

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.

Coloured covers/
Couverture de couleur

Covers damaged/
Couverture endommagée

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Cover title missing/
Le titre de couverture manque

Coloured maps/
Cartes géographiques en couleur

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Bound with other material/
Relié avec d'autres documents

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

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.

Coloured pages/
Pages de couleur

Pages damaged/
Pages endommagées

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Pages detached/
Pages détachées

Showthrough/
Transparence

Quality of print varies/
Qualité inégale de l'impression

Continuous pagination/
Pagination continue

Includes index(es)/
Comprend un (des) index

Title on header taken from:/
Le titre de l'en-tête provient:

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

Additional comments: / **Pageination is as follows : p. [211]-252, XI-XII.**
Commentaires supplémentaires:

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

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X



MINING RECORD

ESTABLISHED 1895

VOL. XIV.

JUNE, 1907.

No. 6

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 615.

ADVERTISING AGENCIES:

London, England: E. Henderson & Co., Billiter Square Buildings.
Denver, Colorado: National Advertising Co., 423-424 Quincy Building.
San Francisco, California: E. C. Duke's Advertising Agency, 1001 Masonic Avenue.

SUBSCRIPTIONS PAYABLE IN ADVANCE:

Canada and the United States, per year . . . \$2.00
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.

NOTES AND COMMENTS.

Publication of the information concerning the occurrence of platinum in the Fraser River, to which reference was made last month, has again had to be deferred.

On page 248 of this issue the payment of dividends by several British Columbia mining companies is noted. It is evident that the number of profit-earning mines in the Province is increasing.

The Atlin Consolidated Mining Company, a Guggenheim organization, has commenced the season's work on Tar Flats, Pine Creek, Atlin district, where it last year installed a 70-ton steam shovel capable of handling 3,000 cu. yd. of gravel per diem.

The Cranbrook *Prospector* says: Three hydraulic plants are now in operation on Wild Horse Creek, Fort Steele mining division. Not since 1900 has there been more activity shown in placer mining on the historic old creek than is going on at the present time.

CONTENTS.

	PAGE.
Notes and Comments	211
Annual Report of Minister of Mines for 1906...	212
Statistics of Mineral Production in 1906.....	213
Progress of Mining in British Columbia.....	216
Peace River District of British Columbia.....	219
Hudson Hope on Peace River.....	231
Surface Geology of British Columbia.....	232
Cariboo Mining Division	233
Quesnel Mining Division	238
Antimony in Slocan District.....	240
Coal Mining in British Columbia.....	241
Mining in Various Parts of British Columbia..	244
Company Meetings and Reports -	
Rambler-Cariboo Mines, Ltd.....	247
Richard III. Mining Company, Ltd.....	247
Snowshoe Gold and Copper Mines, Ltd.	247
Ymir Mines, Ltd.	247
Company Cables and Notes	248
Registrations and Incorporations.....	249
Mining Men and Affairs	251

A new record was made at the British Columbia Copper Company's smelting works at Greenwood, Boundary district, during the last week in June, when 13,647 tons of ore were smelted. Of this quantity 9,209 tons came from the company's mines; the remainder was custom ore.

The recent finding of two large nuggets of gold in Atlin district has been reported. One was in the Otter Hydraulic Company's sluice box on Otter Creek and weighed nearly 30 oz. The other, which weighed 56 oz., was found on Spruce Creek on unoccupied ground covered with tailings.

Among other interesting matter held over by reason of lack of space this month is the provincial mineralogist's review of the "Developments of the Year," his introductory comment on which was: "There have been few developments or occurrences during the past year that require special notice. Mining is becoming more a settled business, by the elimination, to a large extent, of visionary schemes."

A despatch from Slocan City to the *Nelson Daily News* states that: "Work has been suspended at the Ottawa mine, pending the arrival of the Pittsburg owners, when a decision will be made as to the method of work in the future." The manager of the mine is incapacitated, being ill with rheumatism.

The Payne mine and concentrating mill near Sandon, Slocan district, have been bought at public auction by Senator Forget of Montreal, Quebec, for \$60,000. Prior to 1902 dividends totalling \$1,363,000 were paid out of the earnings of this mine. The concentrator, with appliances for saving zinc, was constructed in 1901.

The addition of the northern part of the Skeena division of Cassiar district to the copper producing sections of the Province is worthy of note. Its officially recorded production of 293,269 lb. of copper in 1906 as against none in 1905 and only 17,407 lb. for all previous years indicates substantial progress in lode mining last year.

On May 11 the *Mining and Scientific Press*, of San Francisco, California, published an article on "Mining in Honduras," written for that journal by Horace G. Nichols. This contributor is, we understand, now manager for the Ymir Gold Mines, Ltd., with gold-quartz mine, 80-stamp mill, and cyanide plant in the Ymir section of Nelson mining division.

According to the *Nelson Daily News*, S. S. Fowler, manager of the Canadian Metal Company, who lately returned from an extended trip in the East, says that the appeal of the American smelters on the zinc tariff question concerning the importation of zinc ore from Canada into the United States, had been heard, but that so far as he could learn no decision had been handed out yet.

The *Mining Record* was criticized and condemned by the *Vernon News* and *Victoria Week* last year because of its expressed disbelief in a successful outcome of operations at the British Empire mine so long as "Windy" Young had anything to do with the management of it. The gold commissioner for the Vernon mining division officially reported for the year 1906 as follows: "On the British Empire and Royal Standard claims a 5-stamp mill ran for 120 days, and gold was recovered on the plates." On reference to Table IX. of the "Annual Report of the Minister of Mines for 1906," we find that Similkameen, Nicola, and Vernon divisions are together credited with a production in 1906 of 6 oz. of lode gold, value \$124. We are curious to know whether the British Empire production for a run of 120 days was included in the official return of 6 oz. If so the *Mining Record* was more than justified in its doubt. If not, what explanation has "Windy" Young to make for not having observed the law requiring mine managers to make returns of production?

ANNUAL REPORT OF THE MINISTER OF MINES FOR THE YEAR 1906.

THE ANNUAL REPORT of the Minister of Mines for British Columbia for the year ended December 31, 1906, which is the official account of the year's mining operations in the Province, while unavoidably not issued with the accustomed promptitude of former years, is of more than ordinary interest for several reasons. In particular many engaged in, or otherwise concerned about, mining in British Columbia are pleased to have at their disposal the provincial mineralogist's survey of the condition of the industry, based upon the reports supplied to the bureau of mines by gold commissioners and mining recorders and, what is of much more importance, on the returns required by law to be sent in by mine owners or operators. The statistics of production, carefully compiled from the most reliable data obtainable and presented in tabulated form so as to clearly exhibit the position from a comparative point of view, are of much practical value to those using the information thus made conveniently accessible.

The several special reports made by the provincial mineralogist and the provincial assayer (for to the latter was delegated the duty of visiting and reporting upon two or three districts to which prospectors have been giving attention) are of general interest. Chief among these is that relating to the Peace River country, concerning which there had previously been but little recent information available to the public. The provincial mineralogist's detailed description of the country passed through is given in diary form, and it contains much intelligence that will be found useful by travellers proceeding to that outlying district. A summary precedes the narrative of the daily journeyings and observations, and this is reprinted on pp. 219-230 of this number of the *Mining Record*. The information being authentic and recent will be generally acceptable. The numerous excellent half-tone views adequately illustrate the physical features and general character of the country passed through. Some of these, through the kind courtesy of the bureau of mines, have been used in this issue. Other plates depicting mountain and river scenery along the route travelled, are too long for use in the pages of this journal, which is much regretted since they furnish instructive object lessons relative to the comparatively unknown country under notice.

As far as practicable there have been reprinted in this month's *Mining Record* the statistical tables and the comments of the provincial mineralogist on the year's mining progress and mineral production. Space limitations have prevented more being done this month in this direction, but the parts of this section of the report selected for reprinting will be found to contain figures and facts directly indicating the position of the mining industry of the Province. It has been found necessary to omit particulars of some of the branches of the work done by or under the bureau of mines. These include the practical

work of the provincial assay office, and that of the boards of examiners of assayers and coal mine officials, respectively, and of the inspectors of mines.

Several reports by members of either the Geological Survey of Canada or the United States Geological Survey are reprinted in the volume under review. The reports of Provincial gold commissioners and mining recorders give much information concerning mining in those districts in which it has been in active progress; in other instances the official statements have necessarily been brief and of comparatively little importance. It appears evident that there has been exercised a wise discrimination in the choice of matter in this connection, for there is little, if any, useless "padding" in the reports of individual districts or divisions.

A serviceable addition has been made to the tabulated information printed yearly at the end of the Annual Report. This is a three-page table showing the "Metalliferous Shipping Mines in 1906," with the names of shipping mines arranged under mining divisions, and showing in separate columns, (1) name of mine or group, (2) locality, (3) owner or agent, (4) address, and (5) character of ore.

The comprehensive nature and markedly advantageous arrangement of the large amount of information contained in the Annual Report reflect credit upon the provincial mineralogist, on whom devolved the work of preparing it for the printer and supervising its publication. The varied illustrations—graphic tables, diagrams, sketch maps, and half-tone reproductions of photographs (of which there are about 60)—add materially to the general excellence of this report, which has been well printed at the Provincial Government printing office, and this, too, at a time when handicapped by a rush of other official work. Too much praise can scarcely be accorded for the artistic finish of the half-tones, some of them most effective in tints, in printing which W. H. Clark, foreman of the press room, has well maintained his reputation for high-class work. Most of the photographs reproduced were taken either by W. F. Robertson or Harold Nation who accompanied him on his Peace River journey as an assistant, or, in the case of Vancouver Island and Portland Canal views, by Herbert Carmichael, provincial assayer. Many of the engravings were made by the British Columbia Engraving Company, Victoria; the others in Chicago.

Altogether this Annual Report of the Minister of Mines for British Columbia is a decidedly useful and creditable publication and it is distinctive in that it gives details of the largest mineral production in any one year in the history of mining in British Columbia.

Instructions have been received at Whitehorse to put men at work on the Bullion Creek Hydraulic Company's placer gold claims in southern Yukon.

It is reported from Dawson that the Guggenheim interests have acquired the Treadgold, Northwest Hydraulic, Yukon Consolidated and other properties for a large monetary consideration.

STATISTICS OF MINERAL PRODUCTION OF BRITISH COLUMBIA IN 1906.

STATISTICAL TABLES of the mineral production of British Columbia in 1906 given in the "Annual Report of the Minister of Mines," are of much value, exhibiting as they do the results attained in each of the years they cover as well as the total for all years. The official comments of the provincial mineralogist on these tables, together with such as of them as it is practicable to here reproduce, follow:

TABLE I.—TOTAL PRODUCTION FOR ALL YEARS UP TO AND INCLUDING 1906.

Gold, placer	\$ 68,721,103
Gold, lode	41,015,697
Silver	25,586,008
Lead	17,625,739
Copper	35,546,578
Coal and Coke	79,334,798
Building stone, bricks, etc.	5,543,700
Other metals	270,099
Total	\$273,643,722

Table I. shows the total gross value of each mineral product mined in the Province up to the end of 1906. From this it will be seen that coal mining has produced more than any separate class of mining—a total of \$79,334,798—followed next in importance by placer gold at \$68,721,103, and third by lode gold at \$41,015,697. The metal gold, derived from both placer and lode mining, amounts to \$109,736,800, the greatest amount derived from any one metal or mineral, the next most important being copper, of a total gross value of \$35,546,578, followed by silver at \$25,586,008, and lead at \$17,625,739.

TABLE II.—PRODUCTION FOR EACH YEAR FROM 1890 TO 1906 (INCLUSIVE).

1852 to 1889 (inclusive)	\$ 71,981,634
1890	2,608,803
1891	3,521,102
1892	2,978,530
1893	3,588,413
1894	4,225,717
1895	5,643,042
1896	7,507,956
1897	10,455,268
1898	10,906,861
1899	12,393,131
1900	16,344,751
1901	20,086,780
1902	17,486,550
1903	17,495,954
1904	18,977,359
1905	22,461,325
1906	24,980,546

Total

\$273,643,722

Table II. shows the values of the total production of the mines of the Province for each year from 1890 to 1906, during which period the output increased nearly ten-fold. It reached a production for the past year valued at \$24,980,546, or more than double what it was in 1890.

Table IV. gives the amounts, in the customary units of measure, and the values, of the various metals and other minerals which go to make up the grand total of the mineral production of the Province for 1906, and also, for purposes of comparison, similar data for the two immediately preceding years.

The table shows that in 1906, as compared with 1905, there was a decrease in the production of placer gold of some \$20,900 and of lode gold \$302,463, making for this metal a total decrease of \$323,363.

The amount of silver produced in 1906 was 2,990,262 oz., having a gross value of \$1,897,320, a decrease from 1905 of \$74,498, due chiefly to the decreased production of the Sloean district.

The table also shows an output of lead in 1906

amounting to 52,408,217 lb., valued at \$2,607,578, which although a decrease from the production of the last preceding year of 4,172,486 lb. is still greater than that of any other year since 1900, but owing to the greatly increased market value of the metal, and in spite of the materially decreased amount produced, the value of the product for 1906 shows an increase over that of 1905 of \$268,556.

As it has been impossible as yet to collect accurate statistics regarding building stone, lime, bricks, tiles, etc., these have been estimated.

Table V. shows the proportions of the total mineral production made in each of the various districts into which the Province is divided. It will be noted that in 1906 the Boundary (Yale) district again has the honour of first place, followed in order of output by the Coast district and East Kootenay, with West Kootenay, for many years the Province's greatest producer, only fourth on the list. The Coast and East Kootenay districts, however, owe a considerable percentage of their outputs to the coal mines

TABLE IV.—AMOUNT AND VALUE OF MINERAL PRODUCTS FOR 1904, 1905 AND 1906.

	Customary Measure.	1904.		1905.		1906.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold, placer.....	Ounces	55,765	\$ 1,115,300	48,465	\$ 969,300	.....	\$ 948,400
" lode.....	"	222,042	4,589,608	238,660	4,933,102	224,027	4,630,639
Silver.....	"	3,222,481	1,719,516	3,439,417	1,971,818	2,990,262	1,897,320
Lead.....	Pounds	36,646,244	1,421,874	56,580,703	2,399,022	52,408,217	2,667,578
Copper.....	"	35,710,128	4,578,037	37,692,251	5,876,222	42,990,488	8,288,565
Coal.....	Tons, 2,240 lb	1,253,628	3,760,884	1,384,312	4,152,936	1,517,303	4,551,909
Coke.....	" "	238,428	1,192,140	271,785	1,358,925	199,227	996,135
Other materials.....			600,000		800,000		1,000,000
Totals.....			\$18,977,359		\$22,461,325		\$24,980,546

TABLE V.—PRODUCTION OF MINERAL BY DISTRICTS AND DIVISIONS.

Name.	Divisions.			Districts.		
	1904	1905	1906	1904	1905	1906
Cariboo District.....				\$ 474,600	\$ 406,000	\$ 405,400
Cariboo mining division.....	\$ 313,000	\$ 300,000	\$ 355,800			
Quesnel ".....	150,000	96,000	39,600			
Omineca ".....	11,600	10,000	10,000			
Cassiar District.....				558,573	504,372	555,599
East Kootenay District.....				3,210,573	5,339,154	5,171,024
West Kootenay District.....				5,806,070	5,421,859	4,660,352
Ainsworth division.....	168,023	100,273	268,111			
Nelson ".....	466,683	532,564	515,709			
Sloean ".....	1,236,858	970,544	532,228			
Trail Creek ".....	3,760,866	3,672,828	3,223,587			
Other parts.....	173,640	145,650	120,717			
Lillooet District.....				34,583	32,584	20,314
Yale District.....				4,190,281	6,483,504	8,779,711
Osoyoos, Grand Forks and Greenwood divisions.....	4,110,366	6,356,410	8,689,470			
Similkameen division.....	2,500	1,533	2,624			
Yale ".....	77,415	125,561	78,617			
Coast Districts (Nanaimo, Alberni, Clayoquot, Quatsino, Victoria).....				4,702,679	4,273,852	5,388,146
Totals.....				\$18,977,359	\$22,461,325	\$24,980,546

TABLE VII.—PRODUCTION OF LODGE MINES.*

Year.	Gold.		Silver.		Lead.		Copper.		Total Value.
	Oz.	Value.	Oz.	Value.	Lb.	Value.	Lb.	Value.	
1887			17,690	17,331	204,800	9,216			26,547
1888			79,780	75,000	674,500	29,813			104,813
1889			53,192	47,873	165,100	6,498			54,371
1890			70,427	73,948	Nil.	Nil.			73,948
1891			4,500	4,000	Nil.	Nil.			4,000
1892			77,160	66,935	808,420	33,064			99,999
1893	1,170	23,404	227,000	195,000	2,135,023	78,906			297,400
1894	6,252	125,014	746,379	470,219	5,662,523	169,875	324,680	16,234	781,342
1895	39,264	785,271	1,496,522	977,229	16,475,464	532,255	952,840	47,642	2,342,397
1896	62,259	1,244,180	3,135,343	2,100,689	24,199,977	721,384	3,818,556	190,926	4,257,179
1897	106,141	2,122,820	5,472,971	3,272,836	38,841,135	1,390,517	5,325,180	266,258	7,052,431
1898	110,061	2,201,217	4,292,401	2,375,841	31,693,559	1,077,581	7,271,678	874,781	6,529,420
1899	138,315	2,857,573	2,939,413	1,663,708	21,862,436	878,870	7,722,591	1,351,453	6,751,604
1900	167,153	3,453,381	3,958,175	2,309,200	63,358,621	2,691,887	9,997,080	1,615,289	10,069,757
1901	210,384	4,348,603	5,151,333	2,884,745	51,582,906	2,002,733	27,603,746	4,446,933	13,683,044
1902	236,491	4,888,269	3,917,917	1,941,328	22,536,381	824,832	29,636,057	3,446,673	11,101,102
1903	232,831	4,812,616	2,998,204	1,521,472	18,089,283	689,744	34,359,921	4,547,535	11,571,367
1904	222,042	4,589,608	3,222,481	1,719,516	36,646,244	1,421,874	35,710,128	4,578,037	12,309,035
1905	238,660	4,933,102	3,439,417	1,971,818	56,580,703	2,399,022	37,692,251	5,876,222	15,180,164
1906	224,027	4,630,639	2,990,262	1,897,320	52,408,217	2,667,578	42,990,488	8,288,565	17,484,102
Totals	1,995,050	41,015,697	44,288,567	25,586,008	443,925,292	17,625,739	243,405,196	35,546,578	119,774,022

*Not included in above is iron and zinc ore of a total value of \$270,099.

NOTE.—The information as to production in the earlier years is obtained from the "Mineral Statistics and Mines" for 1896, Geological Survey of Canada.

situated within their limits, whereas in the other districts the production is entirely from lode mining.

Table VII., Production of Lode Mines, relates entirely to the lode mines of the Province, and shows the amounts and values of the various metals produced each year since 1887—the beginning of such mining in the Province. The gross value of the product of these mines is \$119,774,022. The production in 1906 was \$17,484,102, an increase over the last preceding year of \$2,303,938, or about 15.2 per cent.

Official comment on other tables published in the report, and for which the MINING RECORD has not space this month, is as follows:

Table III., Mineral Production of British Columbia, presents in graphical form the facts shown by figures in other tables and demonstrates to the eye the rapid growth of lode mining in the Province and also the fluctuations to which it has been subject. It will be seen that although coal mining has been a constantly increasing industry during this whole period of 20 years, lode mining did not begin practically until 1894, since when it has risen with remarkable rapidity, though not without interruption, until now it has nearly reached the \$17,500,000 line, and the total production has nearly reached the \$25,000,000 line.

Table VI., Yield of Placer Gold to Date, gives the statistical record of the placer mines of the Province from 1858 to 1906, and shows a total production of \$68,721,103. The output for 1906 was \$948,400—a decrease of about two per cent. as compared with 1905, and due to a dry season with a shortage of water for hydraulic mining.

Table VIII., Coal and Coke Production per Year to Date, contains the statistics of production of the

coal mines of the Province. The total amount of coal mined to the end of 1906 is 24,144,633 tons (2,240 lb.), value \$72,815,423. Of this there was produced in 1906 1,517,303 tons, valued at \$4,551,909, a larger amount than had been produced in any previous year. In these coal production figures the coal used in making coke is not included, as such coal is accounted for in figures of output of coke.

The amount of coal used in making coke in 1906 was 381,773 tons, from which was produced some 199,227 tons of coke, worth \$996,135, a decrease of some 72,558 tons from the total of coke produced in 1905. These figures are to a certain extent misleading, however, as in 1905 some 3,694 tons of coke were put into stock, whereas in 1906 all the coke made was sold, together with 13,009 tons taken from stock, making the total coke sales for the latter year 210,897 tons. The production of coke in 1906 would have been much greater than it was but for the very urgent demand for coal and the general scarcity of labour, which taxed the companies' resources to keep up a sufficient supply of coal. A strike at the Crow's Nest Pass collieries in the autumn also greatly diminished the output.

Table IX., Production of the Metalliferous Mines, gives the details of production of the mines of the Province (excepting coal mines) for the years 1903, 1904, 1905 and 1906, and the districts in which such productions were made, showing the tonnage of ore mined in each district with its metallic contents and market value. The total tonnage of ore mined in the Province during 1906 was 1,963,872 tons, having a gross value (together with that of placer gold and miscellaneous minerals) of \$19,432,502.

Table X., Comparative Mineral Production, compares graphically the output of mineral products in

British Columbia with that of similar products in all the other provinces of the Dominion, and shows that in 1906 British Columbia produced of the metals and coal an amount over 757. of that of all the other Canadian provinces combined.

PROGRESS OF MINING.

Provincial Mineralogist's Comments on Last Year's Progress.

