treatment by concentration and cyanidation.

From Peacock Brothers, engineers, of Montreal, Quebec, has been received a 338-page catalogue of patent safety boiler mountings, patent valves and high-class steam specialties, manufactured by J. Hopkinson & Co., Ltd., of Huddersfield, England, for which company Peacock Brothers are sole Canadian agents. This catalogue (No. 660) contains a large amount of information concerning the manufactures above mentioned and, being freely illustrated as well, is of particular interest to users of steam boilers and other appliances. Anyone desiring a copy can obtain it by applying to Peacock Brothers.

The Westinghouse Electric and Manufacturing Company of Pittsburg, Pa., has sent out two circulars—No. 1089, Westinghouse Co. 101-B2 Railway Motor, Direct Current, and No. 1122, Standard Three-Point Railway Diverter. Both are illustrated and give descriptions of the apparatus mentioned. The same company has had reprinted from the *Engineering Magazine* of New York (as a bulletin) an illustrated descriptive article on "Electric Machinery for the Operation of Mexican Mines," by Charles V. Allen.

A lot of electrical machinery has recently been received by the Western Fuel Company, Nanaimo, from the Canadian General Electric Company, Limited, Toronto, Ontario.

BOOKS REVIEWED.

A Manual of Fire Assaying. By Charles H. Fulton, president of the South Dakota School of Mines. Pp. 164, 6x9 in., fully illustrated; cloth, \$2 postpaid. New York, 1907; Hill Publishing Company.

In his preface to this book the author (who has had experience with practically all of the methods of assay discussed in it, first as a manipulator, then as a teacher, and finally in charge of works), intimates that he has long recognized the need of a work on fire assaying that would treat the subject from a scientific and rational point of view rather than from that of the "rule of thumb," which later, he states, strangely enough governs most modern works on the subject.

The book is intended for the use of students in technical schools and for the assayer in actual daily practice who frequently feels the need of a reference book. It is closely confined to the subject of fire assaying, which it treats in detail. There are in all 14 chapters, commencing with assay furnaces and tools, then dealing with definitions, reagents, sampling, weighing, reduction and oxidation reactions, and proceeding to the crucible assay and assay of slags, then to cupellation and parting, respectively, and afterwards to the assay of various ores, metals, etc. Special methods of assay are treated in a separate chapter. Some of the chapters outline scientifically the principles of assaying, in particular those on "Reduction and Oxidation Reactions," "Crucible Assay and Assay Slags," and "Cupellation." A large part of these chapters is new and parts of their contents are presented for the first time. The chapter on the "Errors in the Assay for Gold and Silver" outlines and discusses the accuracy of the assay in greater detail, it is claimed, than has been attempted before.

The amount of exact and scientific information put into

this book has led many assayers and professors to give it instant recognition as promising to become a standard authority.

Hydraulic and Placer Mining. By Eugene B. Wilson. 12 mo, pp. 344. Profusely illustrated with figures in the text and full-page plates. Cloth, \$2.50. New York, U.S.A., 1907. John Wiley & Sons; London, England, Chapman & Hall, Limited.

This is a second edition of Mr. Wilson's book. The author says: "The demand for the first edition of this work, and the great activity developed in placer mining, due in a large measure to the great returns from this species of work, as well as the very substantial profit accruing to the exploitation of the placers, has led the author to present this second edition.

"There have also been many new methods for catching the free gold, as well as great improvements in the machinery for handling the material, and in the application of new machinery to placers where unusual difficulties were encountered in working them.

"All these considerations have led the author to issue the new edition, which in his opinion, brings this work abreast of the latest improvements in this industry."

