ANNUAL REPORT

OF THE

MINISTER OF MINES

FOR THE

YEAR ENDING 31st DECEMBER,

1907,

BEING AN ACCOUNT OF

MINING OPERATIONS FOR GOLD, COAL, ETC.,

IN THE

PROVINCE OF BRITISH COLUMBIA.

THE GOVERNMENT OF
THE PROVINCE OF BRITISH COLUMBIA

PRINTED BY
AUTHORITY OF THE LEGISLATIVE ASSEMBLY.

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1908.

REPORT

OF THE

MINISTER OF MINES,

1907.

To His Honour the Honourable JAMES DUNSMUIR,
Lieutenant-Governor of the Province of British Columbia:

MAY IT PLEASE YOUR HONOUR:

The Annual Report of the Provincial Mineralogist upon the Mining Industries of the Province for the year 1907 is herewith respectfully submitted.

RICHARD McBRIDE,
Minister of Mines.

Minister of Mines' Office,
March, 1908.

REPORT OF BUREAU OF MINES.

—BY—

WILLIAM FLEET ROBERTSON, PROVINCIAL MINERALOGIST.

———:o:———

To the Hon. Richard McBride,
Minister of Mines.

Sir,—I have the honour to submit herewith my Annual Report on the Mining Industry of the Province for the year ending December 31st, 1907.

The statistical tables give the total mineral output of the Province to date, and show in considerable detail the actual mineral production of the past year, as based on smelter or mill returns; also, a summary of the production of each of the last four years, thus illustrating by comparison the progress made in productive mining during this period.

To facilitate comparison with information previously given, I have retained, as closely as was possible, the general form already established for such tables and for the Report.

I have the honour to be,
Sir,
Your obedient servant,
William Fleet Robertson,
Provincial Mineralogist.

Bureau of Mines, Victoria, B. C.,
March, 1908.

MINERAL PRODUCTION OF BRITISH COLUMBIA.

:o:

METHOD OF COMPUTING PRODUCTION.

In assembling the output for the lode mines in the following tables, the established custom of this Bureau has been adhered to, viz.: The output of a mine for the year is considered that amount of ore for which the smelter or mill returns have been received during the year. This system does not give the exact amount mined during the year but rather the amounts credited to the mine on the company's books during such year.

For ore shipped in December the smelter returns are not likely to be received until February in the new year, or later, and have, consequently, to be carried over to the credit of such new year. This plan, however, will be found very approximate for each year, and ultimately correct, as ore not credited to one year is credited in the next.

In the Lode Mines tables, the amount of the shipments has been obtained from certified returns received from the various mines, as provided for in the "Inspection of Metalliferous Mines Act, 1897." In calculating the values of the products, the average price for the year in the New York Metal Market has been used as a basis. For silver 95 per cent., and for lead 90 per cent., of such market price has been taken. Treatment and other charges have not been deducted.

TABLE I.—Total Production for all Years up to and Including 1907.

Gold, placer	$69,549,103
Gold, lode	45,070,717
Silver	27,289,833
Lead	19,917,197
Copper	43,713,122
Coal and Coke	86,972,511
Building stone, bricks, etc.	6,693,100
Other metals	320,699
Total	$299,526,282

TABLE II.—Production for each Year from 1890 to 1907 (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
1907	25,882,560
Total	$299,526,282

TABLE

SHOWING MINERAL PRODUCTION

OF

BRITISH COLUMBIA.