A MATERIAL INCREASE in both tonnage and gross value is the gratifying record of the mineral production of British Columbia in 1906 as compared with that of any previous year. The official review of the year's progress is here shown:

The value of the mineral products of the Province grows steadily greater, each year showing a material increase over the preceding year. The production for 1906 was \$24,980,546, which is 11.2 per cent. greater than that of 1905, 31.6 per cent. greater than in 1904, and 42.8 per cent. greater than in 1903.

An analysis of the returns shows, however, that this increase was due chiefly to the Boundary and Coast districts, with a slight increase in Cassiar. East Kootenay and Cariboo districts about held their own, while Lillooet and West Kootenay showed a considerable decrease. In the latter district, however, Ainsworth more than doubled its output. Rossland and Nelson nearly maintained their positions, but Sloean and the rest of the district showed a marked decrease.

The tonnage of ore mined in the Province, exclusive of coal, was 1,963,872 tons, some 257,193 tons, or 15 per cent., greater than in 1905. The following table shows the percentages of such tonnage and values derived from the various districts of the Province:

	Tonnage, Per cent.	Values, Per cent.
Boundary (Yale) district.....	60.2	44.2
Trail Creek (Rossland) mining division	14.2	16.3
Fort Steele (East Kootenay) mining division	9.2	15.1
Sloean district	0.8	2.7
Coast "	11.1	6.5
Miscellaneous and other districts	4.5	15.2
	<u>100.0</u>	<u>100.0</u>

The number of mines from which shipments were made in 1906 was 154; and of these only 77 shipped more than 100 tons each—practically no change from 1905. Some 41 mines shipped in excess of 1,000 tons each, of which 14 are situated in the Boundary district, eight in Nelson mining division, six in Trail mining division, and five on the Coast. The following table shows the number of metalliferous mines which shipped ore, together with the location of these

mines and the number of men employed both above and below ground:—

TABLE SHOWING DISTRIBUTION OF SHIPPING MINES IN 1906.

	Tons of Ore Shipped.	No. of Mines Shipping.	Men em- ployed.
Cassiar:			
Skeena	5,394	2	85
East Kootenay:			
Fort Steele	180,036	3	378
Windermere	243	6	37
West Kootenay:			
Ainsworth	19,431	14	115
Nelson	50,135	23	363
Sloean	14,973	54	337
Trail	279,527	10	750
Other Divisions	8,715	5	79
Lillooet	215	1	5
Yale:			
Boundary	1,182,517	26	1,111
Ashcroft-Kamloops .	3,837	1	50
Similkameen-Vernon.	3	1	2
Coast	218,846	8	406
Total	<u>1,963,872</u>	<u>154</u>	<u>3,718</u>

The number of men employed in 154 metalliferous shipping mines was 3,718—2,535 below and 1,183 above ground—and in 96 non-shipping mines, 265—145 below and 120 above,—making a total of 3,983.

COAL.*

During 1906 the actual production of coal in British Columbia was confined to the two well-known districts, the collieries in vicinity of the Crow's Nest Pass and the collieries on Vancouver Island.

In the former of these districts the Crow's Nest Pass Coal Company operated collieries at Michel, Coal Creek and, for the first portion of the year, at Carbonado, but on April 1 this last colliery was closed down.

The collieries on Vancouver Island were operated by two companies, viz., the Western Fuel Company at Nanaimo, and the Wellington Colliery Company at Ladysmith and Comox.

GOLD.

Placer Gold.—The production of placer gold was about \$948,400, or 2.2 per cent. less than that of 1905. This falling off, though slight, is general and represents the lessened work of the individual miner, whose successors, the large companies, have not as yet got into satisfactory operation.

Atlin district produced very nearly as much gold as in 1905, chiefly the work of comparatively small companies, although in this district individual miners are still at work, but the ground suited for this class of mining is gradually diminishing.

The two large dredges installed in this district hav-

*For additional information on coal mining see article on pp. 241-243.

been practically abandoned, as the ground upon which they were working was found unsuitable for dredging operations.

A big steam shovel plant has been installed on shallow ground, and from present indications promises to be a large producer. The small shovel, the first installed in the district, has not been a commercial success, owing to the quite inadequate arrangements for handling and washing the dirt lifted.

In the Dease Lake section of Cassiar, despite the difficulties of transportation, one hydraulic company recovered between \$20,000 and \$25,000 in gold; a second company will probably be in operation in 1907. Here, however, the individual miner has almost disappeared.

In Cariboo district, Cariboo mining division showed a marked increase over the preceding year, about 18.6 per cent., chiefly from small hydraulic enterprises, but the Quesnel division showed a decrease of about 30 per cent., due to the fact that the largest producing company did little mining, being taken up with large operations for increasing its water supply.

Fort Steele district continues to produce a little gold from the old creeks, but the quantity is yearly diminishing.

The bars on the Thompson and Fraser Rivers have been very disappointing, and the dredges thereon have not been successful.

Gold from Lode Mining.—The value of the gold produced from lode mining was \$4,630,639, of which about 95 per cent. was recovered from the smelting of copper-bearing ores. There were few stamp mills in operation since the Ymir ceased mining, only one at Hedley and another at Camborne.

SILVER.

The total amount of silver produced was 2,990,262 oz., valued at \$1,897,320, a decrease as compared with 1905 of about 449,155 oz. and in the value of the product of \$74,498.

About 77 per cent. of the silver is found in association with lead, in argentiferous galena, the remainder being found in conjunction with copper ores.

Fort Steele Mining Division produced 1,049,536 oz., about the same as in 1905, but the Slocan shows a decrease in output of 474,335 oz., or 45 per cent.

LEAD.

There was produced in the Province in 1906 some 52,408,217 lb. of lead, valued at \$2,667,578. Although this was a decrease of 4,172,486 lb. from the preceding year, the value, owing to the higher market prices, gave an increase of \$268,556, and was the highest amount ever received for the lead product of the Province, except in 1900.

With lead, as with its associated metal silver, the greater part of the production came from Fort Steele division, while the production of the Slocan in 1906 was only 55.1 per cent. of that of 1905, or 28 per cent. of the production of 1904.

The following table shows the output of the

various districts, and the percentage such bear to the total output for the year:

Mining divisions:	Lb.	Per cent.
Fort Steele	44,487,481	equal to 84.88
Ainsworth	3,173,353	" 6.05
Slocan	2,975,674	" 5.66
Nelson	1,034,553	" 1.96
All other	737,156	" 1.45
	52,408,217	" 100.00

For the whole of the year 1906 the market price of lead has been above £12 10s. in London; consequently the Dominion Government lead bounty has, during this period, been proportionately reduced.

COPPER.

The copper output in 1905 was the largest the Province had ever made, but the production of 1906 exceeded it by some 5,298,237 lb., an increase of 12.32 per cent., while the value of the total product this year was \$2,412,343 in excess of the preceding year, an increase of 41 per cent.

The production of copper in 1906 was 42,990,488 lb., having a gross value of \$8,288,565. This increase was chiefly attributable to the Boundary district, although there was an increase in the Coast district, but Rossland showed a decrease. Of the total output, the Boundary district produced 75 per cent., the Coast 12 per cent., and Rossland 10 per cent.

The following table shows the production of the various districts for the years 1904, 1905 and 1906:

District.	1904 Lb.	1905 Lb.	1906 Lb.
Boundary	22,066,407	27,670,644	32,226,782
Rossland	7,119,876	5,800,294	4,750,110
Coast	5,960,593	3,437,236	5,431,269
Yale-Kamloops	328,380	680,808	355,377
Nelson	220,500	92,663	216,034
Various districts	14,372	10,606	10,916
	35,710,128	37,692,251	42,990,488

The percentage of production for this three-year period was: Boundary district, 74.90 per cent.; Coast, 12.45; Rossland, 11.40; other districts, 1.25.

The average assays of the copper ores of the various camps, based upon the copper recovered, were as follows:—

Boundary, 1.4 per cent.; Coast, 1.21 per cent.; and Rossland, 0.85 per cent. copper.

OTHER MINERALS.

Iron Ore.—There was no iron ore mined in the Province during the past year, for the reason that there is no market for it on the Pacific Coast. There has been considerable prospecting work done in connection with the known iron deposits on the Coast, and schemes have been in consideration for the erection of blast furnaces, either in British Columbia or on Puget Sound.

Zinc Ore.—The production of zinc ore was small,

only some 654 tons, and the industry was practically at a stand still. In 1905, concentrating or "enriching" plants were erected for the production of concentrates that would assay about 50 per cent. zinc, for which there was a market in the United States, into which country they were admitted free of duty as "crude mineral"; but in 1906 a decision of the United States Customs department ruled that these concentrates were not "crude mineral," and, consequently, were subject to duty, which duty was so high as to be prohibitive, the result having been a suspension of zinc mining in British Columbia. This decision has, however, been appealed from, and on February 7, 1907, the United States General Appraisers reversed the decision, deciding that these concentrates were "crude mineral" and, consequently, free from duty.

The Commission, headed by W. R. Ingalls, of New York, and Philip Argall, of Denver, appointed by the Dominion Government to investigate the zinc resources of British Columbia, has published its report, which goes into the subject most thoroughly. Copies of this report can be obtained from the Mines Branch of the Department of the Interior, Ottawa.

Platinum.—Platinum continues to be found in small quantities in various parts of the Province, but as yet no systematic attempt has been made to save it. As noted in previous reports, it is found in alluvial washings in the Similkameen district, on Quesnel River in Cariboo, on Thibert Creek in Cassiar, and also in the Yukon. The latest find was on Fraser River, below Lillooet, from which district there was received a few ounces of the crude platinum sand, saved by a prospector in washing for gold, for which the provincial mineralogist was able to obtain some \$25 an oz. net cash.

Building Stone.—The quarrying of stone for building purposes has as yet only on the Coast taken the form of an industry, as in that district only has the use of stone for building become at all general. In a previous report descriptions were given of the more important quarries that had been opened up on the Coast, to which there is not much to add now, except to note that the general output of the quarries has nearly doubled in the last couple of years.

Brick.—The manufacture of red building brick is constantly increasing with the market. The greater consumption of brick, and consequently the greater production, is on the Coast, near Vancouver and Victoria, although scattered throughout the Interior are small yards supplying local demands, suitable clay being found in abundance.

Fire Brick.—The manufacture of fire brick formerly carried on at Comox has, as far as is known, ceased, although about 3,500 tons of fire clay were mined from the coal mines in the vicinity. A deposit of fire clay of apparently very fair quality is being developed near Vancouver, and a brick-making plant erected, the product of which has not, however, been on the market for a sufficient time to assure its reputation.

The manufacture of earthenware, such as sewer and drain pipes, chimney caps, flower pots, etc., has

been carried on near Victoria by the British Columbia Pottery Company, the output having a value of somewhere about \$80,000, while other firms have also been making drain tiles and pipes.

Lime.—The production of lime is naturally associated more or less closely with constructions of brick or stone, aside from its use in internal plastering, and, consequently, the greatest production has been on the Coast, the most extensively operated limekilns being situated at Victoria and on Texada Island, at both of which points a lime of almost theoretical purity is made, although the kilns are rather primitive and the economies of production have only begun to be introduced.

Cement.—Although other enterprises are in contemplation, the only concern at present manufacturing cement in British Columbia, to any extent, is the Vancouver Portland Cement Company, with works at Tod Inlet, some 14 miles from Victoria, a description of whose plant, as it then existed, was given in the Report of 1904, since which time the capacity of the plant has been about doubled and the demand for the cement will probably necessitate further enlargements in the near future. The value of the output in 1906 approached \$250,000.

Oil and Oilshales.—There has been no serious attempt made to develop the supposed oil fields in the Flathead Valley, southeast Kootenay, owing probably to the conflicting and questioned validity of titles to the various claims; but this matter has now been practically settled, and it is expected the coming season will see active operations tending to prove the field. Nothing further has been heard of the oilshales found in the vicinity of Harper's Camp, Cariboo, and no serious attempt has been made to prospect for oil in the Queen Charlotte Islands, where seepages were reported as found.

Labour troubles at the Marble Bay mine, Texada Island, have been amicably adjusted and shipment of ore to the smelter at Tacoma, Washington, U.S.A., resumed. Output runs ordinarily from 1,000 to 2,000 tons per month. The mine is owned by the Tacoma Steel Company.

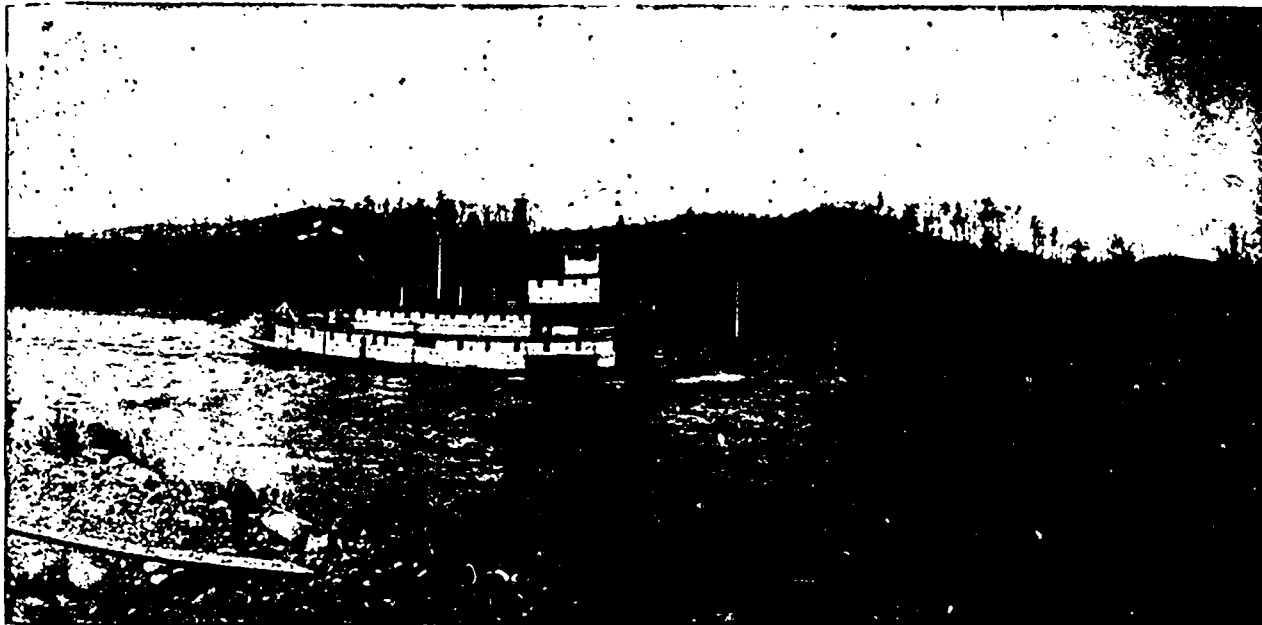
B. D. Brown of New York, president of the Brown-Alaska Company and the Alaska Smelting and Refining Company, has sold his large interest in these companies to G. D. Mumford, who represents the other stockholders. The Brown-Alaska Company, having its head office in Seattle, Wash., owns and is operating the Mamie mine, near Hadley, Prince of Wales Island, Southeast Alaska, and the Outsiders' group near Maple Bay, Portland Canal, British Columbia. N. O. Lawton, formerly of Michigan, is its mine manager. The Alaska Smelting and Refining Company owns the smelting works at Hadley which were erected and, until lately, operated by Paul Johnson, who has been succeeded as manager by Thos. Kiddie. These works smelt the ores of the Brown-Alaska Company's mines and such custom ores as are obtainable. Mr. Mumford is now president of both companies.

PEACE RIVER VALLEY DISTRICT OF
BRITISH COLUMBIA.

Report by Wm. Fleet Robertson, Provincial
Mineralogist.

FROM ESSINGTON TO EDMONTON, via
Skeena River, Babine and Stuart Lakes, and
Peace River, was a journey taken last summer
by the provincial mineralogist, whose report thereon

mines, the provincial mineralogist, during the summer of 1906, made a trip to, and an examination of, that portion of British Columbia lying east of the Rocky Mountains, but to the west of the 120th meridian of west longitude, and known as the Peace River Valley district of British Columbia. As this portion of the Province is at present most remote from transportation facilities of any sort, the time occupied in reaching it from Victoria was greater than was required to make the examination of the



From Essington to Hazelton—Hudson Bay Company's Steamer Ascending Skeena River.

is published in the "Annual Report of the Minister of Mines for 1906." A detailed description of the country passed through is given in diary form in the report. The following introduction and summary

district.

A route was selected embracing a stretch of British Columbia of which little authentic information was available and about which such was desired.



Hazelton (in 1899), at Head of Navigation on Skeena-River, 180 Miles from Essington.

will serve to convey an intelligent idea of the nature and scope of this official account of the region visited and the journey through it:

INTRODUCTION.

Under instructions from the hon. the minister of

This report must necessarily partake largely of a description of the country along the route travelled or adjacent thereto, but, since the line of travel was "crossing the formations," both physical and geological, the features noted will, in all probability, be

found to extend a certain distance north and south of the section traversed.

The route taken on this trip was parallel to, but a little farther north than, that travelled over in 1905 across the Northern Interior Plateau, and the description of the major physical features contained in the report of 1905 are applicable to this more northerly route.

The party consisted of the provincial mineralogist, with Mr. Harold Nation as an assistant, and, for part of the time only, a cook.

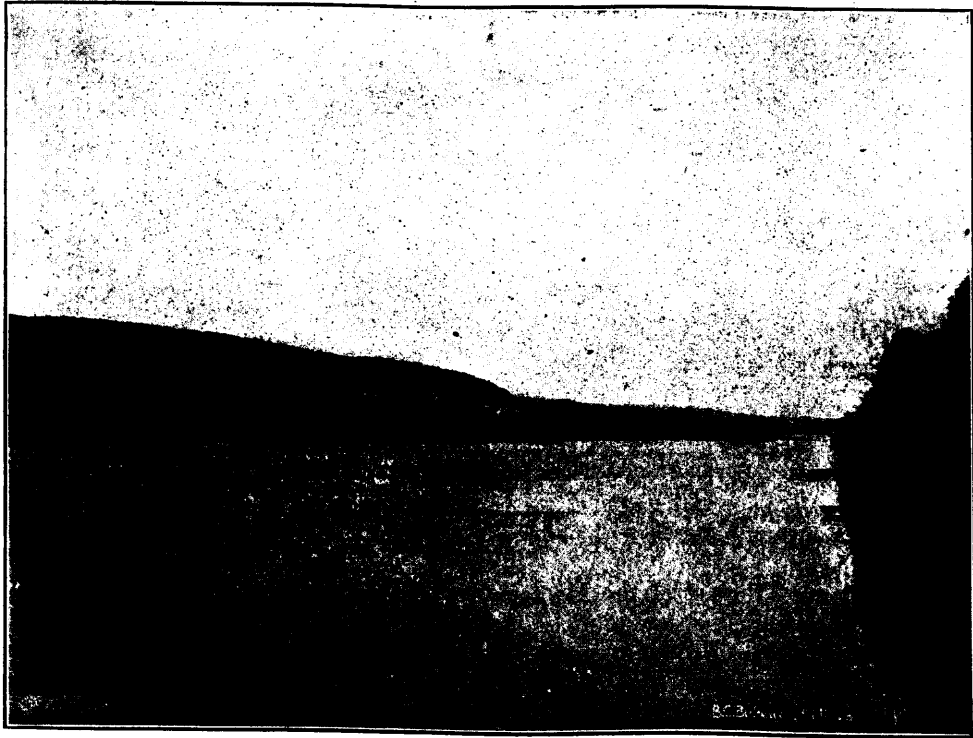
A general description of the route taken is as follows:—From Victoria and Vancouver to Essington, at the mouth of the Skeena River, by Canadian Pacific Railway Company's steamer, a distance of 645 miles. From Essington up the Skeena River

which it was expected would have to be made on a raft, but, being so fortunate as to encounter an Indian with horses, a side trip was made to Moberly Lake and the Pine River district to the south, arriving at Fort St. John overland, after a trip by pack-train of some 90 miles.

From Fort St. John another trip by pack-train was made to the south, to the Pouce Coupe prairie, returning to Fort St. John after travelling by pack-train some 185 miles.

A short trip was also made from this point to the north, on foot, as no horses could be obtained on the north side of the river.

At Fort St. John a bateau was obtained from the Hudson Bay Company, and the party, here reduced to two, floated down stream to Peace River Cross-



Babine Village, and Outlet of Babine Lake, Looking South.

to Hazelton by Hudson Bay Company's steamer, a distance of 180 miles. From Hazelton to Babine Lake by pack-train, 70 miles. From Babine, up Babine Lake by canoe, across a portage of 12 miles to Stuart Lake by wagon road, and, again by canoe, down Stuart Lake to Fort St. James, at the outlet, a total distance of 150 miles. From Fort St. James to McLeod Lake by pack-train, a distance of 85 miles.

McLeod Lake is on the headwaters of the Peace River, and here canoes were taken to the head of the canyon of the Peace, a distance of 182 miles, where the canoes had to be abandoned and a portage of 14 miles made around the canyon to Hudson Hope, the party packing all its supplies and camp outfit across the portage.

From Hudson Hope to Fort St. John, on the Peace River, is a distance of 60 miles by the river,

ing, at the junction of the Smoky River with the Peace, a distance of 180 miles, crossing the Provincial Boundary into Alberta some 45 miles below Fort St. John.

From Peace River Crossing the party went by a freight wagon to the upper end of Lesser Slave Lake, a distance of 100 miles, travelling from that point in a Peterboro' canoe, kindly loaned by the Royal Northwest Mounted Police, down Lesser Slave Lake and River and the Athabasca River to Athabasca or bateau, 700 miles; by wagon, 200 miles; from which point to Edmonton is 100 miles by a good wagon road.

At Edmonton railway facilities were again obtainable and the party proceeded by the Canadian Pacific Railway to Victoria.

The distance travelled was estimated at, approximately, 3,120 miles, divided as follows:—By steamer,

910 miles; by pack-train or on foot, 470 miles; by canoe or bateau, 700 miles; by wagon 200 miles; and by railway, 840 miles.