While this book possesses much merit in many respects, particularly in regard to the general information it gives, it is unfortunately unreliable so far as it deals with the "Mining Regulations for the Canadian Yukon." It quotes those "approved by Order in Council dated Ottawa, January 18, 1898." It is much to be regretted that the important changes since made have been overlooked. Just to give one instance of unreliability—Regulation No. 30 is quoted, commencing with the following sentence: "A royalty of 10 per cent. on the gold mined shall be levied and collected on the gross output of each claim." A Dominion Government advertisement now running in Yukon newspapers says: "Royalty at the rate of two and one-half per cent. on the value of all gold shipped from the Yukon Territory shall be paid to the Comptroller." Further, the information relating to British Columbia, which Province up to the end of 1906 had produced placer gold aggregating in value \$68,000,000 is very meagre, and this together with the mis-information above mentioned suggests that the author of this book is not well informed concerning *hydraulic and placer mining in Canada.* However, apart from these defects the book should prove useful to many engaged in hydraulicking and other methods of placer mining.

Hydrometallurgy of Silver. By Ottokar Hofmann. Pp. 336, 6½x9½ in.; cloth, \$4 postpaid. Hill Publishing Co., 505 Pearl street, New York.

This book comes as a most valuable addition to the existing literature on the extraction of silver by lixiviation, particularly as it deals so very thoroughly with that most crucial part of the process, chloridizing roasting, nearly one-half of the volume being devoted to that subject.

The handling of complex mixtures and calcareous gangues is treated at length and the chapter on the chloridizing of argentiferous zinc-lead ores is particularly interesting and instructive.

The subject of lixiviation by means of various solvents is gone into minutely, while an interesting feature of the publication is a chapter on the cyanidation of silver ores—a subject today little understood, but nevertheless attracting much attention.

R. G. Drinnan of Fernie, has resigned as general superintendent for the Crow's Nest Pass Coal Company, Ltd., to take a similar position with the Pacific Coal Company which is opening a coal mine near Hosmer, also in the Crow's Nest Pass. On the eve of his leaving Fernie Mr. Drinnan, who had been with the Crow's Nest Pass Coal Company since April, 1901, was presented by the company's coal miners and office staff with a valuable silver service, an expensive fur coat and a purse of gold, in token of the esteem in which he is generally held. He was also given a valedictory dinner by the citizens of Fernie.

CONSTRUCTION NOTES.

The Hewitt Mining Company has nearly completed the construction of a Crawford aerial tramway between the portal of the tunnel at the No. 6 level of the Hewitt mine, near Silverton, Slocan, and the Wakefield Concentrating mill on Four Mile Creek, a distance of 5,600 ft. The difference in elevation between terminals is about 2,000 ft. It is stated that an air compressor has been ordered for this mine.

The Slough Creek, Limited, which is operating a deep-drafting gold mine on Slough Creek, in the Cariboo district, has adopted the recommendation of its local manager, H. H. Watters, to substitute hydro-electric power for steam as power for its big pumps and other machinery. The preliminary work of getting out logs for a dam to be built across Slough Creek will be commenced shortly.

The Vancouver Power Company is completing the installation of a 10,000-h.p. unit at its power station a few miles from the city of Vancouver. This is in addition to four 3,000-h.p. units put in several years ago. Two more 10,000-h.p. units are to be installed, this work to be commenced early in 1908. The company supplies electric power for the operation of street railways in Vancouver and New Westminster and suburban lines, power for various industrial works, and light to the two cities named and the surrounding districts.

An Elmore vacuum oil plant is to be installed at the Giant mine zinc-lead mine in the Golden mining division. The machinery for it has been received and is being put in place under the direction of H. H. Claudet of Rossland, the Elmore Company's representative in British Columbia.

THE H. S. SUPPLY CO.