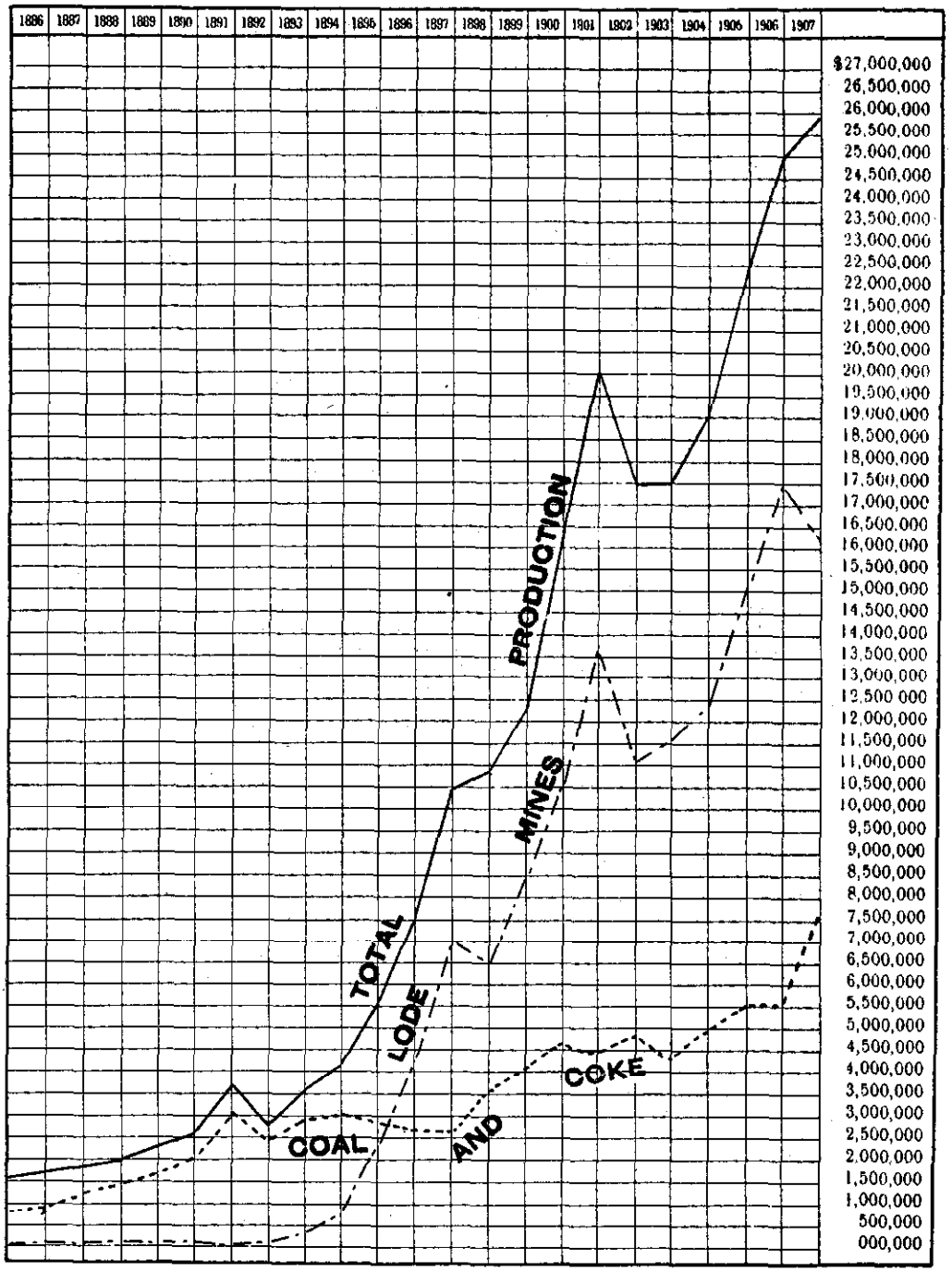


Table IV. gives a statement in detail of the amount and value of the different mineral products for the years 1905, 1906 and 1907. As it has been impossible as yet to collect accurate statistics regarding building stone, lime, bricks, tiles, etc., these are estimated.

TABLE IV.

AMOUNT AND VALUE OF MINERAL PRODUCTS FOR 1905, 1906 AND 1907.