The time occupied between transportation points, viz., Hazelton and Edmonton, was 77 days, includ-

direction 40 miles a day could be covered with little labour or expense; whereas, going up stream, only about 10 miles a day could have been made, and three or four Indians would have been required to "track" the canoes up stream.



Stuart Lake. Looking West from St. James.



Sunset on Stuart Lake.

ing Sundays, in which time 58 camps, or moves, were made. The route taken, while seemingly longer than necessary to reach and return from the district inspected, proved that "the longest way around is sometimes the shortest way home," as it was almost entirely down stream on the waterways, in which

SUMMARY.

A detailed description of the country passed through is given later on in this report, in diary form, but the following is a summary of the same:—

Mineral Possibilities.—The Babine range of mountains, over which the trail from Hazelton to

Babine leads, rises to heights of 7,000 ft. in the peaks, and its rock formation consists of schists, quartzites, shales, etc., cut by numerous porphyritic dykes. This range is practically the length of Ba-

same time, there have been a number of claims staked there, as yet quite undeveloped, which produce at least samples of copper, silver and gold ores that indicate possibilities and lead to the hope of greater



Fort McLeod—Hudson Bay Company's Post on McLeod Lake.



Mount Selwyn, on Peace River; Looking Southeast.

bine Lake, forming its southern shore and watershed, dying out both to the east and west of the lake. Prospecting the range has only been begun, and its potentialities are as yet undemonstrated; but, at the

things in the future.

On the north side of Babine Lake the country is so covered with recent superficial deposits, of Glacial age, that few exposures of solid formation occur to



Valley of Peace River—From Mount Selwyn, 4,000 ft. Above River; Looking Northeast.

Mount Selwyn, from rather more than half-way up which this view was taken, rises to a height of 7,500 ft. and is landmark showing the gateway through the Rocky mountain range by which the waters from the great Interior Plateau of British Columbia break through and find their way down Peace River and thence by the Mackenzie River to the Arctic Ocean. About a dozen miles down-stream from the foot of Mount Selwyn are the Parle-pas Rapids ("Rapide-qui-ne-parle-pas," "Rapid that does not speak"), which are about 1,000 ft. in length. These rapids mark the eastern limit of the Rocky mountain range. Below them the Peace River is very tortuous.

tempt the investigation of the prospector, particularly as the adjacent formations to the south have not as yet been proven.

To the south of Stuart Lake there is a range of rocky hills which does not attain to the dignity of being called a mountain range, in which there are exposures of solid formation, chiefly sedimentaries of Palæozoic age, more or less disturbed, but which, as far as could be observed, have not been cut by the igneous dykes which elsewhere appear in some way to have been, if not the cause of, at least formed at the time when the mineralization took place, and which dykes form, to the prospector, the visible sign of a possible mineralization.

On the north side of Stuart Lake, until within a few miles of its eastern end, the country is covered with glacial deposits, and, from a mineral viewpoint, is unpromising, and from this district we have no record of even placer gold indications ever having been discovered.

Within a few miles of the eastern end of the lake a great knob of the underlying limestone protrudes, from which there are probably exposures of the same rock extending to the northwest, but this point was not investigated. The borders of this limestone area may prove worthy of investigation by the prospector, but the apparent absence of any serious igneous action is here also against the chances of its proving a profitable field. Such igneous action may be found to have occurred farther to the north and have as yet escaped notice, since the lake provides such an easy line of travel as to have left the adjacent country practically untravelled, save by the local Indians.

The line of the trail from Fort St. James to McLeod Lake is uninteresting in a mineral sense, as it is covered deep in gravel, clay, etc., and the few exposures of rock seen were mostly unpromising sedimentaries.

The course down the Pack and Parsnip Rivers was through similar country and lay at the base of the western foot-hills of the Rockies, a range which, as we know it in the more southerly part of the Province, where the geological formation and conditions are very similar, has not, as yet, proved productive of mineral wealth, although a few prospects have been located therein.

The Peace River, formed by the confluence of the Parsnip and Finlay Rivers, derives from the latter tributary wash from the northwest, from the vicinity of Manson Creek, a district in which placer gold has been already found in various localities and in considerable quantities. Consequently, as might be expected, the bed of the Peace River shows black sand and indications of placer gold throughout its explored length, some of the bars giving "colours" quite sufficient to offer inducements to prospect for dredging or steam-shovel ground, but, so far as is known, at no place have the bars contained a sufficient proportion of gold to be profitably worked by what has been called "individual" methods.

Unlike most of the streams in the southern part of the Province on which dredging has so far been attempted, the bars on the Peace River are found to

be free from boulders of any material size, a fact which should greatly favour dredging operations and render possible the working of a deposit of a grade which might not be profitable where such conditions did not exist. These remarks apply not only to the bed of the present river, but also, to a certain extent, to the banks of the river, which were at one time the bars in the greater valley of the ancient river into which the present river has cut. It was in banks of this description, some miles below Fort St. John, that small quantities of gold were found in 1905, which led to the staking of numerous claims and the rather sensational newspaper articles about them attributed to members of the Dominion Government Peace River Exploration party.

Coal.—So far as is known, there have been no indications of coal found in the section of country passed through between Hazelton and the head of the Peace River, although there is a possibility that lignite, at least, may be found under some of the glacial drift to the north of Babine and Stuart Lakes. It seems unlikely that the western slope and foot-hills of the Rockies will be found to be coal-bearing, as, at this latitude, the coal measures appear to be almost exclusively on the eastern slope of these mountains.

On passing down the Peace River through the main range the foot-hills are reached, where rocks of the coal-bearing formation are seen and continue to below the canyon, some 75 miles to the east, in which extensive region it is possible that, in the future, coal may be developed at many points.

Up to the present time the whole district to the east of the mountains has been under Government reserve, so that no coal or other land might be staked or recorded there, which fact has prevented the district from being prospected or settled. A few prospectors, either in ignorance or in disregard of the reserve, located and staked coal lands in the vicinity of the canyon, but as a record of these claims was refused by the Provincial Government, the prospectors and those interested are extremely reticent as to their finds, hoping to re-stake as soon as the reserve is opened, and it is felt that it is but right that the location of their discoveries be not made public.

The coal found appears to be a bituminous coal of very fair quality, in beds of workable thickness.

Some distance east of the canyon and south of the Peace River, on Coal Creek, a tributary of the South Pine, and on the headwaters of Muddy River and other streams of that vicinity, coal has been reported as found; the latest mention of such being by Mr. J. A. Macdonnell, in the report of his explorations of the district for the Dominion Government, in which he mentions finding a good bituminous coal.

The writer, who followed his trail through the district for a considerable distance, found lignite, but was unable to see any bituminous coal, which, it is expected, would be found to be confined to the district more closely bordering on the main mountain range. It is thought that, as soon as railway transportation through the district becomes an established fact, a number of workable deposits of coal will be developed, but under the present conditions any such



E.C. Bourcay, of Minn.

Mountain-of-Rocks Canyon (35 Miles Long) on Peace River.

Some 15 miles below the Parle-pas Rapids is the "Mountain-of-Rocks Portage," which cuts over the shoulder of a rocky hill (4,000 ft. altitude) formed at the bend of the river, which here enters a canyon extending some 35 miles. The stream is not navigable but flows, in a series of rapids and falls, between perpendicular and often overhanging walls of sandstone, the vertical drop in the canyon being about 275 ft. At the mouth of the canyon the river contracts to a width of not more than 150 ft., and its waters rush between the coarse-grained sandstone cliffs, in which occur occasional bands of dark shale. Encouraging results have been reported from prospecting for coal on the south side of the canyon.

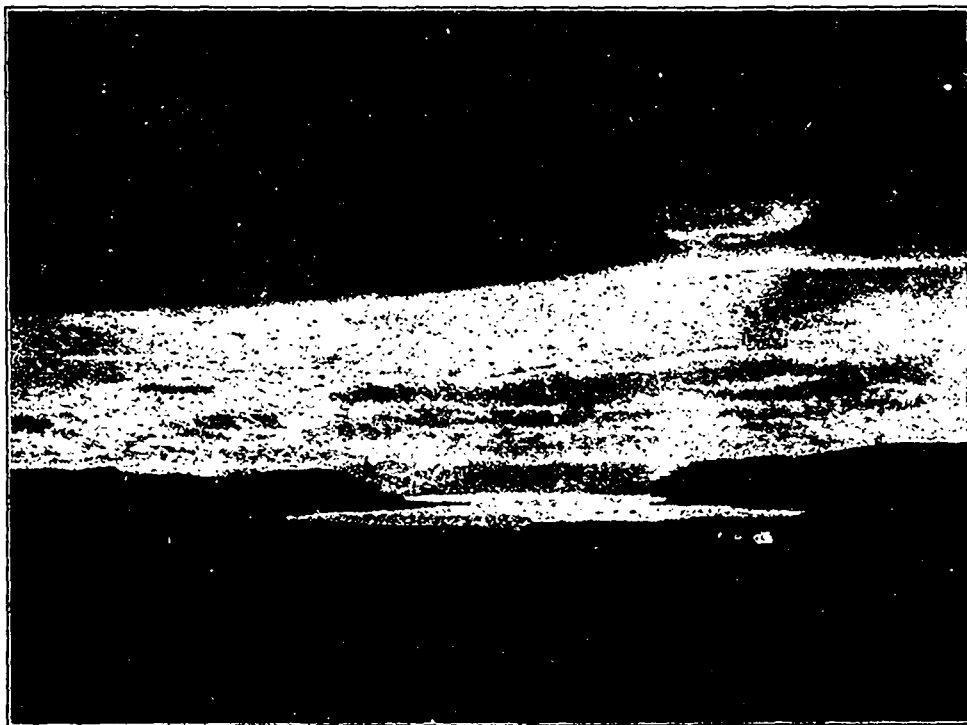
deposit would be without value.

Timber.—Of timber, such as is called timber on the Coast, there is none in the district travelled

with numerous knots, etc. Timber line in the interior, at this latitude, may be placed at, approximately, 4,000 ft. above sea level, although a few scrub



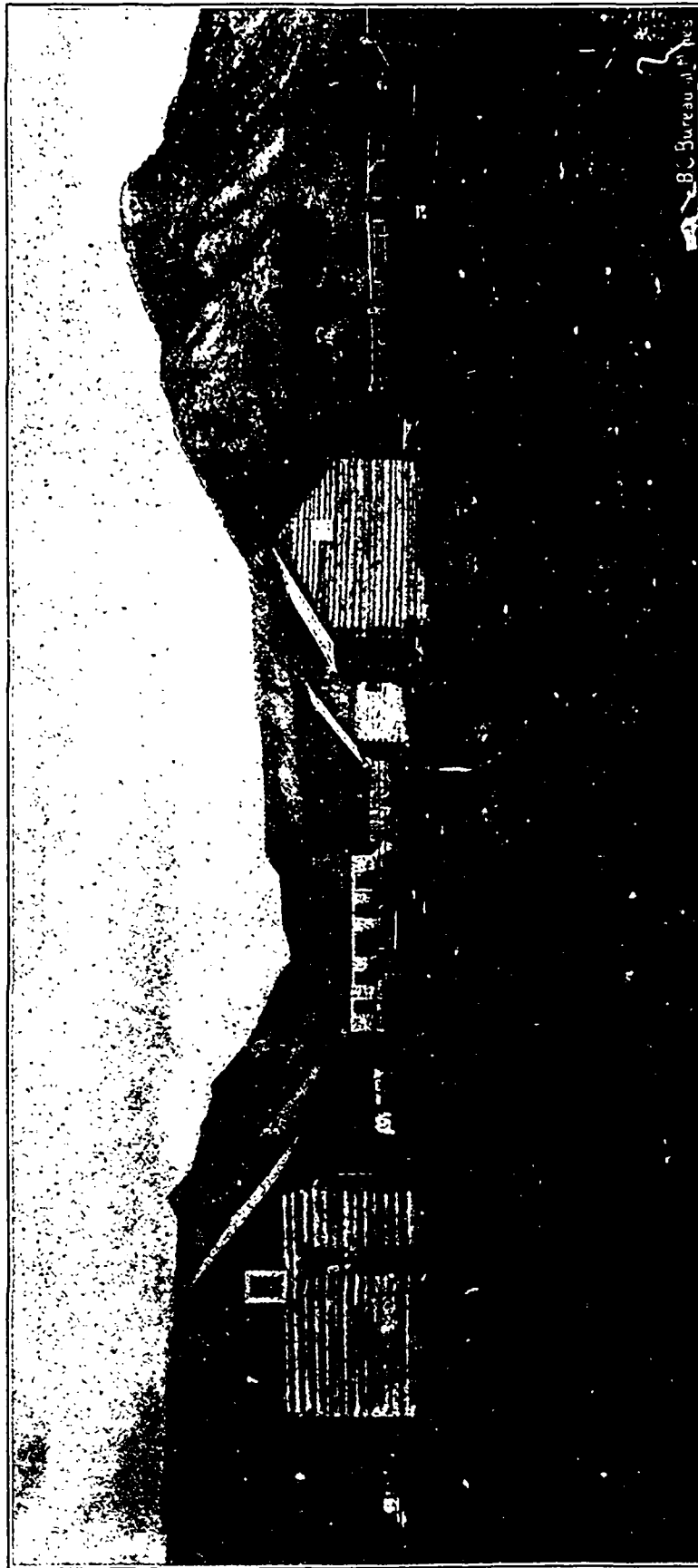
Packing Over Mountain-of-Rocks Portage, Peace River.



Moberly Lake; From the East.

through. Such timber as there is, is spruce, hemlock, balsam and jack pine, the best of it ranging from 12 to 24 in. in diameter, and not tall for that diameter,

trees and bushes range higher. Timber which would be even locally merchantable for lumber is scarce, the repeated forest fires having thoroughly cleared

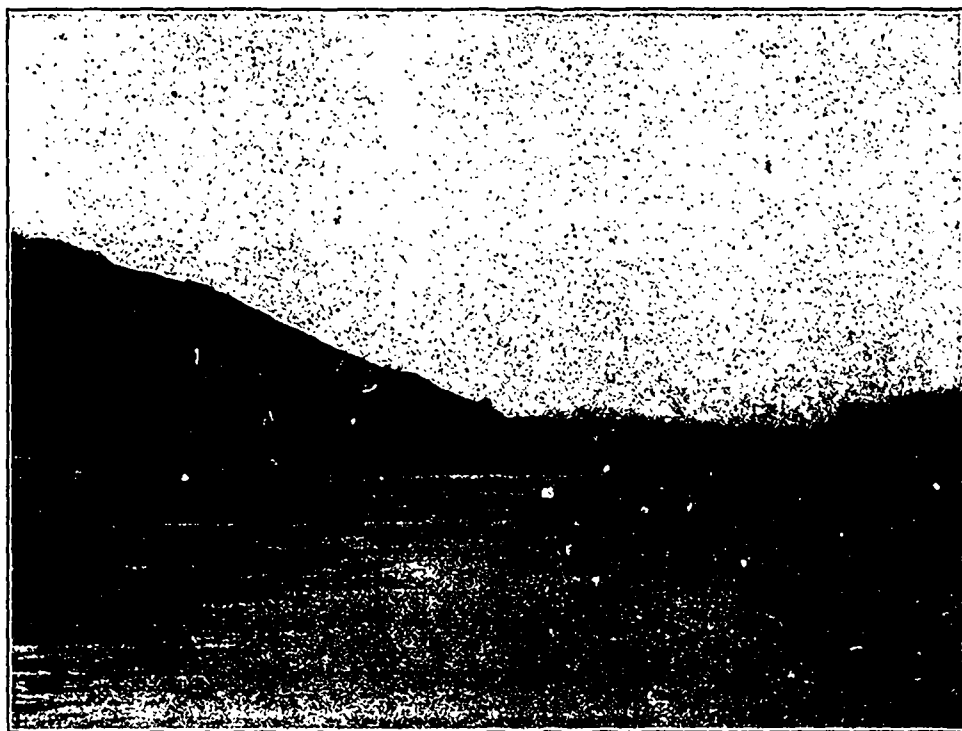


Fort St. John—Hudson Bay Company's Post on Peace River.

Fort St. John is on the north bank of the Peace River, on a small area of comparatively level land at the foot of the steep banks which rise some 800 ft. higher to the general plateau level. There has been located here for more than 50 years a Hudson Bay Company's post, and in late years some free traders also established a trading post, which latter has, within the last two years, been taken over by the Revillon Freres as one of their chain of posts. Fort St. John is the chief point in the Peace River country, and the only permanent habitation in this part of British Columbia east of the Rocky Mountains. It is also the upper terminus of a wagon road which, together with water connections, extends through from Edmonton, Alberta.

out the greater portion of it, leaving only a few isolated patches of the older trees, while the subsequent growth has not as yet reached a size to make it of value for this purpose. Of these patches, probably the best is to the south of Babine Lake, towards its southeastern end, where there is a very fair body of spruce timber. There is a very limited area of fir on Stuart Lake, near the portage, and a few isolated patches of spruce at intervals along the south shore of the lake. There is an area of very fair spruce to the east of McLeod Lake, but along the Parsnip River there is no timber fit for lumber, with the exception of isolated spruce trees and large cottonwoods, which may be utilized and now serve for making the dugout canoes used in the district. These latter trees grow plentifully and sometimes very

On the south shore of Babine Lake, near its outlet, there is a small area of good land, but the remainder of this south shore did not appear promising, good land only being found around the mouths of the few creeks. On the north shore of the lake there is a quantity of very good land. There is a strip of this land extending almost continuously from the outlet up the lake for some 40 miles, and extending from the shore at least a mile back. The greater part of this area is open, free from trees, clear, and supports a magnificent crop of wild hay, which in July was being mowed by the Indians for winter horse and cattle feed, the stock in summer finding good grazing on the higher land, further back from the lake. This was one of the finest strips of land seen on the trip. The soil is a clayey loam;



Hudson Bay Company's Post at Dunvegan, Peace River, Alberta.—Looking Down Stream.

large on the river bottoms of the streams of the northern watershed.

To the east of the mountains, on the upper benches, there is little or no timber, as a rule, the whole country having been burned over. There are, however, on the trail to the Pouce Coupe, a couple of small areas which escaped the general conflagration and are correspondingly the more valuable.

A few tamarack (*Larix Americana*) trees were seen east of the mountains, but that such do not grow west of the mountains here may be inferred by the fact that the Indians from Stuart Lake had never seen and did not know the tree.

Agricultural Lands—In the district passed through there are, to the west of the Rockies, no large blocks of land suitable for agriculture or even grazing, although there are a number of strips of such land, some of them of considerable area.

the slope from the lake is gradual, with a southern exposure, and would support grain of all sorts, as well as vegetables.

The district is at present remote from transportation, but the lake is eminently suited for navigation, with a low valley opening from its southeastern end towards Fraser Lake, through which a road could be easily built, and it seems probable that connection will thus be made with the main line of the Grand Trunk Pacific Railway, soon after that road is built.

In this valley just mentioned there is good agricultural land extending up the valley for miles, but not exceeding in width one or two miles.

To the south of both Babine and Stuart Lakes the hills rise from the water's edge, and, except in a few instances around the mouths of creeks, there is no land suitable for agriculture. At the east end of Stuart Lake there is a considerable area of fine land

to the southeast, which was fully described in the report of 1905.

The trail from Stuart Lake to McLeod Lake passes along the height of land separating three drainage areas, and the greater part of the land in this section consists of gravel benches, barely supporting a scanty growth of jack pine. There are, however, a few patches of land in bottoms which is fair, and a few good hay meadows, but these are too isolated to be of any general importance. These conditions prevail all the way down the Pack and Parsnip Rivers to the Peace River.

In passing down the Peace River, the mountains occupy the land for some distance, followed by the foot-hills as far as the canyon, and it does not seem to offer any inducement to the agriculturist. Possibly, when the country is more developed, a few valleys in the foothills, of very limited area, may eventually prove of use.

From the canyon east to the boundary of the Province a considerable proportion of this great area, as far as the soil, etc., is concerned, is quite suitable for cultivation, being rolling prairie bench land, some 800 to 1,000 ft. higher than the Peace River, and requiring little or no clearing, such tree growth as there is being small poplar and willow. The stream courses are cut down into this bench land to such an extent as to preclude all possibility of irrigation for the greater part of the district, but from observation in a dry season and from information picked up, it would seem that the summer rainfall and dews are quite sufficient for ordinary crops, while the streams and numerous small lakes provide all the water needed for stock.

Of this large area of land, which will some day be utilized for farming, the choicest parts seen were at the Pouce Coupe prairie and around the ends of Moberly Lake, the former about 40 miles long by 25 miles wide, a solid block of fine rolling prairie, clear of trees and covered with grass suitable for hay, well watered and with splendid soil, the analysis of which is given in the detailed report. This is probably the largest solid block of farming land in British Columbia. Detailed descriptions of the land along the route are given elsewhere in this report.

Agricultural Possibilities.—In the whole of the district passed through there are no settlers or settlements, except the isolated posts of the Hudson Bay Company, which are primarily fur-trading posts. Cultivation of the soil being a question of inclination of the factor, there have been few attempts at cultivation from which to draw definite conclusions as to the agricultural possibilities of the region. At Babine Post the ordinary root crops and summer vegetables are grown without difficulty, although occasionally summer frosts trouble the potatoes. Hay and other wild grasses grow so prolifically that it is considered there would be no difficulty experienced with barley, rye, oats, wheat, etc. The summers are reported to be warmer than at Stuart Lake, with a greater summer rainfall and heavier snowfall, together with a winter season averaging two weeks

longer than at Stuart Lake, and probably a lower winter temperature. At Stuart Lake, as noted in last year's report, all the garden vegetables and root crops have been grown successfully, as have the small fruits, such as raspberries, currants, strawberries, etc., both at the Hudson Bay Company's post and at the Roman Catholic Mission, a mile further up the lake, at which latter point barley, rye and oats were seen growing and almost ripe, with fine full heads.