THE MACHINERY DEPOT OF THE WEST

BOILERS

- 1—250-h.p. Babcock & Wilcox water tube.
- 1—125-h.p. 84x12 internally fired.
- 2—100-h.p. 66x16 horizontal tubular.
- 3—50-h.p. 60x16 horizontal tubular.
- 2—70-h.p. 54x16 horizontal tubular.
- 1—60-h.p. Helme.
- 1—60-h.p. horizontal tubular.
- 2—50-h.p. 48x16 horizontal tubular.
- 1—50-h.p. 48x12 horizontal tubular.
- 1—50-h.p. 48x10 vertical.
- 1—46-h.p. 48x7 vertical.
- 1—30-h.p. Scotch marine type.
- 1—25-h.p. 42x10 and 1—20-h.p. 36x10 horizontal tubular.

COMPRESSORS

- 18x30x26x16x24 Laidlaw Dunn Gordon cross compound.
- 16x18x11x22 Leyner two-stage tandem.
- 10½x12x7x14 Leyner two-stage tandem.
- 11x16x9½x16 Norwalk.
- 6½x8 Leyner upright belted.
- 12x18½x12½x12 Ingersoll-Sargeant.
- 8x8x5x10 Norwalk.

ENGINES

- 34½x42x48 Harris cross compound.
- 34x42x48 Hamilton cross compound.
- 18x34x48 Allis Corliss compound.
- 18x42 Fraser & Chalmers Corliss.
- 18x36 Allis Chalmers Corliss.
- 13x12 Ball automatic.
- 9½x10 Arlington Sims automatic.
- 14x20 Atlas slide valve.
- 7x9x12 American cross compound.
- 14x20 Atlas automatic.
- 10x12 Taylor automatic.
- 12x16 Brownell slide valve.
- 8x10 Nagle slide valve.

HOISTS.

- 4x6 Bolthoff double cylinder.
- 5x6 and 2. 6x8 Kennedy & Pierce double cylinder.
- 5x6 Hendy & Meyer double cylinder.
- 10x12 Hendrie & Bolthoff double cylinder.
- 10x12 Murray friction clutch, double cylinder.
- 10x12 and 12x16 Vulcan geared double cylinder.
- 14x16 Hendrie & Bolthoff geared, double cylinder.

CONCENTRATING TABLES

- 2—No. 5 Willley tables.
- 2—Card tables.
- 20—6-ft. Frue vanners.
- 1—4-ft. Frue vanner.

THE S. E. SUPPLY COMPANY,

"The Machinery Depot of the West."
2044 Larimer St., DENVER, COLO., U.S.A.

COAL MINES REGULATION ACT

BOARDS OF EXAMINERS.

NOTICE is hereby given that the following constitute the Boards of Examiners for the various Collieries during the year 1908:—

CUMBERLAND COLLIERY.

Appointed by the Owners—Charles Matthews.
Alternates—David Walker,
David Nellist.

Appointed by the Lieut.-Governor in Council—John Kesley.

Elected by the Miners—Joseph W. Horbury.
Alternates—Alexander McNeil,
Thomas Leeman.

All persons interested may obtain full information by applying to the Secretary of the Board, Mr. John Kesley, of Cumberland, B.C.

EXTENSION COLLIERY.

Appointed by the Owners—Alexander Bryden.
Alternates—Alexander Shaw,
William Jones.

Appointed by the Lieut.-Governor in Council—W. G. Simpson.

Elected by the Miners—James Glen.
Alternates—Thomas Doherty,
William Anderson.

All persons interested may obtain full information by applying to the Secretary of the Board, Mr. W. G. Simpson, Ladysmith, B.C.

NANAIMO COLLIERY.

Appointed by the Owners—George Wilkinson.
Alternates—Charles Graham,
John Newton.

Appointed by the Lieut.-Governor in Council—Thomas Budge.

Elected by the Miners—John Carr.
Alternates—George Moore,
Daniel Livingston.

All persons interested may obtain full information by applying to the Secretary of the Board, Mr. Thomas Budge, Nanaimo, B.C.

MICHEL COLLIERY.

Appointed by the Owners—John Bastian.
Alternate—Joseph Thomas.

Appointed by Lieut.-Governor in Council—Robert Middleton.

Elected by the Miners—Thomas George Harries.
Alternates—Frank Campbell,
Charles Fuchs.