Owing to the difficulty in getting young trees into the district, no attempt has been made to grow fruits, such as apples, plums, etc., but it is not expected that there will be any difficulty in growing these fruit trees. The climate compares very favourably with that of the Province of Quebec, with which the writer is familiar, where fruit is grown equal in flavour to any produced in the Dominion.

At McLeod Lake summer vegetables and root crops have, for many years, been grown with success by the Hudson Bay factor, although the soil around the post is poor and requires artificial irrigation. The crop of wild hay here, where the soil was suitable, was good, and the berry crop plentiful and of good quality.

There is no permanent habitation on the Peace River between the Rocky Mountains and Fort St. John. East of the mountains the vegetation was found to be luxuriant, and seemed to indicate a favourable climate. The wild berries were as good as anywhere in the Province, although not as plentiful. The size of the "apples" on the wild rose bushes was particularly noted, as being larger than seen anywhere else in British Columbia.

At Fort St. John the Hudson Bay Company's factor grows vegetables, etc., but has never attempted anything further. In 1906 the potato crop at the post was poor, owing to the unusual dryness of the season.

South of Fort St. John, in the Pouce Coupe district, no cultivation has been attempted, but the growth of wild grasses and the general conditions seem to compare favourably with portions of Alberta seen later, and which successfully supported a fine crop of grain.

Around Dunvegan, on the Peace River, in Alberta, vegetables and grain of the usual sorts are grown on the lower benches, but it is reported that attempts to cultivate the higher bench lands, some 600 to 800 ft. higher than the river, have not been successful.

At Peace River Crossing, at the junction of the Smoky River with the Peace, the usual garden vegetables were seen growing in the latter part of September, while melons were reported to have been grown nearby, although these were not seen, but the writer ate ripe tomatoes, grown outside by Mrs. Anderson, whose husband, Sergeant Anderson, is in charge of the Royal Northwest Mounted Police barracks.

This point is more northerly than any part of the Peace River in British Columbia, and the climate is colder, yet at Vermilion, some 300 miles still farther to the north and down the Peace River, grain

is reported to be grown to an extent to justify the existence of the three flour mills in operation there.

Climate.—It might be well to quote from Professor Macoun, botanist of the Geological Survey, who visited this district in 1872 and 1875. Speaking of the district in the vicinity of Stuart Lake, he says:

"There can be no doubt but that when the forest is cleared, by whatever cause, the soil will become drier, and the climate will be considerably ameliorated. Owing to the latitude, the sun's rays fall obliquely on the forest, and as a natural result there is little evaporation. As Germany was to the Romans, so is much of our Northwest to us—a land of marsh and swamp and rigorous winter. Germany has been cleared of her forest and is now one of the finest and most progressive of European countries. May not the clearing of our northwestern forests produce a similar result in the distant future of British America."

In the garden of the Hudson Bay Company's post at McLeod Lake, he found in June, 1875, "among other vegetables, cabbage, cauliflower, turnips, peas and potatoes—the latter 6 in. high—growing luxuriantly and not at all injured by frost, although it had been very severe one night shortly before our arrival."

He writes of the vicinity of Hudson Hope:—"I have been extremely surprised at the rankness of the vegetation around here, although there is very little rain at this season and there has been little all spring. Wild peas and vetches grow to an amazing height in the poplar woods, and form almost impenetrable thickets in many places. Vetches, roses, willow herb (fireweed) and grasses of the genera *poa*, *triticum* (bunch grass) and *bromus* fill the woods and cover the burnt ground, and surprise Canadians by their rankness and almost tropical luxuriance. * * *

"Growth is extremely rapid, owing partly to the length of day and cloudless skies, supplemented by heavy dews, and possibly also the great range of temperature during the twenty-four hours, from 45 deg. at sunrise to 80 deg. F. at noon.

"At St. John (on the Peace River) a few minutes' observation tended to show that this point was much warmer than Hudson Hope, that the soil was richer and that the vegetation was in a far more advanced state. Raspberries and service berries were fully ripe and in great abundance. Potatoes, oats, barley, and many varieties of vegetables were in a very flourishing state in 'Nigger Dan's' garden. The oats stood full 5 ft. high, and the barley had made nearly equal growth.

"I started up the hill in rear of the fort. We found the level of the country above the river valley to be about 700 ft. * * *

"Clumps of willows and poplars, of various ages, were interspersed with the most astonishing growth of herbaceous plants I ever witnessed.

"Willow herb (fireweed), cow parsnip, *geum*, *triticum* (bunch grass), *poa*, and a number of other tall-growing species, covered the whole region with a thick mass of vegetation that averaged from 3 to 5 ft.

"The soil must be exceedingly rich to support such

a growth year after year.

"My observations all tend to show that, omitting the slopes on the left bank, the flora of this region is almost identical with that of Ontario.

"It would be folly to attempt to depict the appearance of the country, as it was so much beyond what I ever saw before that I dare hardly make use of truthful words to portray it.

"The country passed over in your own (Selwyn's) excursion, 10 miles to the northwest, you report to bear a vegetation similarly luxuriant, more so than about Edmonton, or anywhere in the Saskatchewan country. Rainy River and the Lesser Slave Lake marshes are the only regions known to me that are in any way comparable to it.

"The latter, however, is swamp, while this is a plateau, nearly level, and in parts over 700 ft. above the river."

Dr. G. M. Dawson, in the "Geological Survey Report" of 1879, writes of this district as follows:—

"Climate and Agriculture.—With regard to the climate of the Peace River country, we are without such accurate information as might be obtained from a careful meteorological record, embracing even a single year, and its character can, at present, be ascertained merely from notes and observations of a general character, and the appearance of the natural vegetation.

"It may be stated at once that the ascertained facts leave no doubt on the subject of the sufficient length and warmth of the season to ripen wheat, oats and barley, with all the ordinary root crops and vegetables, the only point which may admit of question being to what extent the occurrence of early frosts may interfere with growth. This remark is intended to apply to the whole district previously defined, including both the river valleys and the plateau.

"Wintering Stock.—Horses almost invariably winter out well, without requiring to be fed. Hay should be provided for cattle, to ensure perfect safety, for a period of three or four months, though in some seasons it is necessary to feed the animals for a few weeks only. The Indians of the Cree settlement on Sturgeon Lake winter their horses without any difficulty around the borders of a neighbouring lake, the shores of which are partly open. From Hudson Hope the horses are sent southward to Moberly Lake to winter, and, according to Mr. Selwyn, do well there. Lesser Slave Lake, with its wonderful natural meadows, has long been known as an excellent place for wintering stock, and is referred to as such by Sir J. Richardson."

A comparison of the totals of 1899 and 1906, respectively, shows that the mineral production of British Columbia has doubled in value in eight years.

The Geological Survey of Canada has estimated the production of copper in Canada for 1906, at 57,029,231 lb., valued at \$10,994,095. Of this production 79 per cent. was contributed by British Columbia.

HUDSON HOPE ON PEACE RIVER.

From Report of Provincial Mineralogist.

HUDSON HOPE may be taken as marking the eastern boundary of the foothills of the Rocky Mountains, as to the east the country spreads out into high-level bench prairie land, having a gen-

fine, dark, loamy soil, resting on a bluish clay, underneath which, as seen in the cutbanks along the rivers, lie clay shales with beds of semi-coherent sandstone, all belonging to the Cretaceous period. Interbedded with these measures there are, probably, occasional beds of lignite, and possibly of true coal. The "float" from these seams was found in various creeks, but the beds in place could not be found, a matter not



Hudson Bay Company's Post at Hudson Hope, Peace River.



Looking East Down Peace River From Hudson Hope.

eral height above sea level of from 2,200 to 2,400 ft., into which the Peace River has cut to a depth of about 800 to 1,000 ft., while the smaller waterways have cut to a correspondingly less degree.

Almost everywhere the surface, for a depth varying from one to four or five feet, is composed of a

to be wondered at, as every cutbank seems to have a fresh mudslide each spring.

The Peace River, below Hudson Hope, has a width of from a quarter to half a mile, and, although flowing at the average velocity of from five to six miles an hour, contains no rapids, as its bed is com-

posed of gravel and small, round, water-worn stones, producing innumerable bars and shoals, with numerous islands, almost every one of which bears evidence of having been originally a gravel bar, on which, at the upper end, a log jam had formed, producing a breakwater behind which the sand and silt had collected, forming a foothold for the vegetation of forest trees which now grow so luxuriantly.

In the back channels and eddies sand and silt bars have collected, and these, particularly nearer the Canyon, show colours of fine gold. Attempts have been made to wash these bars with cradles and sluices, but, while some quantity of gold has been recovered, the bars are not rich enough to pay for this class of mining. The results obtained, however, indicate the possibility of their being successfully worked by dredging, the character of the river bed, its freedom from all boulders, etc., being particularly suited for such operations, although, at the present time, the difficulties of transporting heavy machinery into so remote a district seem almost insurmountable.

At highest water the river is too swift, and at low water too shallow, for steamboat navigation, but, for a period during midsummer, the Hudson Bay Company operates a large and well equipped stern-wheel steamer from Vermilion to Peace River Crossing, at the junction of the Smoky River, a distance of some 300 miles, with each year occasional trips to Fort St. John. In 1906 the steamer ran one trip to Hudson Hope, a distance of 250 miles above the Crossing, thus providing transportation over a distance of 550 miles of river; a length of river navigation which can best be appreciated by stating that it is approximately 50 per cent. greater than that provided by the St. Lawrence River, from the Great Lakes to Quebec, on tide water. According to the Geological Survey, the fall in the river between Hudson Hope and Vermilion is 572 ft. or about one foot to the mile.

THE SURFACE GEOLOGY OF BRITISH COLUMBIA.

DR. R. CHALMERS of the Geological Survey of Canada, spent the closing weeks of last year's field-work season in examining the surface geology of British Columbia. In his report on the "Surface Geology of the Great Plains and British Columbia, etc.,"* he gave the following information concerning this Province:

"The surface deposits of British Columbia are somewhat different from those of the great plains. The black clay or vegetable deposit is not often seen there, the materials consisting largely of gravels, sands, silts and clays. The heavier precipitation and the extensive denudation which the western slope of

the Cordillera has undergone carried away much of the eroded material. Except in the river flats, which are comparatively narrow until the Pacific Coast is approached, the level surfaces are few and limited. The valley of the Fraser River, however, exhibits some fine terraces and meadows in its lower reaches, and where these are overflowed by spring floods periodically there is a black loamy soil. These remarks apply more particularly to the mainland; but the surface deposits of Vancouver Island, so far as examined, appear to be very much the same.

"Clays are common in the prairies and British Columbia, and bricks are manufactured at or near all the principal towns. The clays of the plains, however, contain lime, as they are largely derived from the shales, limestones and other rocks of the prairie and Rocky Mountains. Iron and other substances, as for example soda, potash, magnesia, etc., are also found in them and are more or less detrimental to clays intended to be used for refractory products such as firebrick, pottery, etc.

"Though ordinary brick clays are so widely distributed over the prairies they are quite thin in many places, and vary in character and composition.

"In British Columbia bricks are made in several places, especially at or near the towns. Pressed brick, firebrick and sewer pipes are manufactured at Victoria, Fraser River and other places. Good fireclays occur at Ladysmith and Comox, and on the mainland at Matsqui on the west side of Fraser River.

"A highly plastic ferruginous clay, which might be used as a pigment, occurs on Texada Island.

"From the north arm of Burrard Inlet a good brick clay has been obtained.

"A fairly refractory firebrick could be made from an under-clay which occurs in Granite Creek, Yale district, and in the Kamloops division of the same district another deposit of good clay is found up Guichon creek.

"Clays of economic value have also been noted on Michel Creek, East Kootenay, and on Arrow Lake, West Kootenay.

"In British Columbia the soil is different from that of the prairies. Clays, sands, silts and gravels prevail everywhere, however, and the central part of the Province has been found a good fruit-growing district."

(Note—Dr. Chalmers appears to have been inadequately informed as to the "good fruit-growing" parts of British Columbia. Not only the central part, but practically wherever fruit trees have been planted—along the valleys of the rivers in East and West Kootenay, and Yale; in the valleys of the rivers and on the delta of the Fraser; on Vancouver Island, and in other parts of the Province, it has been amply demonstrated that fruit-growing can without difficulty be made a successful industry.—Editor *MINING RECORD*.)

*In "Summary Report of the Geological Survey Department of Canada for 1906," pp. 78-79.

CARIBOO DISTRICT.

A Year's Progress in Placer Gold Mining.

CARIBOO AND QUESNEL mining divisions of the Cariboo district together produced in 1906 placer gold to the value of \$395,400 as compared with \$553,000 for all other parts of British Columbia. These figures are from the official records, which credit Cariboo division with a total recovery last year valued at \$355,800 and Quesnel at \$39,600. It may be that after the Guggenheim properties near Bullion shall be supplied with ample water for gravel-washing purposes the Quesnel division will show an annual production of gold as large as that of the Cariboo, as was the case in the nineties. In fact its output during six years 1895-1900 considerably exceeded that of the parts of the district now included in the Cariboo division, having reached an aggregate in that period of \$1,457,710 as against \$953,400 for the latter. Quesnel's most productive year was in 1900 with a total recovery for that year of \$510,000; since then its output has decreased year by year until in 1906 it got down to what it is believed will prove to have been its extreme low-water mark. Cariboo division, on the contrary, has in late years made a substantial increase, last year's total having been its highest since the early nineties, while its aggregate of \$1,623,200 for five years, 1902-1906, compares very favourably with that of \$906,100 for the corresponding period, 1897-1901.

The following reports for 1906* of George Walker, gold commissioner for the Cariboo district, and the mining recorder of Quesnel mining division, respectively, give information showing the condition of the placer gold mining industry in the district last year: Mr. Walker reported:

"I am unable to announce any increase in the gold output of the mines, but, at the same time, the actual conditions give the greatest encouragement that the district is on the eve of a prosperous term that has not been equalled for years, from the fact that more applications for mining leases have been granted than in any previous year, while there has also been an increase in the revenue. The work done during the past year has given evidence of such a substantial character that it is safe to predict greatly increased activity in the near future. Several of the small properties, hitherto held and worked by individual miners, have been purchased by strong companies and formed into large enterprises, necessitating the construction of extensive ditches, flumes, reservoirs and other works of a substantial nature. This changing of the methods of working, together with the very dry season, has had a deterrent effect upon the output of our hydraulic operations, the method by which three-fourths of the gold of the district is produced, and has curtailed this year's output of gold, but, when the extensive preliminary works already well under way are completed, there will undoubtedly be a large

increase in the gold yield of the district.

'In order to obtain as reliable information as possible, I addressed notes to the foremen and managers of the various mines, requesting a report on the season's operations at the mines under their supervision, and from the information thus obtained the following report is largely taken:

"CARIBOO MINING DIVISION.

"In the Cariboo, or what is locally known as the Barkerville mining division of Cariboo district, the result of the season's operations has been fairly good, but shows a slight decrease from that of the previous year.

WILLIAMS CREEK AND TRIBUTARIES.

"The Mucho Oro claim on Stout's Gulch, formerly owned by W. C. Fry and purchased this year by John Hopp, who, having leased the Cariboo Gold Fields ditch and installed a larger hydraulic plant, moved approximately eight times as much material as was previously done by the former owners. The output of the mine, so far as I can learn, has been very satisfactory and the future prospects are promising.

"The Forest Rose hydraulic claim, on Williams Creek, also owned by Mr. Hopp, on which very little had been done for a number of years, has been put into good working order and active operations will commence in the early spring.

LOWHEE CREEK.

"The property on this creek formerly owned by the Cariboo Consolidated, Limited, and on which very little has been done for the past three or four years, was also purchased by Mr. Hopp, who in the fall employed quite a force of men repairing ditches, enlarging the sluice flume and making general repairs in and around the property so as to be in readiness for next season's work, when, I am informed, it will be operated to its full capacity.

LIGHTNING CREEK AND TRIBUTARIES.

'I am indebted to the manager of the Cariboo Consolidated (1904), Limited, Melbourne Bailey, for the following brief but comprehensive report on the La Fontaine mine:—

"Work has progressed steadily, with a force of men numbering on an average 48 per diem for the whole year. The total length of the various tunnels, drives, cross-cuts, etc., that have been driven to date, in developing and prospecting the channel, is 6,340 ft. A total of 95.2 ft. of upraises has been made, in addition to the main shaft, which is of a depth of 175 ft. Since the first of January, 1906, a total of 6,828 cu. yd. of gravel has been mined and washed, which yielded 1,451.5 oz. of gold; the gravel having, therefore, an average value of \$3.91, as against last year's average of \$2.22 per cu. yd. The total amount of gold recovered to date in our La Fontaine mine is 2,035 oz., having an approximate value of \$37,450. Our drainage drives are being continued up stream as rapidly as possible, in order to block out and drain the gravel so that it can be worked to advantage later on.

*See "Annual Report of Minister of Mines for 1906," pp. H 33-H 47.

“Above the Old Eleven of England workings, opposite the mouth of Anderson Creek, gravel containing very much higher values has been struck, some of this gravel averaging \$30.40 per cu. yd., making the outlook for the future very bright.”

This determined the depth and location of the old channel of Lightning Creek, at the present location of our works, to our satisfaction. A year ago we began the preliminary work and placed orders for the equipment of our shaft; since then we have sunk



Old Black Jack and Burns Hydraulic Placer Gold Mine, Cariboo, B.C., in 1863. Reproduced for the British Columbia Bureau of Mines from an old Photograph in Possession of Hon D. M. Eberts, M.P.P., Victoria, B. C.

“I am indebted to S. Keast, Superintendent of the Lightning Creek Gold Gravel and Drainage Company, Ltd., for the following report:

“Our previous report included mention of prospect drilling operations closing the season of 1905.

a double compartment shaft 8 ft. 6 in. x 12 ft. 6 in., about 200 ft. deep, and at this writing the cross-cut, 8x12 ft., is in about 90 ft. and, we believe, very close to gravel. We have equipped the plant with a 40-h.p. engine, 10-h.p. dynamo engine, 12-h.p. com-

pressor, two 40-h.p. boilers, 25-h.p. hoist, saw-mill, two 12-in. Cornish pumps, driven by a water-wheel 8 ft. breast and 20 ft. diameter, a Keystone drilling apparatus to locate the depth, values and position of the old channel, a considerable amount of special machinery, including a power lathe, large pipe-cutter and threader, boring machine, and a complete outfit of tools to suit our work. We also have one large and one small steam pump, with special arrangements for fire protection. The property is also well provided with buildings for various purposes. The main shaft-house is 62x90 ft. The old shaft house is equipped with an 8-in. pump and water-wheel, and besides this we have two 6-in. fast-speed pumps for general use. Estimates on a 500-h.p. electric plant, to be driven by turbines (water power), have been obtained from various companies, it being our intention to run all the works by electric power, the station to be located below the old Big Bonanza dam, which we have cut away preparatory to the erection of a much larger dam on the same site. All our operations along the creek will be connected by a narrow gauge electric railway.

"The installation of this plant, which we estimate will cost \$60,000, will greatly reduce operating expenses and enable us to operate on a much larger scale. Since the last active work began, in May, 1905, the company has expended for labour, equipment and working expenses, generally, an average of \$5,000 monthly. At present there are about 30 men directly connected with the work, which number will be increased as soon as we get working room in the drifts, if efficient labour can be secured.

"During the past winter our holdings, including the Big Bonanza and other claims not included in the previous Consolidation Act, were re-consolidated by an Act of the Provincial Legislature.

"The supplies and equipment for drilling operations and for special work during the ensuing season have been ordered. These will aggregate fully 25 tons of material, excluding the proposed electric plant. A second shaft will be started in the spring, and after drilling the Big Bonanza a 300-ft. shaft will be started thereon. The steam equipment for the No. 2 shaft is now on the ground.

"The drilling operations at our present location showed 9 ft. of old or pre-glacial channel gravel, very firm and apparently rich, underlying all the other gravel and sand. The formation is about as follows: 40 ft. sand and gravel, 40 ft. blue clay, 30 ft. dry and wet slum, 45 ft. sand and gravel, 10 ft. old hard gravel; altogether, 165 ft.

"The 6-in. drill hole which penetrated the old channel at this depth gave values of \$7.15, recovered by the sand pump. This would figure over \$1,000 to the set, if these values were similar over the bedrock at this location.

"During the past summer seven holes were drilled about half a mile above our present shaft, and the last one, we feel certain, would have located the old channel, but that at 146 ft. the drive pipe parted, and not having enough for a new string, we closed that work until spring. At this depth, however, we

recovered \$2.50 with the sand pump. The gravel at this point was quite thick, and from the upper indications of value the bedrock was expected to show a larger value than the location below.

"Of the Fountain Creek Consolidated Mining Company, of Fountain Creek, an enterprise started last year to prospect the deep ground of this creek, A. McPherson, the foreman, writes me:

"The Fountain Creek Consolidated Mining Company was first organized in July, 1905, to prospect on Fountain Creek. After four months' work the venture was found too expensive for the company. The first bedrock was found at 45 ft., from which some 50 ft. of drift was run, but the bedrock found in the channel had so heavy a grade and was washed so smooth that very little value was obtained, but the quality of gold was so encouraging that the company concluded to go half a mile further down stream and sink a second shaft. This was done, but a depth of only 42 ft. was obtained when a flow of water was struck; after three days' work bailing with a bucket and windlass the shaft had to be abandoned and work was suspended for two months and the company was reorganized. The reorganized company, on November 20, 1905, started to work to find the channel by sinking a large shaft, building an overshot water-wheel to drive pumps and a large shaft-house, all of which are completed. The shaft was sunk 52 ft. and a drift started in rock to find the channel. This drift is now out from the shaft 55 ft., but, as the rock encountered is very hard, the progress made is slow. Up to the present time the company has expended \$10,000.

"Bertram Mellon, manager of the Slough Creek, Ltd., kindly furnishes me with the following particulars of the company's operations:

"Our operations for the current year consist of drifting in bedrock and tapping the gravel at various points at intervals during the year, but only as much work of this nature has been done as was necessary to maintain a flow of water from the gravel at a speed sufficient to keep both pumps running at from 70 to 80 per cent. of their capacity. The greater part of the year has been occupied with purely construction work. A water lodgment (having a capacity of about 60,000 Imperial gal.), has been driven below the level of the main tunnel for a distance of 140 ft. A drift is now being run from the main tunnel to connect with the pump chamber and provide a necessary exit. The old drain tunnel, commencing some 2,000 ft. down the valley and connecting with the gravel shaft, has been opened up and repaired throughout. This drift is now being continued up stream, for the purpose of taking off the surface water and so reducing the possibility of this water finding its way to the bedrock gravels. Pumping, at the rate of from 7,000,000 to 8,000,000 gal. a week, has gone on steadily throughout the year. It is now quite clear that the unwatering of this mine is a much greater undertaking than was anticipated, and in order to increase the outflow and assist the pumps it is proposed to elevate water with bailing tanks. Two additional boilers and a pair of 16 in.

x 36 in. direct-acting winding engines will be installed. The work attending this increase of plant, new boiler house, an extension of shaft-house, and a new head frame, etc., is now going forward. From 20 to 30 men have been employed and about 60 Chinese are at work cutting fuel, under contract.'

WILLOW RIVER.

'The Willow River Mining Company, Limited, has at last succeeded in reaching the deep channel of Willow River, and, I am credibly informed, when compelled to shut down on account of the fatal illness of the principal owner, was working on gold sufficient to pay, with the ground improving with every foot advanced across the channel.

MOSQUITO CREEK.

'The Williams and Alabama hydraulic claims, owned by Flynn Brothers, owing to the light snowfall of last winter, had a short season; notwithstanding this fact, these claims still continue to be among the most productive of the district.

EIGHT-MILE LAKE.

'T. O. Burgess, assistant manager of the Thistle Gold Company, Ltd., says:—Notwithstanding the fact that it was necessary to do considerable dead work before obtaining any returns from the mine, the season just past has proved a very successful one. This is due in great part to the unusual rainfall in the latter part of the season, there having been after the first day of September, 26 days (24 hours each) of water for hydraulic operations. From the commencement of the season to June 30, there were 52 full days of water. In order to gain depth, a cut for a sluice flume 2 ft. in width was brought up from the lake through the east side of the diggings. As the old sluice flume was on the west side, this also afforded better dumping facilities, that part of the lake into which the old sluice dumped having been filled up with tailings. With the exception of occasional bedrock, the cut was in hardpan, all of which it was necessary to blast before the pipes would take hold. This cut, 800 ft. in length, had a minimum depth of 8 ft. a maximum of 30 ft. and an approximate width of 8 ft.; total length of new sluice-flume laid, 1,200 ft.; grade of sluice, 4 in. to the 12-ft. box.

'While the above-mentioned work was in progress the top material at the working face, which, in the fall of 1905, was prepared for washing by a bank blast, was worked off through the old sluice-flume. The bottom or pay-gravel was left until the fall run, when it was taken up and washed through the new sluice. At the same time a small pit was also taken out on the west side of the diggings. Another bank blast will be put off this fall; length of main drive 60 ft.; length of T, 60 ft.; charge, 3,000 lb. of black blasting powder.

'Fifteen men were employed in the early part of the season. The prospects for next season are bright, the ground is good, and all work will be live work.'

GOOSE CREEK.

'Regarding the Waverly mine, P. Carey, the foreman, says:

'With a light snowfall during the winter, it was the general opinion that the water supply would be short, which proved well founded. After a short run with the best of the feshet, I decided to store the remaining flow in the reservoir, and thus keep the mine going steadily with the usual number of hands. The result of the clean-up was so satisfactory that the board of directors was able to declare a dividend of \$5 per share, an increase of \$1 per share over any previous year. Then the necessity of having to divert water from the main pipe-line for the economical and convenient working of the west branch pit, a new giant, water gates and other apparatus had to be provided for as well. A contract has been let for the supplying and delivering of this material at the mine, to be in readiness for next spring's operations. In conclusion I may add that, from present appearances, the large body of pay-gravel in the faces of both pits of the mine will be a steady and increasing dividend-producer for years.'

CHINA CREEK.

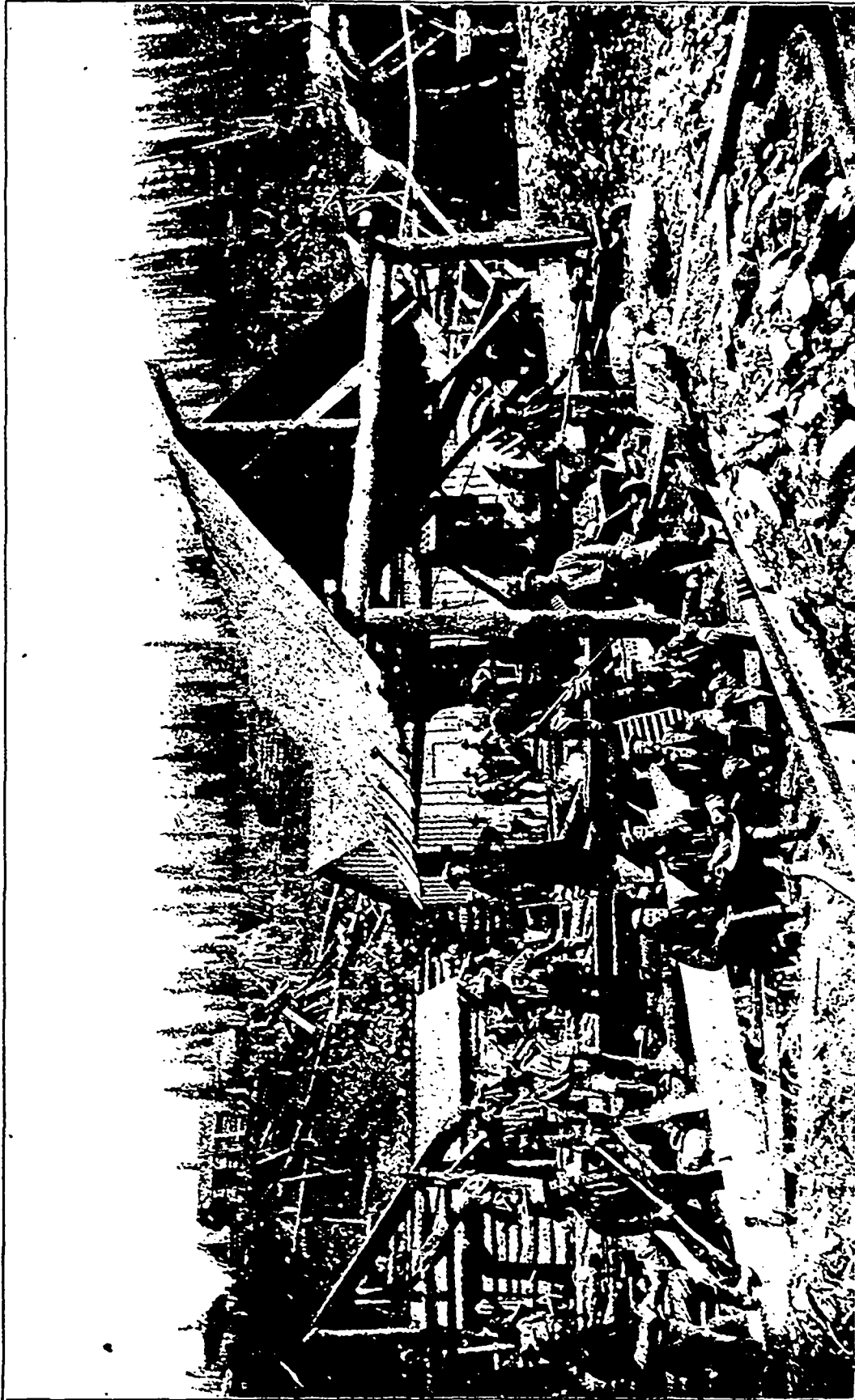
'I am favoured with the following report from B. A. Laselle, manager of the China Creek Hydraulic Company:

'An early spring made it possible to commence hydraulicking the last week of April, 10 days earlier than usual. The total yardage washed during the season was 150,000 cu. yd., of which 60,000 yd. were piped off during the fall run and not cleaned up. The equipment on this property now has an average daily washing capacity of 2,000 cu. yd. a day of 24 hours. The gold values continued uniform, and the large amount of workable ground in this company's holdings makes the future of this mine appear satisfactory to the owners.'

NUGGET GULCH.

'There is a new hydraulic mine of much promise on Nugget Gulch, which has been equipped this season, and of which the manager, B. A. Laselle, says:—

'This property has been equipped during the past season with a complete hydraulic plant, capable of handling 1,500 cu. yd. a day of 24 hours. The water supply is secured from Victoria Creek, where an earth-filled crib dam was constructed for storage and reservoir purposes, which will enable the property to be worked a part of the time during the dry seasons. The water was turned into the pipe for a few days in the latter part of October, and the pit opened up enough to enable this mine to start hydraulicking with the first water available in the spring of 1907. Construction work on the property completed this season consists of 2½ miles of ditch, with a carrying capacity of 1,200 miner's inches; an earth-filled crib dam 250 ft. long, 14 ft. high, and 34 ft. wide on the bottom; pipe-line, 1,250 ft. long; sluice-flume, 200 ft. long; camp buildings and three miles of new wagon road up Antler Creek. This property is situated on what is apparently a pre-glacial channel coming in from the head of Cunningham Creek, with every appearance of having been the principal source of the gold found on Antler Creek during the early sixties, and the owners feel assured of profitable re-



"Carlton" (J. A.) Cameron's Placer Gold Claim on Williams Creek, Cariboo, 1863. Reproduced for the British Columbia Bureau of Mines from an old Photograph in the Possession of Edgar Bloomfield, Esq., of Vancouver, B.C.
 Note.—No. 1—"Carlton" (J. A.) Cameron, with Gold Pan. 2—A. D. Melmes. 3—James Wattie. 4—James T. Steele. 5—Robert Stevenson. 6—James Cummings (behind No. 4). 7 and 8—Brothers of J. A. Cameron (on either side of No. 1).

turns from this property in the future, as the workable ground is extensive and well suited for cheap and economic working.'

ANTLER CREEK.

"The Russian Creek hydraulic mine, on Lower Antler Creek, is a new hydraulic mine of much promise, which is being opened up, and of which the superintendent writes me as follows:

"The Russian Creek mine is situated at the junction of Russian and Antler Creeks, having a bench more than a mile in length, and ranging from 500 to 1,000 ft. in width. Gold was first discovered late in the season of 1905 by a shaft sunk to a depth of 35 ft. Later, seven shafts were sunk, cross-cutting the bench, ranging from 20 to 30 ft. in depth, all showing high gold values, which increased with depth, although it was impossible to reach bedrock in any one of the shafts on account of water. During the present season two men have been employed ground-sluicing a cut, which cross-cuts the bench, in order to determine the average value of a cubic yard. There was, approximately, 900 yd. of gravel moved, producing $12\frac{1}{4}$ oz. of gold, which was an average of about 25 cents a cu. yd. The face of the present cut is about 38 ft. high, with the bedrock pitching into the hill; therefore, it is impossible to determine the depth of the deep ground at present. The company intends to install a hydraulic plant for next season; at present there are four men at work digging a ditch to be about a mile long, 3 ft. wide in the bottom by 5 ft. on top, for the purpose of bringing water from Russian Creek on to the ground.'

CUNNINGHAM CREEK.

"The Bear Hydraulic Company, Ltd., on Cunningham Creek, which owns the second largest hydraulic mine in Cariboo district, has completed a large dam on Cunningham pass for storage purposes, which will enable the management to work the mine continuously during the season; also 600 or 700 ft. of a large rock cut through the rim-rock to tap the bottom gravels of the channel was practically completed in the latter part of the season, thereby putting the claim in good shape for next year's work.

QUARTZ.

"C. J. Seymour Baker writes me regarding his operations as follows:

"A considerable amount of work has been done on Proserpine Mountain, three miles from Barkerville, and several new reefs opened up, but they all appear to be low grade on the surface. The Forest shaft was bailed out and the fault examined. From its appearance, the reef is thought to be close by.

"Assays were made of galena found and in several places on the mountain the galena went 70 oz. of silver to the ton, and in one case as high as 180 oz., but the quantity is so small and the distribution so irregular that the ore cannot be made to pay as a silver-lead ore. In no other place in the district has galena carrying such high values in silver been found.

"Some quartz veins on Sugar Creek, Island Mountain and near Stanley were examined, but the

highest value found was about \$16 in gold to the ton, and the galena ore 25 oz. of silver to the ton.

"The deposit on Hardscrabble Creek containing scheelite was visited. The scheelite appears to be distributed irregularly in the country rock, which has quartz in lumps and lenses running through it. The quartz often appears to the eye to be much richer in scheelite or in tungstic oxide than the country rock, even where it is actually much poorer, so it is difficult to judge of the value of the ore by its appearance.

"It is doubtful if the scheelite carries any gold or silver, although that near the surface of the bedrock does, but this is believed to be derived from the auriferous alluvial above it.'"

QUESNEL MINING DIVISION.

The gold commissioner reported:

"Of this portion I regret my inability to speak with any degree of certainty, not having received reports from the various managers, but the report of the mining recorder of the division will be found appended hereto.

"The Luce claim, on Little Snowshoe Creek, was purchased last spring by Graham and Minisci, to whom I am indebted for the following report:

"The present season we operated the mine with a crew of seven men, but had only two months' water. Unfortunately, just as the water had about given out, a large slide came down from the bank and buried the bedrock we had stripped, in consequence of which we were unable to clean up. We were unprepared for the freshet that occurred in the fall and did not use the water. We drifted toward the hill rim for 50 ft., and found the pay of greater width than was expected. We look forward with confidence to a good season next year.'"

Report by W. Stephenson, Mining Recorder.

"In submitting the annual report, with the estimated yield of gold obtained for the mining season of 1906 from the Quesnel mining division of Cariboo district, it might be inferred from the small amount of gold obtained for the season that this section of the district was becoming unproductive, or, as miners would say, worked out. Such is not by any means the case. The first and real cause of the very apparent shortage of gold obtained is the scarcity of water for the working of hydraulic and other surface mining. As is well known, the winter of 1905-6 the snowfall was very light in this division. Similar conditions have held for the last four winters; consequently, each succeeding year during this period the water in the lakes, swamps and other natural reservoirs has been diminishing, and many of these natural reservoirs have become exhausted by evaporation; a number of the gulches and small streams which were fed from these sources have become altogether dry, while some of the lakes have fallen below the level of the ditch-heads through which the ditches formerly drew their water supply. Through the mining section of this division a large number

of the small mining claims were unable to work for lack of water, and the same was the case with the large hydraulic mines, the water supply having been so limited that they did not attempt to operate during the season. For this reason we have no returns whatever from our chief producers. Owing to the demand, at good wages, for labour, it may be said that desultory mining on the river bars and creeks was abandoned during the season, the men having done better by working for the wages obtainable from the companies and contractors on the preliminary work in constructing roads, digging ditches and other works being pushed as fast as available labour will permit and the materials can be procured. Judging from the work already done and that contracted for, it would seem that mining men and capitalists have confidence in the future of this section of Cariboo district."

(Note by Provincial Mineralogist.—J. B. Hobson has kindly provided the provincial mineralogist with a copy of his report, as manager of the Cariboo Gold Mining Company, to the general manager of the Guggenheim Exploration Company, of New York, from which the following extracts are made):—

CARIBOO GOLD MINING COMPANY.

"I hand you herewith my annual report, which reviews briefly the work carried on at the company's mines during the progress of the season commencing March 1 and ending November 20, 1906. Owing to the impossibility of securing the full number of labourers and mechanics required for excavation and construction work, the season's work turned out a most disappointing one, for the reason that only a small portion of the work on Spanish Lake canal was performed. The increased rate of wages demanded and paid added materially to the cost of the work performed. The failure of the contractors to complete the lower or Bullion section of the Spanish Lake system, which cuts away the old Polley's Lake ditch for a distance of 1 73-100 miles, made it impossible to utilize the water stored in Morehead, Polley's Lake and Boot Jack reservoirs, for mining purposes, in the hydraulic excavation.

"Water Supply.—The quantity of water available for use during the season of 1906, was: From Morehead Lake, 37,000 miner's in.; from Polley's Lake, 31,600 miner's in.; from Boot Jack Lake, 6,100 miner's in.; total, 74,700 miner's in., which is barely sufficient to operate the mine 30 days with 2,500 miner's in. of water.

"It was intended to use this water to take up the high-grade bottom gravel in Pit No. 1, but the failure of the contractors to complete the Lower or Bullion section of the Spanish Lake ditch, which cut out the lower end of the South Fork ditch, made it impossible to deliver the water from Polley's Lake and Boot Jack Lake reservoirs for use at the mine.

"It is expected the contractors will complete the Bullion section on or before July 1, 1907, when mining operations can be commenced in Pit No. 1, and continued to such time as the water supply shall be exhausted.

"The snow fall on the watershed tributary to Boot Jack, Polley's and Morehead Lakes is greater than it has been for several years past, so the outlook for the ensuing season's water supply is quite favourable.

"The water in Spanish Lake reservoir stood 83 in. above the bottom of discharge gates on November 20, and 100 in. on December 27—a rise of 17 in. in 37 days.

"Condition of the Mine.—The mine, having been equipped with a gravity tram, an hydraulic elevator plant, and a Loveridge derrick, may be considered in good condition for the economical removal of the high-grade bottom gravel, which has been uncovered for a distance of 1,500 ft.

"The disintegration of a large quantity of the top deposits by the bank blasts places the high bank of Pit No. 1 in good condition for economical and profitable removal.

"The sluice-tunnel should be completed and ready for use early in the season of 1908.

"Spanish Lake Water Supply System.—The dam built across the outlet of Spanish Lake is 298 ft. long on crest, 31 ft. high; width on top, 12 ft.; inner or water slope, 3/4 to 1; outer, 1/4 to 1. It is constructed of barked spruce logs, in cribs of 9 ft. centres, all securely fastened with iron drift-bolts, and rock-filled. The inner slope is sheeted with double 2-in. plank and battens; said sheeting is well bedded in concrete and covered with earth carried up to the discharge gates.

"The water is discharged through three cast-iron, brass-faced gates, 40 in. in diameter, fastened to three 42-in. riveted sheet-steel conduits, each 24 ft. long, which terminate in the outlet flume at head of ditch.

"The structure is completed, with the exception of a small amount of work to complete and make safe the waste weir, and a few cribs to fill with rock at extreme top of structure.

"Spanish Lake Ditch.—By reference to the engineer's report, it will be noted that some work has been done all along the line of ditch, excepting on the Quesnel section. About one mile only is completed on the Bullion section. The whole of the work performed by the contractors will not exceed nine per cent. of the excavation. The contractors, however, appear confident that they will, with the aid of the steam shovels now on the ground, be able to complete the work by the middle of November, 1907.

" Estimated Cost of Completing the Spanish Lake Water Supply System.

"Summary of Estimates:—

Expended during season 1906, as per accountant's books, as follows:—

Spanish Lake dam	\$ 18,282 54
" ditch—	
Payments to contractors..	\$31,177 74
Telephone construction..	710 69

Other payments, covering supervision, engineering, surveying, camp equipment, lumber, material, etc.	13,154 31	
		45,042 74
Roads to Spanish Lake		26,894 28
Bridge, Quesnel Lake crossing		7,093 16
Total expenditure for season	\$ 97,312 72	
"Estimated Cost to Complete Spanish Lake Ditch System.		
1st Spanish Creek division	\$112,100 00	
2nd division	77,500 00	
Quesnel River section	109,500 00	
Bullion section, to complete	9,500 00	
Pipe-lines—		
Poquette line	12,614 25	
South Fork Quesnel Crossing, including bridge	61,016 25	
Right of way, clearing	6,400 00	
Total estimate to complete	\$388,630 50	
To which must be added the 10 per cent. retained on contractors' estimate during 1906, which is still unpaid		3,299 60
		\$489,242 82

The mining recorder's report continues:

"I have no returns of gold from the Horsefly section, as there has been no mining nor even prospecting done on the waters of the Horsefly River during the season, but lately five mining leases have been located upon the upper Horsefly, which may cause development of the ground.

"The hydraulic mines on the south fork of the Quesnel River not having been operated during the season, there are no returns from them. On the north fork a few individual white miners have been taking out fair wages during the year.

"Upon the main Quesnel River, from the Forks down, very little mining has been done this season, but quite a number of mining leases, both dredging and bench, have been located.

"Keithley, Snowshoe and other creeks in this vicinity are holding out well, but owing to the limited supply of water, returns for 1906 fall short of average years.

"In regard to lode mining there is little to be said; there have been a few mineral locations recorded, but very little development work done.

"Although the amount of gold obtained for the year is small, the number of new locations and the heavy expenditure on preliminary work done in the opening up of those locations give promise of good returns in the near future."

ANTIMONY IN SLOCAN DISTRICT.

AN ANTIMONY property is being opened up in the Slocan district. The discovery late last season of stibnite, on the north fork of Carpenter Creek, has been reported by the gold commissioner for that district to the Provincial department of mines. The Golden Crown Gold and Silver Mining Company, Lewis Hind, Three Forks, manager, owns the property—the Alps group of three claims situated on a branch of the north fork of Carpenter Creek, $8\frac{1}{2}$ miles from Three Forks and about 7,000 ft. above sea level. The ore occurs in a quartzite dyke about 30 ft. in width and traceable for 4 to 5 miles. Ore has been found in quantity in three places along a distance of about 600 ft. Each good showing is where the vein appears to have been pinched by the intrusion of very hard schist. In two places the ore seems to be in place, lying on the schist, which is the foot-wall while quartzite is the hanging-wall. As a rule the ore occurs clean, but in places it is mixed with soft yellow quartz and is then difficult to sort. Where first found it was in large lumps of high-grade ore, occurring in decomposed quartzite. These weigh up to 1,600 lb. The ore contains as high as 67 per cent. antimony, and small silver and bismuth values as well. The greatest width of ore is about 4 ft., where the vein is well defined. The ore is to be shipped to Scotland for treatment and shipments will be made after the construction of an aerial tramway some 4,000 ft. long already arranged for shall have been completed. Substantial quarters are to be built for the accommodation of a number of men.