All persons interested may obtain full information by applying to the Secretary of the Board, Mr. Robert Middleton, Michel, B.C.

COAL CREEK COLLIERY.

Appointed by the Owners—David Martin.
Alternates—John Hunt,
Harry Miard.

Appointed by Lieut.-Governor in Council—John McCliment.

Elected by the Miners—Robert Adamson.
Alternates—Joseph Lane,
Abraham Brown.

All persons interested may obtain full information by applying to the Secretary of the Board, Mr. John McCliment, Coal Creek, B.C.

NOTE.—Alternates act as Members of the Board in the absence of those regularly appointed or elected to act thereon.
Dated this 23 day of December, 1907.

RICHARD McBRIDE,
Minister of Mines.

MINING MEN AND AFFAIRS.

John B. Hobson is now at his home in Victoria.

S. F. Parrish, now of Los Angeles, California, has been examining mining properties in Arizona, U.S.A.

James Derbyshire is now superintendent of the Crow's Nest Pass Coal Company's Michel colliery.

T. J. Corwin has been experimenting with black sand obtained from gold-bearing streams in the Cariboo district.

W. M. Brewer has returned from a visit to Tonopah, Nevada, U.S.A.

Capt. Joseph Argall, of the Iron Mask mine, Kamloops, was a visitor to the coast early in November.

W. J. Watson, manager of the Tyee Copper Company's smelter at Ladysmith, was in Victoria lately to meet some Alaska mine owners.

Thos. R. Stockett, general manager of the Western Fuel Company, of Nanaimo, has returned from a visit to California.

Ed. Bridge, of Michel, has been appointed to superintend the work the Crow's Nest Pass Coal Company is having done at Carbonado, on Morrissey Creek.

C. E. Oliver, who a short time ago went up to Tete Jaune Cache to see mica claims, left Kamloops for Spokane on November 30.

Eugene Miltenberger has arrived at Nelson to superintend the operation of the works the Canada Zinc Company to be erected there.

P. Davidson Ahier, who had charge of recent operations at the Cariboo-McKinney gold-quartz mine, Camp McKinney, has been visiting the Slovan.

R. Roberts, manager of the Jewel mine, a gold-quartz property situated in Long Lake camp, Boundary district, has been spending a few days at Victoria.

R. D. Featherstonhaugh, who has been in charge of different hydraulic gold mining enterprises at Atlin during several years, lately spent a few days at Whitehorse.

W. T. Copeland, manager of the Cariboo Gold Mining Company (a Guggenheim incorporation), recently arrived on the coast from Bullion, Cariboo.

Joseph Wendle, well known in the Cariboo district, has gone to the southern States to spend the winter with relatives there.

James McGregor, inspector of metalliferous mines for the West Kootenay and Boundary districts, paid an official visit to the Similkameen in November.

Geo. H. Barnhart of Nelson, formerly manager of the Ymir mine, in the Nelson mining division, is on a visit to Colorado, U.S.A.

J. M. Ruffner, general manager of the Pine Creek Power Company and the North Columbia Gold Mining Company, is down from Atlin. He will probably spend the winter months in the United States.

Blanchard M. Snyder, superintendent of the British Columbia Copper Company's smelting works at Greenwood, Boundary district, has gone to California for the winter.

F. H. Sherman has been re-elected by acclamation district president of the United Mine Workers of America for District 18, comprising southeastern British Columbia and southwestern Alberta.

A. Carmichael, manager of the Otter Creek Company's hydraulic gold mining operations in Atlin camp, came down from the North early in November and spent several days with relatives in Victoria.

Robert Smart, Dominion Government assayer at Whitehorse, southern Yukon, has been notified of his election as a member of the American Institute of Mining Engineers.

Charles Simister has been appointed general superintendent of the Crow's Nest Pass Coal Company's collieries in British Columbia. He had been mine manager for the company, first at Carbonado and latterly at Michel.