The treatment capacity of the Granby Copper Company's smelter at Grand Forks is now at the maximum the enlargement of its six smaller furnaces was intended to reach. With eight blast furnaces, each having a capacity of about 500 tons per diem, the works are equipped for a larger output of copper than at any previous time since they were established. Should there be no difficulty arise in connection with labour and fuel supplies the Granby Company should have a period of renewed profitable operations, mines and smelting works together being equipped for output and treatment of 100,000 to 120,000 tons of ore per month.

In the course of a speech he made before the Canadian Club in Montreal, Quebec, Dr. Alfred Thompson, M. P. for the Yukon, spoke of the mineral wealth of that country. He said that aside from gold, coal of good quality had been discovered, and, as well, silver, copper and iron. Gold of course was the metal to which the country owed its growth and prosperity, and since its discovery in 1896, no less than \$120,000,000 worth of that precious metal had been produced in that country. He described the different methods employed in getting out the gold, explaining the old-fashioned way of using a sluice and grizzly, operated by one man, and comparing it with the present-day methods of sluicing, dredging and other hydraulic mining.

COAL MINING IN BRITISH COLUMBIA
IN 1906.

A Record Year in Production of Coal.

PRODUCTION OF COAL in British Columbia in 1906 reached a higher total than in any previous year in the history of coal mining in the Province and this notwithstanding that a strike at the Crow's Nest Pass Coal Company's collieries lasted practically two months and kept the gross production of the company's mines down to a total nearly 25,000 tons less than that of 1905 instead of showing an increase that under conditions prevailing immediately prior to that interruption to operations would have resulted in an enlarged output by probably 150,000 tons. The gross output, which includes all coal used in the manufacture of coke, was 1,899,076 tons (2,240 lb.) in 1906, as compared with 1,825,832 tons in 1905, this giving an increase in gross production of 73,244 tons. The net production, which is what is taken into account in the statistics of quantity and value recorded each year by the bureau of mines, was 132,991 tons larger than that of 1905, there having been less coal made into coke last year, and consequently a smaller production of coke. But for the labour trouble referred to the gross production of coal in the Province last year would have exceeded 2,000,000 tons, which point in material progress should be reached by the close of the current year.

The following review of coal mining in 1906 is from the "Annual Report of the Minister of Mines" for that year. The reports of the inspectors of mines, dealing with the various mines of the several producing collieries of Vancouver Island and the Crow's Nest Pass districts, respectively, are too long to admit of their being reprinted in this number of the MINING RECORD. The summary prepared by the provincial mineralogist, however, shows that coal mining is receiving increasing attention and that the addition of other properties to the list of producing mines may be looked for ere long. The official review is as follows:

Although workable coal seams have been proven in several places scattered over the Province, the only coal-fields actually producing coal are the Vancouver Island coal-field, on the east coast of Vancouver Island, and the Crow's Nest Pass coal-field, situated in the extreme southeastern portion of the Province, on the western slope of the main range of the Rocky Mountains. In the former field two companies are operating, the Wellington Colliery Company, Ltd., at Extension and Comox, and the Western Fuel Company at Nanaimo; in the Crow's Nest field the three collieries opened are all operated by the Crow's Nest Pass Coal Company, Ltd.

The collieries of British Columbia have felt the wave of general prosperity which has swept over the country, and now find themselves in such a position that they have more orders for coal and coke than they can fill. It seems probable that this condition

will exist for some time to come. The mines are all sufficiently developed and equipped for a larger tonnage than is at present produced, and to such cause the present stringency of coal supply can not be attributed, but rather, it is claimed, to the scarcity of labour, both skilled and unskilled, to mine the coal and operate the mines on a more extensive scale.

The gross amount of coal mined in the Province during the year 1906 was 1 899,076 tons (2,240 lb.), an increase over the preceding year of 73,244 tons. Some 381,773 tons of this coal was manufactured into coke, of which there was produced 199,227 tons.

The distribution of this output of coal and coke is shown in the following table:

COAL AND COKE PRODUCED, EXPORTED, ETC., BY PROVINCE, 1906.

Sales and Output for Year (Tons of 2,240 lb.)	Coal.		Coke.	
	Tons.	Tons.	Tons.	Tons.
Sold for consumption in Canada	681,889	.....	149,193	.....
Sold for export to United States	679,829	.....	61,704	.....
Sold for export to other countries				
Total sales		1,361,728		210,897
Used in making coke....	381,773	.....	
Used under colliery boilers, etc.	170,416	.....	
Total for colliery use		552,189		
Retailed locally		2,389		
		1,916,306		
Stocks on hand first of year	30,456	.....	13,228	.....
Stocks on hand last of year	13,226	.....	1,558	.....
Difference taken from stock during year.....		17,230		11,670
Output of collieries for year		1,899,076		199,227

The number of hands employed appears in the next following table, the first column showing those working underground and the second those above ground:

NUMBER OF HANDS EMPLOYED.

Character of Labour.	No. Em- ployed.		Total.
	No. Em- ployed.	No. Em- ployed.	
Supervision and clerical assistance	87	63	150
Whites—Miners	1,396	.....	1,396
Miners' helpers	442	.....	442
Labourers	660	471	1,131
Mechanics and skilled labour	319	270	589
Boys	132	50	182
Japanese	73	13	86
Chinese	281	493	774
Indians and Hindus.	25	30	55
Totals	3,415	1,390	4,805

The spring of 1907 witnessed the unprecedented occurrence of a Vancouver Island smelter importing coke from Australia, and an Alaskan smelter temporarily shut down for lack of British Columbia coke. The collieries of the Crow's Nest Pass—both in British Columbia and across the Provincial boundary, in Alberta—have had a greater demand for coal and coke than they could supply, which is partly due to shortage of labour, combined with a labour dispute in the autumn, and partly to a shortage of cars to move the coal, the railways being also handicapped later by heavy snowfalls.

While not yet producing coal in the commercial sense, certain properties in the Nicola Valley are being opened up systematically since the completion of the railway from Spence's Bridge, on the Canadian Pacific railway, to the coal-field at Nicola, and at least one of these properties will be shipping coal during the year 1907.

The Nicola Valley Coal and Coke Company, under the management of Alex. Faulds, formerly with the Wellington Colliery Company, has opened up a coal seam on its property, and has a prospecting slope now down 1,000 ft., at an angle of about 25 deg., on a seam of coal 6 to 8 ft. thick. A tunnel is being driven to strike the seam at the level of the bottom of this slope; this tunnel will be used as the working tunnel through which the coal will be brought out, and at the mouth of which the tipples will be placed. Development has so far progressed that the property should be shipping in 1907.

The following are analyses of coal and coke from the Nicola Valley:—

Sample.	Moisture.	Volatile Comb. Matter.	Fixed Carbon.	Ash.	Sulphur.	British Thermal Units.	Coking Properties
Nicola Jewell	3.4	34.9	56.7	5.0	0.65	12,486	Fair.
Coal from Princeton.....	3.4	34.3	54.1	8.2	0.74	12,176	Fair.
Nicola coke	1.2	1.2	84.0	13.6	0.63	11,215	....

The Diamond Vale Coal and Iron Company, of Nicola, has made extensive tests of its coal areas with a diamond drill and has selected a site for its colliery plant. A shaft has been started through the overlying surface deposits and is down some 50 ft., but trouble is experienced with water and good progress is not being made.

The lignitic-coal deposits in the vicinity of Princeton, Similkameen, have remained with little or no further development done on them; much development could scarcely be expected until a railway is actually constructed to the camp.

Prospecting for coal continues in the vicinity of Kamloops, but no property has been opened up as yet.

No fresh developments worthy of note have occurred in the Flathead district of East Kootenay.

Some further prospecting work has been done up Elk River, but no active development of the known seams has taken place.

The Pacific Coal Company, at Hosmer, between Fernie and Michel, on the Canadian Pacific Railway

Company's Crow's Nest line, has begun active operations, and at the end of the year had two tunnels driven in on the coal for a distance of 1,000 ft. each; the larger of these tunnels is 8 ft. 6 in. x 22 ft. in the clear and the smaller 8 ft. 6 in. x 13 ft. It is proposed to take the coal from these tunnels to the tipples by an incline 4,000 ft. long. This property also should become a producer during the coming year.

The Crow's Nest Pass Coal Company on April 1, 1906, abandoned work, at least temporarily, at its Carbonado collieries.

Dr. R. W. Ells' report on the coal measures of Queen Charlotte Islands will be found on pages 74 *et seq.* of this "Annual Report"; and a report by W. W. Leach, also of the Geological Survey of Canada, on the coal of the Telkwa valley is reproduced on pages 95 *et seq.* of the report.

Some notes on the coal formation of the Peace River Valley, by the provincial mineralogist, will be found on pages 101 *et seq.*

On Vancouver Island by far the greater area of the possible coal-producing measures is included in the grant of land made to the Esquimalt & Nanaimo Railway, and the coal that may be therein is now owned by the Dunsmuir interests, and as they have sufficient coal land being worked and explored to last for some years, no active steps need be taken by them to further prospect at present. Certain areas of land, however, in the Railway Belt, had been alienated from the Crown before the railway grant was made, and these carry with them the coal rights. On an area of this description bore-holes have been sunk in the Cedar district, near Nanaimo, with fair

prospects of success; and similar work is about to be begun near Comox.

Some prospecting has been done on the coal seams in the vicinity of Fort Rupert on the northeast coast of the island, but no definite results have been announced.

Active development of the coal measures on Tumbo has again been started, after many years of inactivity.

VANCOUVER ISLAND COLLIERIES.

The gross output of coal from the Vancouver Island collieries for the year 1906 was 1,178,627 tons (of 2,240 lb.) of coal actually mined, in addition to which 17,230 tons were taken from stock, making together an actual consumption of 1,195,857 tons. Of this gross consumption 980,072 tons were sold as coal, 138,057 tons were consumed by the producing companies, and 77,728 tons were manufactured into coke, of which there was produced in 1906 some 9,842 tons (2,240 lb.), and there was taken from stock piles some 13,009 tons, making the total coke sales for the year 22,851 tons.

The report of the inspector for the Vancouver Island inspection district shows that there were in operation on the island three collieries, viz., those of the Western Fuel Company at and near Nanaimo, and the Wellington Colliery Company, Ltd., at Extension and Cumberland, respectively.

The Western Fuel Company in 1906 worked the following-named mines, under the direction of Thos. R. Stockett, Jun., as general manager, and Thos. Graham as superintendent: No. 1 shaft, Esplanade, Nanaimo, and Protection Island mine, Thos. Mills, mine manager; No. 4, Northfield, George Wilkinson, mine manager.

The Wellington Colliery Company, Ltd., operated the undermentioned mines: Extension colliery in Cranberry district (Extension), Andrew Bryden, manager, with Nos. 1, 2 and 3 mines all worked from what is known as the No. 1 tunnel; Union colliery, in Comox district (Cumberland), John Matthews, manager, with Nos. 4 and 7 slopes and Nos. 5 and 6 shafts.

Permission having been given to publish the returns of the Wellington Colliery Company, Ltd., the following information has been taken from them:

	Tons of 2,240 lb.
Coal sold for consumption in Canada.....	408,399
“ “ “ export to United States.....	221,000
“ “ “ “ to other countries....	15,673
<hr/>	
Total quantity sold	645,072
	Tons.
Coal used in making coke.....	77,728
“ “ under colliery boilers....	98,923
<hr/>	
Total for colliery use.....	176,651
	821,723
From stock on hand Dec. 31, 1905.....	18,775
<hr/>	
Gross output for year	802,948

The quantity of coke sold was 22,851 tons, of which 13,009 tons came from stock on hand at first of the year and 9,842 constituted the year's output. The tonnage for consumption in Canada was 14,547 tons, and for export to United States 8,304 tons.

The total number of persons employed by the Wellington Colliery Company was 1,938, including 281 Chinese, 73 Japanese and 22 Hindus. Average daily wage ranged from \$1 (lowest pay to white boys) to \$4.50 (white miners), and up to \$5 for mechanics. Extension mines employed 824 persons and Cumberland mines 1,114.

CROW'S NEST PASS COLLIERIES.

The district inspector's report gives information relative to three extensive collieries on the western slope of the Rocky Mountains in East Kootenay district the Crow's Nest Pass Coal Company, Ltd., is operating, viz., Coal Creek colliery, situated on both sides of Coal Creek, about five miles from the town of Fernie, on a branch railway to the mines; Michel colliery, on both sides of Michel Creek, on the Canadian Pacific Railway Company's Crow's

Nest Pass line, being 23 miles in a northeasterly direction from Fernie; and Carbonado colliery, on Morrissey Creek, connected by a four-mile branch line with the Canadian Pacific and Great Northern railways at Morrissey, and distant from Fernie 14 miles in a southeasterly direction.

Coal Creek colliery, Andrew Colville, mine manager, worked last year Nos. 1, 2, 4, 5, and 9 mines and employed 1,117 persons. Its output of coal for the year was 426,793 tons of coal, of which 149,753 were used in making coke, producing 93,171 tons of the latter commodity. Michel colliery, Charles Simister, mine manager, worked Nos. 3, 4, 5, 6, 8, and 9 mines and employed 628 persons. Its output of coal was 273,497 tons of coal, of which 154,292 tons were used in making coke, producing 96,214 tons. Carbonado colliery was closed at the end of March, 1906, and has not since been worked. Its output for three months totalled 20,159 tons.

The Crow's Nest Pass Coal Company's total output of 720,449 tons (2,240 lb.) of coal was disposed of as under:

	Tons.
Sold for consumption in Canada.....	150,793
“ “ export to United States.....	230,863
<hr/>	
Total quantity sold	381,656
	Tons.
Used in making coke	304,045
“ under colliery boilers.....	32,359
Retail coal	2,389
<hr/>	
Total for colliery use.....	338,793
<hr/>	
Output of collieries for year.....	720,449
	Tons.
The coke made was disposed of thus:	
	Tons.
Sold for consumption in Canada.....	134,646
“ “ export to United States.....	53,400
<hr/>	
Total quantity sold	188,046
Placed in stock	1,339
<hr/>	
Output for year	189,385

No coke was made at the Morrissey ovens in 1906.

The Yukon Consolidated Goldfields Co., a Guggenheim organization, which last summer commenced the construction of a hydro-electric plant on Little Twelve-mile river for the purpose of supplying electric power for the operation of its gold dredges, and the excavation of a big ditch from Twelve-mile river to its extensive area of gold-bearing ground on Hunker and Bonanza creeks, expects to shortly have three steam shovels at work on the ditch. Two of these are already in position for starting work, which they will do probably about June 1, and a third has been ordered to arrive early in the season. The power station, transformer station, and a 33,000-volt transmission line 30 miles in length, for the above-mentioned hydro-electric system, were practically completed several months ago.

MINING IN VARIOUS PARTS OF BRITISH COLUMBIA.

Excerpts from "Annual Report of Minister of Mines for 1906."

REPORTS from gold commissioners and mining recorders, published in the "Annual Report of the Minister of Mines for 1906," give information and statistics relative to mining in their respective districts or divisions. A few excerpts from these are as under:

LORNE CREEK, SKEENA MINING DIVISION.

The provincial mineralogist notes that: "At Lorne

removed by the stream of water at present available through the existing pipe-line and plant. Although, so far, the proposition has not been a paying one, the management has hopes of ultimate success, owing to the marked improvement shown in the character and grade of the bedrock and the narrowing up of the channel."

REVELSTOKE MINING DIVISION.

The gold commissioner for Revelstoke district reported of placer mining in 1903: "The Revelstoke and McCulloch Creek Hydraulic Mining Company's ground, under the management of J. D. Sibbald, promises to turn out well, and now that the old



Pintledamme Pass, Looking East. (Between Kemano River and Ootsa Lake.)

Creek are situated the workings of the Dry Hill hydraulic mines, at a distance of about a mile from the river and at an elevation about 300 ft. higher. The ground here is being sluiced for gold in what is supposed to have been the old bed of Lorne Creek, which had long ago been filled in by a slide from the mountain, the stream being thereby diverted to its present channel. The ground undoubtedly contains gold in considerable quantities, but its recovery is rendered difficult by an exceedingly irregular bedrock and the presence of a great number of boulders, which require to be broken up before they can be

workings have been cleared away and virgin ground struck, a record can be looked for. French Creek had a revival of interest during the close of the season. Smith Creek is on the eve of a busy year. The new company, under the management of F. H. Guffey, has installed an up-to-date ferry, crossing the Columbia River at the mouth of Smith Creek, erected a saw-mill, constructed some seven miles of trail, and has ordered the necessary machinery for a first-class hydraulic plant."

The report of the mining recorder for the division contains the following: "During the past year but



Kemano River, Gardner Canal District, Skeena Mining Division.

Kemano River flows into Gardner Canal from the northeast, its mouth being about 30 miles from the entrance to the canal. It is a stream of considerable size and is navigable for canoes a distance of 20 miles, but is so swift-flowing as to require "poling" or "liming" all the way. The neighboring mountains, which rise abruptly to a height of 4,000 to 5,000 ft., seem to be entirely granitic. A short official report by the provincial assayer was reprinted in the *MINING RECORD* last January, p. 13.

little development work has been done on the mines in this division, other than the necessary annual assessment work, except by the Prince Mining and Development Company, Ltd., at the headwaters of Downie Creek, which has kept a force of men on all the season. A large amount of work has been done on these properties—upwards of 3,000 ft. of tunnelling and shafts. The ore-bearing body has been proved to a depth of 400 ft., and found to be from 2 to 10 ft. in thickness. A tramway route to the river has been surveyed, which is less than six miles in length and is pronounced perfectly feasible. The company owns 20 mineral claims and fractions, 18 of which are Crown-granted. The properties are situated 30 miles up the Columbia River from Revelstoke, where the head office of the company is located.

"On the Revelstoke group of eight mineral claims, located by Neil McEachern and others in 1905, 10 miles south of Revelstoke, on the west side of the Columbia River, the surface showing consists of a ledge of free-milling quartz about 200 ft. wide. Mr. McEachern has run 150 ft. of tunnel, besides open cuts and cross-cutting on the ledge at different points. Some specimens show gold to the naked eye."

VERNON MINING DIVISION.

The mining recorder for this division had little or no improvement in 1906 to report. He said: "There has not been much activity in mining matters in this division during the past year. The most important work was done on the British Empire and Royal Standard claims, near Okanagan Landing. On these a 5-stamp mill ran for 120 days, and gold was recovered on the plates. The mill was shut down in November and has not since resumed operations. Want of capital is still seriously interfering with the proper development of these claims.

"Some work was done last June on the Last Chance mineral claim, a rather promising silver-lead proposition situated on the north bank of Trout Creek, about 8 miles up from its mouth. It has two pay streaks 10 and 12 in. wide, respectively, and some picked specimens ran as high as 100 oz. of silver to the ton and 50 per cent. lead. There is one tunnel driven in about 120 ft., at a dip of about 45 deg.

"Take it all round, last year was decidedly an off year."

ASHCROFT MINING DIVISION.

The official notes on this division are brief. The recorder reported: "There has been practically no change for the last couple of years. The office statistics show a small decrease all round, although the reports continue favourable, and the owners of mineral claims are in nearly all cases keeping up their assessments. There has, however, been very little legitimate mining done. No placer mining has been engaged in to speak of, the Fraser River Gold Dredging Company having ceased all operations for the present."

YALE MINING DIVISION.

There was practically nothing of importance to report of this division, so the mining recorder's summary for 1906 was brief, as under:

"Placer Mining.—The Pacific North-West Company, on Siwash Creek, continued the extension of its open cut and laying sluice boxes, with a view of striking bed-rock.

"Dredging.—The Yale Syndicate, composed of New Zealand capitalists, has completed its dredging plant, and is ready to make a practical test of the Fraser River bed at Hill's bar, as soon as weather shall permit.

"Mineral Claims.—The Mount Baker and Yale Mining Company, on Siwash Creek, has done the usual assessment work.

"The Marvel Gold Mining Company has five mineral locations, and has extended its tunnel into the mountain, meeting with encouraging prospects. These properties give assay values in gold from four different ledges. A 6-stamp Merrill mill has been installed on this property.

"The Bonanza location, near Hope, is owned by Wardle & Co., who extended the tunnel during the past season.

"In the vicinity of Hope considerable activity has been evidenced by a number of locations recorded in Coquihalla and Skagit Valleys; also on Ladner Creek. In the event of construction of the V., V. & E. railway, a large amount of prospecting may be expected in the country bordering on the line of construction."

SIMILKAMEEN MINING DIVISION.

Beyond a brief reference to coal at Princeton appearing in the comments of the provincial mineralogist under the head of "Coal Mining", there is no reference made to coal in this division. The mining recorder reported of other mining:

"A few Chinese were engaged in placer mining above the mouth of Bear Creek.

"On Copper Mountain the majority of the claims are Crown-granted, and on the remainder assessment work has been done.

"The owners of the St. George, St. Helen and St. Lawrence mineral claims, on Bear Creek, who, with the assistance of the Government, built a wagon road some 12 miles long, have started to develop their property by means of a shaft. At the 120-ft. level a body of high-grade ore was struck, which continues with depth.

"At the head of this creek a group of claims, known as the Independence, has been bonded to a New York syndicate, which has a force of men running a tunnel to prospect the ground.

"I have nothing of importance to report concerning other portions of the district, owners satisfying themselves with doing merely sufficient work to hold their claims."

The smelting industry in Canada is officially stated to have increased from over \$7,000,000 in 1901 to over \$28,000,000 in 1906.

COMPANY MEETINGS AND REPORTS

SNOWSHOE GOLD AND COPPER MINES, LTD.

The London *Critic* on June 8 published the following.

The report of the Snowshoe Gold and Copper Mines, Ltd., for the year ended September 30, 1906, to be presented at the meeting on 13th inst., states that during the greater part of the year the Snowshoe mine remained closed down pending the completion of satisfactory arrangements for dealing with the property, and consequently the accounts show a further loss. As the shareholders have already been informed, an agreement was signed on June 23, 1906, leasing the mine to the Consolidated Mining and Smelting Company of Canada, Ltd. Under this agreement, rather more than 6,000 tons of ore had been sent to the smelters at September 30, averaging approximately 0.08 oz. gold, 0.3 oz. silver and 1.4 per cent. copper. The total royalties received have amounted to £1,997 upon the shipments made under this agreement. Since the close of the financial year the original lease has been cancelled by mutual consent, and a new lease substituted, the terms of which the directors consider to be more advantageous to this company. During recent months, the exceptionally severe winter in Canada and the strikes of coal miners have considerably interfered with operations at the mine, but the lessees hope to be in a position shortly to maintain a regular output of more than 10,000 tons per month. Numerous improvements have been made on the property, and the company's representative in British Columbia reports that the lessees are carrying out all work in a very thorough and systematic manner. For the seven months to April 30, 1907, the output has amounted to about 25,000 tons, more than half of this tonnage having been shipped during the months of March and April. Since September 30 last, the liabilities have been reduced by approximately £7,000.

YMIR GOLD MINES, LTD.

The report of the Ymir Gold Mines, Ltd., to March 31, 1907, prepared for presentation at the general meeting of shareholders on July 2, stated that expenditure on development operations for the period under review was £167,079, of which £133,708 was derived from ore treated. This leaves a balance of £33,371, representing the cost of development operations from November, 1902, to date. Included in this amount is the cost of exploration work for the new vein, the extensive driving done in levels Nos. 5, 6, 7 and 10, the cutting of a canal for increased water power and the 300 ft. of raise from the tenth to the seventh level. The directors consider that a very large proportion of this outlay is in the nature of capital expenditure, and can properly be added to the cost of the property, leaving the remainder to be gradually written off profit and loss in future years. The London administration expenditure amounting to £6,112 (inclusive of interest on loans and accrued debenture interest) for a period of four and one-third years will be written off as profits become available for this purpose. In the circular of January 17 last, full explanations were given of the series of misfortunes which culminated in the crisis involving the provision of additional capital. This was arranged by the guaranteed subscription of £40,000 of 10 per cent. debenture stock at par, part of an authorized issue of £50,000. The holders of this stock have the option of converting it into shares at par, and the consent of the shareholders to the resolution authorizing the necessary increase of capital was to be required at the extra-ordinary general meeting to be held at the conclusion of the ordinary meeting. The reasons for the long delay in holding the meeting have also been explained. With the funds available immediate steps were taken to carry out the recommendations of the consulting engineer; and, although some time was unavoidably lost in commencing the work, very gratifying progress has since been made. The raise from the tenth to the seventh level (enabling the good ore to be kept separate from the waste rock) has been completed; the compressor has been moved, and is now driven by water power, thus effecting a saving in fuel of over £1,500 per annum, with largely increased

efficiency. Several hundred feet have been driven in the various levels, with greater speed and less cost than in the past, and the manager is now able to commence crushing operations with 15 or 20 stamps. Work will be energetically carried on to complete the scheme of development laid down by the consulting engineer, so that 40 stamps at least may be kept running. The special exploratory work in connection with the new vein has now reached a very interesting stage, and at any moment news may be received of the success of this most important work. The directors desire to express their appreciation of the services of the manager, Horace G. Nichols, who took over the work under circumstances of peculiar difficulty. Notwithstanding the large amount of ore mined during the company's history, from which bullion and concentrates have been sold to a value of over £430,000, there is an immense area of unworked ground above the adit level, which may confidently be expected to produce many thousands of tons of payable ore. Below the adit (or drainage) level the company has a virgin mine, and having regard to the strength of the vein at this level (it is in places over 15 ft. wide) and to the fact that the experts advise that the riches in the upper levels are not the result of surface enrichment, there is good reason to hope that the vein will live to great depths and produce large quantities of payable ore. With the addition of ore from the new vein there should be no difficulty in again putting the full 80 stamps in commission. As shareholders have been previously advised, Morland Hughes, who has now a large financial interest in the company, and Robert Gilman Brown, the consulting engineer of the company, have joined the board, the latter as technical director.

RAMBLER-CARIBOO MINES, LTD.

From the Kaslo *Kootenain* it is learned that the annual general meeting of the Rambler-Cariboo Mines, Ltd., was held at the company's office, Kaslo, on June 11. There was a good attendance of shareholders, who with the proxies held by them, represented 1,256,875 shares. A. F. McClaine, president of the company, occupied the chair, and A. W. Allen was appointed secretary.

The directors report, covering a period of twenty-three months, together with the audited financial statement and the manager's report, were presented and adopted.

The manager's report was a brief, concise report of operations mainly concerning the successful completion of the long tunnel.

The old board of officers was re-elected, E. E. Chipman chosen auditor, and the following appointed directors for the year: A. F. McClaine, A. Coolidge, J. Armstrong, Harry Cornwall, P. W. Lawrence, B. W. McPhee and W. E. Zwicky.

RICHARD III. MINING COMPANY, LTD.

A general meeting of the shareholders of the Richard III. mine was held on June 8 at Duncans. The report of the directors was adopted. In this report it was recommended that a dividend of 2½ per cent. be declared, payable on and after June 15. The treasurer announced after paying this dividend there would be a reserve of over \$10,000 for carrying on development work. Ore is being shipped to the Tye Copper Company's smelter at Ladysmith, at a good profit. The management has adopted the plan of following the ore, and is keeping two shifts of miners at work in the development of the property. It is hoped by the directors that hereafter dividends will be paid at regular intervals.

Zinc ore from the Lucky Jim mine, stored at the Kootenay Ore Sampling Works, Kaslo, since last summer, is being shipped to Gas, Kansas, U.S.A.

The production of cement in Canada increased more than tenfold during the last decade. In 1897 it was: Natural rock, 85,450 bbl.; portland, 119,763 bbl.; total value, \$275,273. In 1906 the official estimate showed: Natural rock, 8,610 bbl.; portland, 2,139,164 bbl.; total value, \$3,170,859.

COMPANY CABLES AND NOTES.

CABLES.

British Columbia.

Le Roi—May: Shipped to Northport 10,930 tons, containing 2,495 oz. gold, 4,972 oz. silver, and 272,100 lb. copper. Estimated profit on this ore, after deducting cost of mining, smelting, realization and depreciation, \$17,500. Expenditure on development work during the month, \$13,000.

Le Roi, No. 2—May: Josie mine report: Shipped 1,940 tons; net receipts, \$33,106, being payment for 2,135 tons shipped, and \$870 for 57 tons concentrates shipped, in all \$33,976. Vancouver mine report: Shipped 10 tons; net receipts \$10,342, being payment for 173 tons concentrates shipped.

Le Roi No. 2—The following cable has been received with regard to the diamond drilling on the 900-ft level, and which has passed through 16 ft. of ore (not the Hamilton vein) at 317 ft. below that level: Ore struck on the following points: 317 ft. to 319 ft., heavy; 319 to 327, light; 327 to 330, heavy; 330 to 332, light. Drilling assays as follows: 316 to 319, gold 1.04 oz., copper, 1.60 per cent.; 327 to 328, gold 0.22 oz., copper 1.40 per cent. Assays cores will be forwarded at once.

Slough Creek—The manager cables:—"Now drawing off 921 gal. per minute; pressure No. 5 bore, 87 lb.; No. 10 bore, 93 lb. per sq. in.

Tyee—May: Smelter ran 25 days, treating 1,114 tons of Tyee ore; value, after deducting refining charges, equal to \$13,287; 4,713 tons of custom ore—5,827 tons, producing a total of 458 tons of matte. (Office note—The "gross value of contents" (\$7,658) given in circular issued last month, referred to Tyee ore only, and did not include custom ores. This method of making returns will hereafter be adhered to.)

U. S. A.

Alaska Mexican—May: 120-stamp mill ran 21½ days, crushed 16,210 tons ore; estimated realizable of bullion, \$18,359. Saved 320 tons sulphurets., estimated realizable value, \$17,398. Working expenses, \$23,688.

Alaska United—May: Ready Bullion claim: 120-stamp mill ran 23 days, crushed 16,500 tons ore; estimated realizable value of bullion, \$12,970. Saved 213 tons sulphurets; estimated realizable value, \$7,150. Working expenses, \$22,790.

Alaska Truadwell—May: 240-stamp mill ran 28½ days, 300-stamp mill ran 9½ days, crushed 45,500 tons; estimated realizable value of bullion, \$60,404. Saved 784 tons sulphurets; estimated realizable value, \$43,249. Working expenses, \$54,439. We have sufficient labourers and three-quarter crew machine men; making good progress obtaining new men.

DIVIDENDS.

The International Coal and Coke Company, Ltd., has declared a dividend of one and one-half cent., payable on August 1. Transfer books will be closed from July 16 to August 1, both inclusive.

The Crow's Nest Pass Coal Company, Ltd., has declared its customary quarterly dividend, at the rate of 10 per cent. per annum, payable on July 1.

On June 4 the Granby Consolidated Mining, Smelting and Power Company, Ltd., made its seventh declaration of payment of dividend. Amount of this distribution was \$3 per share—\$405,000—paid June 29. Total of dividends to date is \$2,563,630.

The Richard III. Mining Company, Ltd., of Duncans, Vancouver Island, has paid its first dividend—of two and one-half per cent.—on June 15.

The twelfth dividend of the Canadian Goldfields Syndicate was paid recently. It was at the rate of 1¼ per cent. on the capital stock, and the total was \$11,500.

NOTES.

The *Hedley Gazette* states that three diamond drills are constantly in operation on the properties of the Yale Mining Company, Similkameen, working day and night shifts.

The solicitors for the Ymir Gold Mines, Ltd., have advertised notice of intention to apply to the presiding judge in chambers for an order extending the time for registering a certain trust deed dated March 25, 1907, between the Ymir

Gold Mines, Ltd., of the one part, and C. M. C. Hughes and Oliver Wethered, of the other part, until July 20, 1907.

A circular recently issued from the head office in London to the shareholders of the Ymir Gold Mines, Ltd., announces that the raise from the tenth to the eleventh level is completed, that good pay ore was taken out in the course of the work, that an assay value of \$13 was obtained, that crushing will begin before the end of June with 20 stamps in operation on ore from development, and that H. G. Nichols, manager, is confident of the success of the policy recommended by Gilman Brown, the company's consulting engineer.

In regard to development work on the Hamilton vein in the Le Roi No. 2 company's mine at Rosslund, the manager, P S Coudrey wrote on May 16, as follows: "As reported to you by cable, we have succeeded in locating what is undoubtedly the Hamilton vein on both the 700 and 900-ft. levels. On the 700-ft. level the streak is now 85 ft. long and since the beginning of the month has averaged 1.78 oz. gold and 0.9 per cent. copper; while on the 900-ft. level, which is 41 ft. long, for the month has averaged 0.71 oz. gold and 0.71 per cent. copper. On the 16th inst. we had an assay from the 900-ft. level of 5.82 oz. gold and 0.5 per cent. copper. For the seven days previous the assays from the 900-ft. level have run as follows: Gold, 0.58 oz., 0.18, 0.14, 2.36, 0.54, 1.98, 5.82; copper 0.5 per cent., 0.5, 0.3, 0.6, 0.6, and 0.5."

A special general meeting of the shareholders of the Goodenough Mines, Ltd., will be held at Kaslo, on the afternoon of August 6. Included in the business will be consideration of an offer to lease (with option of purchase) all the property and assets of the company.

Creditors of the Vancouver Mining and Smelting Company, Ltd. (in liquidation) are required on or before August 2, 1907, to send their names and addresses, and particulars of their debts or claims duly verified, to the liquidator, H. T. Ceperley, Molson Bank Building, Vancouver, B. C.

REGISTRATION OF EXTRA-PROVINCIAL COMPANIES.

Alberta Fuel Co., Ltd.—Head office at Spokane, Washington, U. S. A. Capital, \$100,000, divided into 1,000 shares of \$100 each. Head office in British Columbia at Grand Forks. Attorney, George M. Fripp, Grand Forks.

Bella Coala Copper Co.—Head office at Spokane, Washington, U. S. A. Capital, \$2,000,000, divided into 2,000,000 shares of \$1 each. Head office in British Columbia at Vancouver. Attorney, A. Mogridge, hotel clerk, Vancouver.

Falls Creek Copper Mining Co., Ltd.—Head office at Spokane, Washington, U. S. A. Capital, \$1,500,000, divided into 1,500,000 shares of \$1 each. Head office in British Columbia at Nelson. Attorney, Michael C. Monaghan, miner, Nelson.

Copper Mountain Mining Co.—Head office at Phoenix, Arizona, U. S. A. Capital, \$500,000, divided into 500,000 shares of \$1 each. Head office in British Columbia at Vancouver. Attorney, (not empowered to issue and transfer stock), Edgar Bloomfield, barrister, Vancouver.

Jewel Syndicate, Ltd.—Head office in Scotland. Capital, £25,000, divided into 25,000 shares of £1 each. Head office in British Columbia at the Jewel mine, Long Lake, Boundary district. Attorney, Richard Roberts, mining engineer, Greenwood.

Allis-Chalmers-Bullock, Ltd.—Head office in Montreal, Quebec. Capital, \$2,500,000, divided into 25,000 shares of \$100 each. Head office in British Columbia at 416 Seymour Street, Vancouver. Attorney, E. H. Breed, sales manager, Vancouver.

Vancouver Copper Co., Ltd.—Head office in England. Capital, £110,000, divided into 110,000 shares of £1 each. Head office in British Columbia at Victoria. Attorneys, Frederick Peters, K.C., and Charles E. Wilson, barrister, Victoria.

CERTIFICATES OF INCORPORATION.

- Maple Leaf Mines, Ltd.*, with a capital of \$250,000, divided into 250,000 shares of \$1 each.
- Portland Canal Mining and Development Co., Ltd.*, with a capital of \$100,000, divided into 325,000 shares of 25 cents each and 150,000 shares of 12½ cents each.
- Vancouver Coal Prospecting Co., Ltd.*, with a capital of \$20,000, divided into 20,000 shares of \$1 each.
- British Columbia Concrete Block and Brick Company, Ltd.*, with a capital of \$30,000, divided into 300 shares of \$100 each.
- Port Haney Brick Co., Ltd.*, with a capital of \$50,000, divided into 500 shares of \$100 each.
- Canadian Marble and Granite Works, Ltd.*, with a capital of \$150,000, divided into 1,500 shares of \$100 each.
- Vulcan Iron Works, Ltd.*, with a capital of \$50,000, divided into 500 shares of \$100 each.

COMPANIES REGISTERED IN ENGLAND.

- Alberta Development Syndicate, Ltd.*—Registered April 10, with capital £6,300, in 6,000 preferred shares of £1 each and 6,000 deferred shares of 1s. each, to adopt an agreement with the Cobalt Mines and Exploration Syndicate, Ltd., to acquire and hold shares, stocks, debentures, debenture stock, bonds, obligations, and securities issued or guaranteed by any company constituted in the United Kingdom, Canada, or elsewhere. No initial public issue. Table A mainly applies, remuneration of directors, 5 per cent. of the net profits, divisible. Registered office: 41 Threadneedle Street, London, E. C.
- Anglo-Canadian Syndicate, Ltd.*—Registered May 3, with capital £5,000, in £1 shares, to carry on the business of financiers, underwriters, dealers in stocks, shares, debentures, bonds, and securities, miners, quarriers, etc. No initial public issue. The subscribers are to appoint the first directors; qualification, £100; remuneration, £100 each per annum. Registered office, 31 and 32 Broad Street Avenue, London, E. C.
- Western Canada Investment Company, Ltd.*—Registered April 24, by Nicholson, Graham & Beesly, 24 Coleman street, London, E. C. Capital £100,000, in £1 shares. Objects: To carry on an investment, financial, and agency business in Canada or elsewhere; to seek and secure openings for the employment of capital in any part of the world; to search for, prospect, examine, and explore mines and ground supposed to contain minerals or precious stones; to acquire, hold, dispose of, and deal with gold, silver, copper, lead, tin, quick-silver, iron, coal and other mines, mining, water, timber, and other rights, etc. No initial public issue. The first directors (to number not less than three nor more than five) are: C. Bulkeley-Johnson, of Gladwood, Melrose, N. B.; R. D. Fordyce, Brucklay Castle, Aberdeenshire; and A. Partner, The Briars, Tolworth, Surbiton. Qualification, 500 shares. Remuneration as fixed by the company. Registered office: 24 Coleman Street, London, E. C.

NOTICES IN THE BRITISH COLUMBIA GAZETTE.

Edward Edwards of Revelstoke, to be acting gold commissioner for the Revelstoke, Illecillewaet and Trout Lake mining divisions during the absence of Frederick Fraser, gold commissioner.

Margaret K. Dodd of Yale, to be acting mining recorder for the Yale mining division during the absence of William Dodd.

Constable Angus M. Ego of Lillooet, to be deputy gold commissioner and deputy mining recorder for the Lillooet mining division from July 15, during the absence of Caspar Phair.

Horace George Nichols of Ymir has been appointed attorney in British Columbia for the Ymir Gold Mines, Ltd., in place of E. M. Hand, whose appointment has been revoked.

PRODUCTION NOTES.

The first shipments of gold from Alaska this season have reached Seattle. The value of that brought by two steamers was \$1,663,920.

East Kootenay's mineral production in each of two successive years has exceeded \$5,000,000. Lead was highest in 1906, with coal a close second, each in excess of \$2,000,000. The relative positions of these minerals were the reverse in 1905. The greater part of the remaining value was in silver.

CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA, LTD.

Ore receipts at this company's smelting works at Trail during May totalled 27,363,959 lb. The chief shippers were the Centre Star group, Rossland, 17,312,780 lb.; Le Roi No. 2, Rossland, 4,261,380 lb.; Victoria, Nelson, 1,948,520 lb., and St. Eugene, East Kootenay, 1,154,145 lb. Ten other mines shipped the remaining 2,687,134 lb. Ores containing copper, gold, and silver totalled 24,696,640 lb.; silver and lead, 2,375,973 lb.; and gold and silver, 291,346 lb.

SULLIVAN GROUP MINING COMPANY.

Published report of ore production for month of May at this company's mine, situated near Kimberley, East Kootenay, is as follows: On hand April 30, 3,370 tons; mined in May, 2,210 tons; total, 5,580 tons. Shipped to company's smelter at Marysville, East Kootenay, 2,259 tons; on hand May 31, 3,321 tons. At the smelter 2,478 tons were smelted during the month; bullion shipped, 402 tons, valued at \$46,482. Smelter production for nine months ended May 31: Lead, 6,040,489 lb.; silver, 140,000 oz.

PRODUCTION OF LEAD.

Published figures show that during five months ended May 31 ores and concentrates containing lead were received at the smelters at Trail and Nelson, as under:

	Lb. of Ore.	Lb. of Lead.
Trail smelter	13,904,836 containing	6,301,670
Nelson smelter	10,783,977	4,728,817
Totals	24,688,813	11,030,487

The lead ore smelted at the Sullivan Company's smelter at Marysville, East Kootenay, during the same period was approximately 26,060,000 lb., but no information has been made public as to the lead contents.

CONSTRUCTION NOTES.

The reconstructed Montezuma concentrator, on the south fork of Kaslo Creek, is in operation and its first product has been shipped.

At Pine Creek, Atlin, J. M. Ruffner's steam ditcher machinery, weighing about 30 tons, has been received and placed on a scow. More labourers are required to operate this plant.

Work has been commenced to further increase the capacity of the Granby Consolidated Company's smelting works at Grand Forks. A. B. W. Hodges, local manager, states that the eight furnaces are to be lengthened, thereby increasing the total smelting capacity by about 1,000 tons daily and making the maximum treatment capacity of the works about 4,500 tons a day. The enlargement of the furnaces will be spread over about a year, so as to keep most of them in blast while the work is in progress.

Surveys have been ordered by M. M. Johnson, consulting engineer and managing director of the Dominion Copper Company, for an aerial tramway it is planned to construct from the company's mines at Phoenix, Boundary district, five miles down to its smelter at Boundary Falls. Continued shortage of railway cars necessitates other provision for conveyance of ore to the smelter, the treatment capacity of which is now 1,200 tons daily.

The Babcock & Wilcox boiler in the new power-house

of the Diamond Vale Coal and Iron Mines, Ltd., Nicola district, is now bricked in and cemented, and will soon be under steam.

On April 25 an upright engine, pump and hoist were loaded at Ashcroft for Barkerville. This machinery is to be installed in the shaft house of the Sloean-Cariboo Mining and Development Co.'s property on Canadian Creek, Cariboo.

The charcoal iron smelter at Irondale, near Port Townsend, Washington, U. S. A., has been renovated, some 60 men having been employed in reconstruction work and the installation of new plant and machinery. It is planned to resume iron-smelting operations, after a shut-down of several years, early in July. The greater portion of the ore (magnetite) to be smelted will come, as before, from British Columbia. Bog iron will again be obtained from Skagit county, Wash. Jas. A. Moore of Seattle, Wash., is at the head of this enterprise.

TRADE NOTES AND CATALOGUES.

The Westinghouse Storage Battery is dealt with in a booklet published by the Westinghouse Machine Company of East Pittsburgh, Pennsylvania, U.S.A., which company announces its preparedness to contract for complete storage battery installations for any class of service. Information is given relative to the plate, positive and negative; boosters, regulators, and switchboards; and portable batteries. Numerous illustrations add to the usefulness of this publication.

The Canadian Rand Company's little booklet on compressed air appliances briefly notices Rand air compressors, "Imperial" pneumatic tools and motor hoists, Rand trolleys, air hoists, and the Rand "Little Giant" drill. Short descriptions of all these air appliances, together with illustrations of the various machines and devices, make a handy little booklet. Full information and quotations are obtainable from any of the company's branch offices or from its executive offices in Montreal, Quebec.