H. Harris, formerly superintendent of the Hall Mining and Smelting Company's smelter at Nelson, B.C., is making a trip to Australia, leaving Vancouver by the S.S. "Aorangi" early in December.

Barclay Bonthron, of Vancouver, about the middle of November paid another visit to the Nicola Valley district, accompanied by several prospective investors in local mining property.

C. H. Parks, of Boston, Massachusetts, U.S.A., has been interesting himself in mineral claims on Moresby Island, Queen Charlotte group, where he spent several recent months.

Herbert Carmichael, provincial assayer, has resumed his ordinary duties in Victoria after having spent the greater part of the summer and autumn in the Alberni district obtaining information for a report thereon.

John Hopp reached Victoria from Barkerville on November 8 after having been engaged for several months in hydraulic gold mining on several Cariboo properties he holds.

A. C. Garde, formerly manager of the Payne Mining Company, Slovan, has been appointed manager of the La Plata mine, near Nelson, in succession to Capt. T. H. Trethewey, resigned.

Capt. Harry Johns, superintendent of the British Columbia Copper Company's Napoleon mine, near Marcus, Washington, U.S.A., was in Los Angeles, California, recently.

E. M. Sandilands, for years resident at Sandon, Slovan, from which place he removed some months ago, has been appointed stipendiary magistrate and deputy mining recorder at Jedway, Moresby Island, Queen Charlotte group.

G. A. Singer has returned to Livingstone Creek, southern Yukon, where, according to the *Whitehorse Star*, he will engage in winter mining on a rather extensive scale, on a hydraulic gold mining property on that creek.

R. W. Brock has been appointed acting director of the geological branch of the Dominion Department of Mines. The director, Dr. A. P. Low, who is also deputy minister of mines, continues too ill to perform his official duties, so he has been granted further sick leave.

Bertram Mellon, formerly of Cariboo, where he was manager for the Slough Creek, Limited, has returned to England after having visited Australia and New Zealand. He will probably stay in the old country for a short time before resuming work.

Randolph R. Bruce, of Wilmer, East Kootenay, on his return trip from Victoria visited the Canadian Metal Company's Blue Bell mine, opposite Ainsworth, on Kootenay Lake, in company with the company's general manager, S. S. Fowler, of Nelson.

B. A. Lasell, manager of the Bear Hydraulic Company, operating on Cunningham Creek, Cariboo, was in Victoria during November. He purposes shortly proceeding to New York to there confer with others interested in the company.

Ed. Dedolph, who lately resigned as superintendent of the Sullivan smelter, before leaving Marysville, East Kootenay, for Kaslo, was given a valedictory dinner by the townspeople and presented with a complimentary address and a gold watch.

M. M. Johnson, of Salt Lake City, Utah, consulting engineer to the Dominion Copper Company, lately accompanied H. H. Melville, of New York, its vice-president, on a tour of examination of the several mines and smelter the company has been operating in the Boundary district.

Albert I. Goodell has been appointed manager of the Sullivan Company's lead smelter at Marysville, East Kootenay, upon his retirement from the management of the *Le Roi Mining Company's* smelting works at Northport, Washington, U.S.A.

Robert Strachan, who was temporarily superintendent at the Crow's Nest Pass Coal Company's Michel colliery, after Mr. Simister's promotion, has been appointed superintendent of the company's Coal Creek mines, succeeding Andrew Colville there.

Wm. Gardner, of London, England, secretary of the Tye Copper Company, is in British Columbia temporarily in charge of the company's mining and smelting business on Vancouver Island pending the appointment of a successor to the late Clermont Livingston as general manager for the company in the Province.

James D. Hurd assumed the duties of general manager of the Crow's Nest Pass Coal Company, with offices at Fernie, on November 16. His predecessor, G. G. S. Lindsey, has been appointed president of the company, with headquarters at Toronto, Ontario, in place of Hon. Senator Cox, who had been president for nine years.

John Hampson, of Nelson, has arranged to leave Canada for England on December 13. He expects to return next spring. Mr. Hampson was in charge of the Brown-Alaska Company's Mamie mine near Hadley, southeast Alaska, until the recent suspension of operations there.

Louis Katona, a Hungarian metallurgist, has been visiting mines and smelters in the Kootenay and Boundary districts. He came to Canada after having been similarly engaged in several European countries. He will spend some time in the United States and then proceed to Australia and New Zealand.

Capt. T. H. Trethewey, on the eve of his final retirement from the management of the La Plata mine, was entertained at dinner at Nelson on November 18 by a number of his intimate friends, who cordially wished him "God speed and success." He left Nelson for Port Arthur, Ontario, two days later.

W. J. Elmendorf, manager of the Arctic Chief Mining Company, in southern Yukon, returned to Whitehorse on November 18 from a trip to the Portland Canal district, whence he had been to examine the mineral claims of the Portland Canal Mining and Development Company of Duncans, B.C.

H. N. Galer, vice-president of the International Coal and Coke Company, was banqueted at Coleman, southwest Alberta, by the company's official staff on the occasion of his removing from Coleman to Spokane, Washington, U.S.A. Mr. Galer has been resident manager of the company for about two years.

The American Mining Review, of Los Angeles, California, U.S.A., lately published the following personal note: "A. Chester Beatty will, it is stated, resign his position on the Guggenheim engineering staff. It is rumoured that he may accept a position with the United States Smelting, Refining and Mining Company."

Charles Camsell, of the Geological Survey branch of the Dominion Department of Mines, read a paper lately before the Logan Club, Ottawa, on the "Ore Deposits of the Vicinity of Hedley, Similkameen." Mr. Camsell was engaged in geological survey work in the Similkameen during the field-work seasons of 1906 and 1907.

Among a number of newly elected members of the American Institute of Mining Engineers who lately accepted election was Lyndon K. Armstrong, mining engineer of Spokane, Washington, U.S.A. Mr. Armstrong formerly published a mining journal at Spokane. He is known to most mining men of the Kootenay and Boundary districts of British Columbia.

J. J. Fleutot, managing director of the West Canadian Collieries, Limited, has returned to Blairmore, Alberta,

The painstaking English and Scotch architect looks for

QUALITY

Cost of maintenance is what he figures on.

QUALITY COUNTS

and it was **QUALITY** that won when

MALTHOID

ROOFING

was chosen by the Alaska Yukon Pacific Exposition Officers as the Standard Roofing for the Exposition.

SOLE MANUFACTURERS

The Paraffine Paint Co.

408 Occidental Ave., Seattle

R. ANGUS, 51 Wharf St., Victoria.

H. DARLING, 28 Powell St., Vancouver.

after having been in France several months. The West Canadian Collieries company owns working coal mines at Lille and Bellevue, near Frank, beside other coal properties, also in the Blairmore-Frank district, not at present being operated.

O. E. S. Whiteside of Blairmore, Alberta, manager of the West Canadian Collieries, Ltd., has resigned to become manager of the International Coal and Coke Company, Ltd., at Coleman, in the same district. His successor at Blairmore is to be L. Rameau, who lately arrived from France. The change will take place on January 1, next.

J. H. Mackenzie, known in British Columbia as a former general manager of the Le Roi Mining Company at Rossland, has been appointed general manager of the properties of the Goldfield Consolidated Mines' Company, Goldfield, Nevada, succeeding John W. Finch, who takes the position of consulting engineer to the company. Mr. Finch was also connected with mining in West Kootenay several years ago.

George H. Collins, of Vancouver, well known in the Boundary district where for years he was a mine manager, has been appointed managing director of the recently incorporated Canadian Fish and Cold Storage Company, which will operate in the neighbourhood of Queen Charlotte Islands and erect a large cold storage plant at Prince Rupert.