"The Care of Electric Mine Locomotives in Service" is the title of Bulletin No. 12 issued by the Jeffrey Manufacturing Company, of Columbus, Ohio, U.S.A. The 80 pages contained in this well-printed bulletin are replete with information and instructions regarding the care and operation of electric mine locomotives, and with half-tones illustrating many phases of this subject. The work has been prepared with a view to its being of practical assistance to users of these locomotives, and to those requiring general instructions for their care and operation, and brief descriptions of their equipment, will be found especially helpful.

From the Canadian Westinghouse Company, Ltd., of Hamilton, Ontario, have been received three more publications, viz., Circular No. 1118, "Westinghouse Type CCL Poly-phase Induction Motors"; special publication No. 7023, "Points for Consideration when Purchasing Series A.C. Arc Lamps." (a paper by G. Brewer Griffin before the Ohio Electric Light Association Convention at Sandusky, Ohio, U.S.A.); and "Westinghouse Fan Motors." The last-mentioned is a most artistic production with a cover that is a striking example of successful colour printing, and many pages of representations, in beautifully finished tints, of fan motors in position in buildings and other places in which these essentials to comfort in summer are in effective use.

The American Spiral Pipe Works, of Chicago, Illinois, U.S.A., has published an illustrated catalogue showing in great variety forged and rolled steel pipe flanges and other manufactures, accompanied by tables of dimensions, prices, etc.

From Nelson comes information that the Canadian Metal Company of that city is installing at its newly built concentrating mill at the Blue Bell mine, opposite Ainsworth, Kootenay Lake, a number of Wilfley concentrating tables. Mussen Limited of Montreal, Quebec, sole Canadian agents for this improved concentrator will be pleased to give full particulars and to send their Bulletins Nos. 21 and 22, which contain complete details of the tables and indicate special points well worthy of consideration by those requiring concentrators.

BOOKS, ETC., RECEIVED.

American Institute of Mining Engineers.—Bi-Monthly Bulletin of the American Institute of Mining Engineers, No. 15, May, 1907.

Canadian Mining Institute.—Advance proofs of numerous papers presented at the annual meeting held in Toronto, Ontario, March, 1907. These will form part of Vol. X of the "Journal of the Canadian Mining Institute."

Department of Public Works of Ontario.—"Eleventh Annual Report on Highway Improvement, Ontario, 1907." An illustrated report giving much information concerning the improvement of public highways in Ontario. By A. W. Campbell, deputy minister of public works. Pages, 104.

Hill Publishing Company, New York City.—"Hydrometallurgy of Silver, with Special Reference to Chloridizing Roasting of Silver Ores and the Extraction of Silver by Hyposulphite and Cyanide Solutions." By Ottokar Hofmann, mining and metallurgical engineer. Pages, 328; illustrated. (For review).

BOOK REVIEWED.

Principles of Copper Smelting, by Edward Dyer Peters, professor of metallurgy at Harvard University. 569 pages, 6½x8½ in.; illustrated. Published by Hill Publishing Company, London and New York. Cloth, \$5 postpaid.

This book should prove of more than ordinary interest to metallurgists and students in British Columbia since several of the former, well known in the Province, were under the author. Professor Peters, years ago, when they were gaining practical experience at a smelting works of which he was then in charge. Wm. F. Robertson, now provincial mineralogist; Paul Johnson, who built and operated smelting works at Nelson and Greenwood, respectively; Thos. Kiddie, who designed and operated the Tyee Copper Company's works at Ladysmith, Vancouver Island; and Robert R. Hedley, until lately manager of the Mall Mining and smelting Company's lead-silver smelter at Nelson—all will bear testimony from personal knowledge that this distinguished author is no mere theorist, but, on the contrary, is fully qualified from long years of practical experience to discuss the principles of copper smelting.

Dr. Peters' former book, "Modern Copper Smelting," the value of which successive editions have proved, was devoted primarily to the *means how*; the new book, "Principles of Copper Smelting," is not a revised and enlarged edition of the former, but is a work which gives the *reasons why*. The old book described furnaces and methods, but not the reasons—the practice, not the principle. New plants and new methods are given in the new book, and the old ones reviewed as examples, but Professor Peters, in the main, is concerned with the metallurgical chemistry of copper as applied to commercial conditions. It is by no means abstract chemical theory, but a boiling down of principles for the use of those who would better their metallurgical practice.

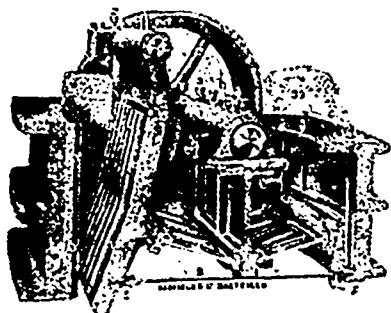
It should be mentioned that, as the author states in his preface, the book is written, in part, for students; and, as there are many persons who would like to gain some insight into the smelting of copper, but who have not the training which is requisite for the understanding of ordinary metallurgical treatises, Professor Peters explains that he has tried to write in such a manner that it might be reasonably intelligible to those who have no exact knowledge of chemistry.

Among the noteworthy features of the book in addition to the varied and comprehensive work of the author are the subjects of "Pyrite Smelting," largely written and entirely reviewed by Mr. Robert Sticht, general manager of the Mount Lyell Mining and Railway Company, Ltd., with large copper producing works in Tasmania; and "Applications of Thermochemistry," written by Mr. Joseph W. Richards, professor of metallurgy, Lehigh University, Bethlehem, Pennsylvania, who is an acknowledged authority in this department.

A chapter on miscellaneous and commercial facts and formulas concludes the book, which is completed by an alphabetical index of 41 pages.

HADFIELD'S PATENT STONE BREAKER AND ORE CRUSHER.

The British Columbia Copper Company, Ltd., has installed at its Oro Denoro mine, in Summit camp, Boundary district, a Hadfield's patent stone breaker and ore crusher, with solid cast steel frame and fitted with jaws and other wearing parts of Hadfield's patent "Era" manganese steel. This machine was made by Hadfield's Steel Foundry Company, Ltd., East Hecla Works, Sheffield, England, and was supplied by that manufacturer's sole Canadian agents, Peacock Bros., engineers, of Montreal, Quebec. It is described as being "specially designed to minimize the risk of breakages, to remedy defects and faulty design associated with ordinary breakers of this class, and to give a maximum output with minimum wear of crushing faces and other wearing parts." It is of the type that has long been the standard for breaking stone. Briefly the stone is broken between the fixed and movable jaw plates, the latter plate being actuated by a powerful toggle movement communicated to it from the driving pulley through the eccentric shaft and the pitman.



The adjustment is accomplished in the usual way, i.e., by simply raising or lowering the adjusting wedge by means of the adjusting bolts, which varies the position of the adjusting toggle block and thus makes a corresponding variation in the distance between the crushing jaws. In this breaker all unnecessary levers, arms and joints have been carefully avoided, the maker being convinced that one of the most essential features of a stone breaker is simplicity.

The dimensions, capacity, etc., of the machine supplied to the British Columbia Copper Company are as follows: Size of receiving opening, 24x19 in.; output per hour based on hard limestone to 2½-in. ring, 16 to 24 tons; approximate weight of heaviest piece (frame), 11,200 lb.; approximate total shipping weight, 27,000 lb.; extreme dimensions (including shafts)—length 8 ft. 2 in., breadth 6 ft. 10 in., height 7 ft. 2 in.; size of driving pulley, 36 in. dia. x 12-in. face; r.p.m. 250; effective h.p. recommended, based on hard limestone to 2½-in. ring, 50. The company expects to have this crusher at work by the middle of July and that it will do good work. Hadfield's steel jaws, car wheels, etc., bought through Peacock Bros. previously, were found so satisfactory that it was decided to give a trial to one of the ore crushers from the same manufactory.

Between 9,000 and 10,000 men are employed in direct connection with the mining and smelting industries of British Columbia. Nine-tenths of these are white men.

F. A. Wilkenson, of the United States Geological Survey department, is spending his holidays in Crow's Nest Pass district. The Fernie *Free Press* states that he is waiting until high water subsides to go up the Elk River to examine the property of the National Coal and Coke Company, in which he is interested. The property will be re-surveyed this summer and Crown granted. It is confidentially expected by interested persons that a railway will be built up the Elk within 18 months when the National Coal and Coke Company, the Imperial Coal and Coke Company and the Canadian Pacific Railway Company will develop their respective coal properties on a large scale.

MINING MEN AND AFFAIRS.

J. Anste Bancroft of Montreal has been looking over mining properties in the Ashcroft district.

A. R. Fingland, superintendent of the Monitor and Bosum mines, Slocan, was on the Coast during the month.

J. J. Campbell, general manager of the Hall Mining and Smelting Company, Ltd., has returned to Nelson from a business trip to eastern Canada.

Dr. James Bonar of the British Civil Service commission has been appointed deputy master of the Royal Mint about to be established at Ottawa, Ontario.

Frank A. Ross, general manager of the Daly Reduction Company, has returned to Hedley, Similkameen district, from a business visit to the company's head office in New York.

Ex-Judge Alexander Henderson of Vancouver, has been appointed commissioner of Yukon Territory, Canada, in succession to W. W. B. McInnes, who resigned last winter.

F. X. Gosselin of Dawson has been appointed gold commissioner for Yukon Territory, in place of E. C. Senkler, appointed legal adviser for the Yukon.

W. D. Matthews of Toronto, Ontario, president of the Consolidated Mining and Smelting Company of Canada, has been visiting the company's mines and smelter in the Kootenay.

J. M. Turnbull of Trail was at Frank early in June to examine the Hilcrest Coal Mining Company's coal property in that neighbourhood.

S. M. Moore of Frank, Alberta, general manager of the Canadian-American Coal and Coke Company, Ltd., lately made a business trip to Winnipeg, Manitoba.

Paul Johnson, metallurgist, left Seattle during the first week in June for Sweden where he will probably stay for several months.

R. J. McPhee, manager of the Ottawa mine, Springer Creek, Slocan City mining division, has been compelled to go to a sanatorium for treatment for rheumatism.

O. B. Perry has been visiting the Guggenheim hydraulic gold properties in the Cariboo district. He was accompanied by Prof. John F. Newson of Stanford University, California.

F. C. Laird, manager of the Willow River Mining Company, left Barkerville, Cariboo, on June 21 on a business trip to Chicago. He is expected to return before the end of July.

Leslie Hill of Nelson, consulting engineer to the Hastings (B. C.) Exploration Syndicate owning the Arlington gold mine at Eric, Nelson mining division, lately spent several days in Victoria.

H. H. Claudet of Rossland, representative of the Elmore Vacuum Oil Process, recently visited Victoria and Vancouver, going thence to Golden, in which latter district he will shortly install a Vacuum Oil Process plant.

J. A. Whittier, manager of the Goodenough Mines, Ltd., has returned to British Columbia after having wintered in California. He will shortly commence the season's mining on his company's Grey Copper mine, Slocan.

Capt. J. Argall, manager of the Iron Mask mine, Kamloops, has returned from England. A smelter is to be erected in connection with this mine as soon as the necessary plant and machinery can be obtained from the manufacturers.

Thomas Kiddie, of Hadley, Southeast Alaska, manager for the Alaska Smelting and Refining Company, was in Seattle, Wash., during June to meet G. D. Mumford, of New York, the new president of the company.

Wm. DeWitt, superintendent of the Fern mine, near Nelson, met with an accident on the night of June 13. A ladder in the mine broke while he was descending it; the result was a broken leg for Mr. DeWitt.

Thos. Mills has resigned as mine manager at the Western Fuel Company's No. 1 and Protection Island coal mines, Nanaimo, after having been employed in local mines for about 16 years.

E. Lindeman, under instructions from the Dominion department of mines, Ottawa, has commenced an investigation of the iron ore resources of Vancouver Island and neighbouring islands.

J. W. Astley, late general superintendent for the Le Roi Mining Company, Rosslund, has decided to practise as a consulting mining engineer and has made Victoria his headquarters.

M. R. Galusha of Spokane was in Rosslund about the middle of the month. It is understood that it is intended to shortly resume work at the Jumbo mine which Mr. Galusha managed when it was in operation last year.

James Rutherford, at one time in charge of a mining property in the Trout Lake mining division for a Spokane company, has returned to British Columbia from a visit to Scotland.

John D. Hoffman of San Francisco, Cal., and Howard W. DuBois of Philadelphia, Pa., have been examining the Bear Hydraulic Company's gold mining property in the Cariboo district.

Wynn Meredith of San Francisco, Cal., was recently in Vancouver. Some time since he supervised the construction of the Vancouver Power Company's hydro-electric system, the hydraulic end of which provides for 30,000 h.p., but machinery for only 12,000 h.p. has thus far been installed.

Edward Stables of London, England, is at Victoria, awaiting completion of arrangements for the acquirement by the Vancouver Copper Company of the Lenora mine at Mt. Sicker, Vancouver Island, before reopening the mine which adjoins the well-known Tyce mine.

W. M. Brewer lately paid another visit to the Indian Chief group at Sidney Inlet, west coast of Vancouver Island, in company with Mr. Duryce, manager of the Vancouver Island Copper Company which is developing the property under bond and option of purchase.

Geo Williams, well known as construction engineer at several smelters on Vancouver Island and in the Boundary district, has returned to Victoria from Boundary Falls, where he was supervising construction of additions to the Dominion Copper Company's smelting works.

Herbert Carmichael, provincial assayer and assistant to the provincial mineralogist, has been deputed by the Provincial Government to make a reconnaissance of the country tributary to Alberni, west coast of Vancouver Island. His party includes three assistants for survey and topographical work.

Announcement has been made of the appointment of D. H. Pringle, formerly of the staff of the British American Trust Company, as general manager in Canada for the Galbraith Coal Company, the Alberta Coal and Coke Company, and the Alberta Fuel Company, with headquarters at Calgary, Alberta.

J. Parke Channing who, beside his other appointments is consulting engineer to the General Development Company, left New York on May 29 for the West, on his way to Atlin and the Canadian Yukon. It is understood that while in the northern country he will give particular attention to gold dredging and hydraulicking enterprises.

According to a published report, George J. Walker, of Boston, editor of the *Boston Commercial*, and a well-known authority on copper matters, intends coming West for the purpose of visiting the copper mines and smelters of the Kootenay. During the trip he will also visit the Montana, California, Nevada and Utah copper fields.

G. G. S. Lindsey, managing director of the Crow's Nest Pass Coal Company, Ltd., and Jas. McEvoy, the company's chief engineer, recently went to Toronto, Ontario, to lay before the board of directors plans, etc., of extensive improvements to be made for the enlargement of production and general expansion of business at the company's collieries in southeast Kootenay.

Dr. George W. Maynard after having spent five weeks examining copper properties in the Whitehorse district, Yukon Territory, left Vancouver on June 19. He intended before returning to New York to visit the Monitor Copper Company's mine, near Alberni, and the Tyce Copper Com-

P & B PAINT

A special study of preservative paints extending over a period of a quarter of a century has enabled us to produce the best paint for general use around smelters or chlorination works on the market to-day.

For painting cyanide tanks, acid vats, pipes, etc., P & B Paint gives entire satisfaction. Leaves a protective coating equal to three coats of metallic paint.

Send for P & B Paint folder which tells where and how to use P & B Paint.

The Paraffine Paint Co.

Manufacturers of

**Malthoid Roofing; P & B Ready Roofing;
Malthine Building Paper and
other P & B Products.**

Seattle Office, 408 Occidental Ave.

Local Agents:

**R. ANGUS, VICTORIA.
H. DARLING, VANCOUVER.**

pany's smelting works at Ladysmith, both on Vancouver Island.

The manager of the Hilcrest mine near Frank has again gone east. Before going he announced to John Galvin and J. A. McDonald, of the U.M.W.A., who were endeavouring to secure an agreement for the mine workers, that the mine will remain idle indefinitely.

Professor R. W. Brock of the Geological Survey department of Canada has been employed by the Ontario bureau of mines to make an examination of the Larder lake region in northern Ontario. It has been announced that later in the summer he will join W. H. Boyd in the Lardeau district, where the geological and topographical work necessary to complete the southern half of the Lardeau map-sheet will be taken up where left at the close of the field-work season of 1904.

Dr. Robert Bell of the Canadian Geological Survey has been elected a corresponding member of the Geographical Society of Paris, France. This society was founded in 1821 and is one of the oldest and largest of the geographical societies of the world. It will be remembered that Dr. Bell, who on March 1 last completed his fiftieth year of active official service, was not long ago awarded the Patron's or King's Gold Medal of the Royal Geographical Society of Great Britain, and the Cullum Medal of the American Geographical Society. He had already been honored by King Edward VII. with the Companionship of the Imperial Service Order "for faithful service." The doctor, who after several years as acting director of the Geological Survey Department of Canada last year made way for A. P. Low, is still in active service and will spend the ensuing field work season in geological work in the region north of lakes Superior and Huron, Ontario.

Work has been commenced on the Lehigh Portland cement works, four miles from Belleville, Ontario. The plant, when completed, will be the largest of its kind in Canada.

COAL MINING NOTES.

An agreement to cover two years, has been reached between the Alberta Railway and Irrigation Company, which owns the Lethbridge colliery, and the United Mine Workers of America representing the men working in the company's coal mine. The company has conceded recognition of the miners' union, which it had long refused. The agreement settles wages disputes and the question of eight hours' work at the face in the mine. P. L. Naismith is the company's manager.

H. N. Galer, manager of the International Coal and Coke Company, is reported in the press to have stated that this company's coal mines and coke plant at Coleman, Southwest Alberta, which were closed during recent labour troubles, are again working to present full capacity, which is an output of 1,600 tons of coal a day. Some 1,300 tons of coal are sold daily for steam purposes and the balance of production made into coke which is sold to Boundary, B.C., smelters.

The Alberta Coal and Coke Company is opening a coal mine near Lundbreck. Plans for a plant are being prepared by Chicago engineers. H. N. Galer is manager of this company conjointly with the International company.

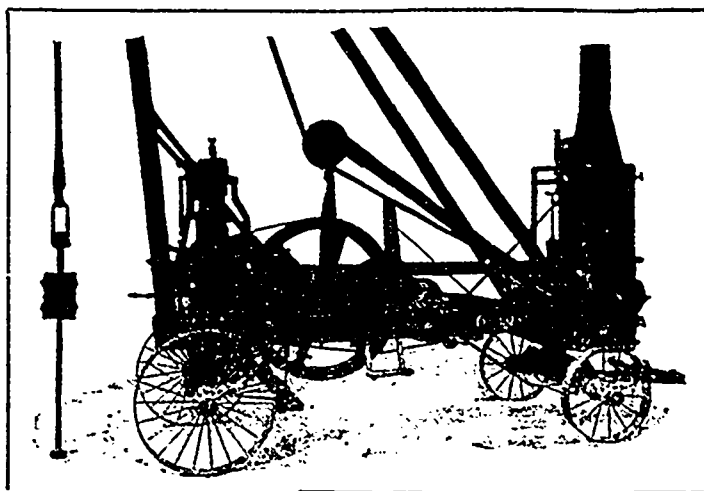
The *Frank Paper* says that the growth of the coal mining industry in Alberta is evidenced by the announcement that seven new local unions of the United Mine Workers of America, are soon to be organized at different points in District 18.

The *Miner* states that at Rossland "considerable coal is coming in from the collieries, including Bankhead, Crow's Nest Pass Coal Company's, Frank, Lethbridge, Coleman and elsewhere. Now that the consumption of coal for household purposes has decreased the mines are being well supplied. The mining companies will take advantage of the situation and lay in surplus supplies for possible emergencies."

Prospecting Drills

Hollow Rod, Core and
Cable Types.

Also Combination Drills, handling any combination of these systems on the same machine. Our catalogue on Core Drills contains valuable information that every driller should have. We also solicit enquiries for Diamond Drills, Drill Steel, Safety Blasting Fuse, etc.



For Water
Oil,
Gas,
Minerals,
Etc.

MUSSENS LIMITED

HEAD OFFICE: MONTREAL

Vancouver Branch

359 WATER STRE

TO MINING INVESTORS.

Mining Property for sale on Working Bond, or will give interest in return for development to shipping stage. Situated south of Similkameen River, two miles west of Hedley. Ore body consists of four feet of mispickel (arsenical iron pyrites) ore carrying shipping values in gold from \$12 to \$20 per ton, and 15 feet of \$3 ore. Formation is the same sedimentary that crosses the Nickel Plate ground and some of the ore is similar to the product of that mine. Timber and water power acquired. Great Northern railway, in course of construction, crosses lower part of property; 1,500-ft. gravity tramway would deliver ore to railway.

HERBERT B. BROWN,
Hedley, Similkameen, B. C.



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.

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 lands may be purchased at \$10 per acre for soft coal and \$20 for anthracite. Not more than 320 acres can be acquired by one individual or company. Royalty at the rate of ten cents per ton of 2000 lbs. shall be collected on the gross output.

W. W. COREY,
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 BRITTAIN

Registered Patent Attorney and Mechanical Engineer.

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

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 The 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 Mailing 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

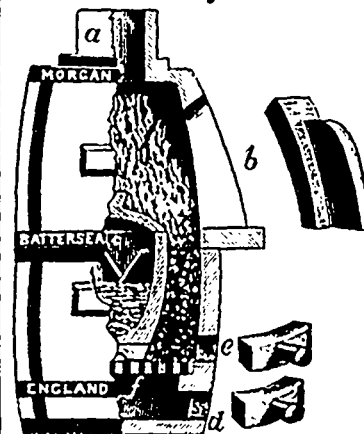
Assayers' and Mill Supplies

Headquarters for Laboratory Apparatus of all kinds, Bohemian Chemical Glassware, C. P. 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.**



GEO. H. PLAYLE

SHORTHAND REPORTER,

ARBITRATIONS,
COMMISSIONS, ETC.

Nelson, B. C.

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.