A. B. W. Hodges of Grand Forks, Boundary district, general superintendent of the Granby Consolidated Mining, Smelting and Power Compa. , has been spending some time in Spokane, Washington, U.S.A., since the suspension of work at the company's mines and smelter. His assistant superintendent at the smelting works, W.

A. Williams, proceeded to St. Louis, Minnesota, on a holiday visit.

OBITUARY.

Sir James Hector, formerly chancellor of the University of New Zealand, who many years ago was geologist of the Palliser boundary-marking expedition and rendered invaluable services in connection with explorations in British Columbia and other parts of northwestern Canada under Captain Palliser, died recently at Wellington, New Zealand. He discovered the Kicking Horse Pass in the Rocky Mountains through which pass the Canadian Pacific railway runs *en route* to the Pacific coast. This pass and the Kicking Horse River were so named in consequence of Dr. Hector, as he then was, having been, when exploring in that locality, disabled by a kick in the chest from his horse and rendered senseless for some time.

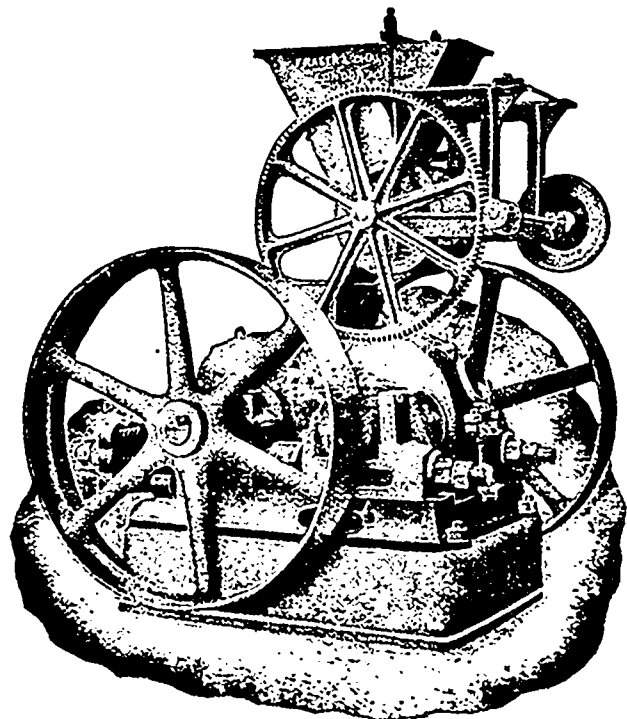
Sir James Hector was a graduate of the University of Edinburgh, Scotland, with the degree of M.D. He was created K.C.M.G. in 1887 in recognition of his distinguished services in western Canada as a geologist and explorer. After leaving Canada he went to New Zealand, where, as chancellor of the University of New Zealand he occupied a prominent position in that country. He retired from the chancellorship in 1903 and shortly afterwards, in company with his only son, revisited scenes of his early labours in the Rocky Mountains. While so engaged the son contracted fever from which he died at Revelstoke. A monument was later erected at Field, in the mountains, to commemorate the untimely death of the young man. The stricken and bereaved father returned to New Zealand, where he lived in comparative retirement the few remaining years of his life.

IMMEDIATE SHIPMENT FROM STOCK

We can make immediate shipment from stock
of the following machinery :

- One 3 Stamp Mill, complete with all accessories and spare parts.
- One 4 ft. x 10 ft. Grizzly, with 1½ in. spaces made up of bars 3 in. x ¼ in. x ⅝ in.
- One set of 24 in. x 9 in. Fraser & Chalmers' Crushing Rolls.
- One Colorado Impact Screen for wet screening.
- One " " " for dry screening.

We also draw your attention to the fact that we carry in stock WIRE ROPE, RAILS, STEEL, FUSE, WILFLEY CONCENTRATORS, and many other lines for mining and metallurgical work.



MUSSENS LIMITED

HEAD OFFICE, MONTREAL.

VANCOUVER BRANCH, 359 WATER STREET.



SYNOPSIS OF CANADIAN HOMESTEAD REGULATIONS.

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

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

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

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

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

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

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

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

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

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

PATENTS

Obtained in all countries. Satisfaction Guaranteed

ROWLAND BRITAIN

Registered Patent Attorney and Mechanical Engineer.

Room 3 Fairfield Building,
Granville St., near Post Office, VANCOUVER, B. C.

THE ENGINEERING BUREAU.

Palo Alto, California, U.S.A.

EMPLOYERS, when in need of reliable and experienced mining and technical men, superintendents, etc., should write to The Engineering Bureau.

Information gladly furnished as to men available for vacancies.

SCHOOL OF MINING

A College of Applied Science,

KINGSTON, ONT.

Affiliated to Queen's University.

For Calendar of the School and further information apply to the Secretary, School of Mining, Kingston, Ontario.

Cecil M. Bryant, A.R.S.M., A.I.M.M., London, England.

C. M. BRYANT & CO.
PROVINCIAL ASSAYERS.

The Vancouver Assay Office and Ore Testing Works.

Established 1890.

MILL, SMELTER, CONCENTRATION AND CYANIDE TESTS.
Control and Umpire Work. Superintending shipments to smelter

For Full Particulars Apply to This Office

P. O. Drawer 763.

VANCOUVER, B. C.

Tel. 264

RELIABLE ASSAYS

Gold	\$.75	Gold and Silver	\$1.00
Lead .....	.75	Gold, Silver, Copper	1.50

Samples by Mail Receive Prompt Attention.

Placer Gold, Retorts and Rich Ores Bought. Send for Free Mailings Envs. and Price List.

OGDEN ASSAY CO., 1536 Court Place, DENVER,

CLAUDET & WYNNE

ASSAYERS, METALLURGISTS & MINING ENGINEERS

Head Office—Rossland, B. C.
Branch Office—Princeton, B. C.

Representing } Elmore Oil Process
" } Elmore Vacuum Oil Process.

The B. C. Assay and Chemical Supply Co., Limited.

Direct Importers of

Assayers' and Mill Supplies

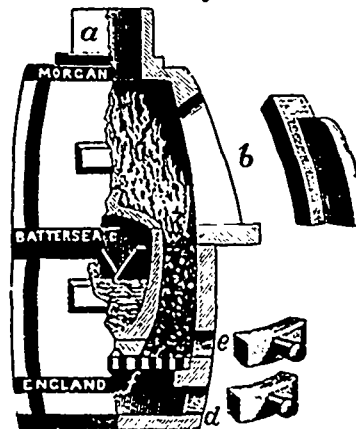
Headquarters for Laboratory Apparatus of all kinds, Bohemian Chemical Glassware, C. F. Acids, Potassium Cyanide and Quick-silver

Sole agents in British Columbia for Morgan Crucible Co., Battersea, England; F. W. Braun & Co' Patent Cary Furnaces, Burners, etc.; W. Ainsworth & Sons' Fine Balances.

Write for our prices

ADDRESS

**513 Pender St.,
Vancouver, B. C.**



THE ENGINEERING BUREAU.

Palo Alto, California, U.S.A.

WANTED—Ambitious, capable and experienced mining and technical men, to qualify for all kinds of American and foreign positions. If available for vacancies, transfer, or promotion, write at once to The Engineering Bureau.

THE FOLLOWING COURSES ARE OFFERED

1. Four Years' Course for Degree of B. Sc
2. Three Years' Course for Diploma.
 - a. Mining Engineering.
 - b. Chemistry and Mineralogy.
 - c. Mineralogy and Geology.
 - d. Chemical Engineering.
 - e. Civil Engineering.
 - f. Mechanical Engineering.
 - g. Electrical Engineering.
 - h. Biology and Public Health.