	Customary Measure.	1905.		1906.		1907.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold, placer	Ounces.	48,465	$ 969,300	.....	$ 948,400	41,450	$ 828,000
" lode	"	238,660	4,933,102	224,027	4,630,639	196,179	4,055,020
Silver	"	3,439,417	1,971,818	2,990,262	1,897,320	2,745,448	1,703,825
Lead	Pounds	56,580,703	2,399,022	52,408,217	2,667,578	47,738,703	2,291,458
Copper	"	37,692,251	5,876,222	42,990,488	8,288,565	40,832,720	8,166,544
Coal	Tons, 2,240lbs	1,384,312	4,152,936	1,517,303	4,551,909	1,800,067	6,300,235
Coke	" "	271,785	1,358,925	199,227	996,135	222,913	1,337,478
Other materials	.....	.....	800,000	.....	1,000,000	.....	1,200,000
			$22,461,325		$24,980,546		$25,882,560

TABLE V.

PRODUCTION OF MINERAL BY DISTRICTS AND DIVISIONS.

NAME.	DIVISIONS.			DISTRICTS.		
	1905.	1906.	1907.	1905.	1906.	1907.
CARIBOO DISTRICT	.....	.....	.....	$ 406,000	$ 405,400	$ 360,500
Cariboo Mining Division	$ 300,000	$ 355,800	$ 306,500	.....	.....	.....
Quesnel "	96,000	39,600	44,000	.....	.....	.....
Omineca "	10,000	10,000	10,000	.....	.....	.....
CASSIAR DISTRICT	.....	.....	.....	504,372	555,599	572,809
EAST KOOTENAY DISTRICT	.....	.....	.....	5,339,154	5,171,024	5,548,880
WEST KOOTENAY DISTRICT	.....	.....	.....	5,421,859	4,660,352	4,792,976
Ainsworth Division	100,273	268,111	364,868	.....	.....	.....
Nelson "	532,564	515,709	614,395	.....	.....	.....
Slocan "	970,544	532,228	619,842	.....	.....	.....
Trail Creek "	3,672,828	3,223,587	3,049,702	.....	.....	.....
Other parts	145,650	120,717	144,169	.....	.....	.....
LILLOOET DISTRICT	.....	.....	.....	32,584	20,314	15,721
YALE DISTRICT	.....	.....	.....	6,483,504	8,779,711	8,444,326
Osoyoos, Grand Forks & Greenwood Divisions	6,356,410	8,698,470	8,354,995	.....	.....	.....
Similkameen Division	1,533	2,624	56,564	.....	.....	.....
Yale "	125,561	78,617	32,767	.....	.....	.....
COAST DISTRICTS (Nanaimo, Alberni, Clayoquot, Quatsino, Victoria)	.....	.....	.....	4,273,852	5,388,146	6,147,348
				$22,461,325	$24,980,546	$25,882,560

PLACER GOLD.

Table VI. contains the yearly production of placer gold to date, as determined by the returns, sent in by the banks and express companies, of gold transmitted by them to the mints, and from returns sent in by the Gold Commissioners and Mining Recorders. To these yearly amounts one-third was added up to the year 1878, from then to 1895 and from 1898 to 1907, one-fifth, which proportions are considered to represent, approximately, the amount of gold sold of which there is no record. This placer gold contains from 10 to 25 per cent. silver, but the silver value has not been separated from the totals, as it would be insignificant.

TABLE VI.—YIELD OF PLACER GOLD PER YEAR TO DATE.

1858....	$ 705,000	1875....	$ 2,474,004	1892....	$ 399,526
1859....	1,615,070	1876....	1,786,648	1893....	356,131
1860....	2,228,543	1877....	1,608,182	1894....	405,516
1861....	2,666,118	1878....	1,275,204	1895....	481,683
1862....	2,656,903	1879....	1,290,058	1896....	544,026
1863....	3,913,563	1880....	1,013,827	1897....	513,520
1864....	3,735,850	1881....	1,046,737	1898....	643,346
1865....	3,491,205	1882....	954,085	1899....	1,344,900
1866....	2,662,106	1883....	794,252	1900....	1,278,724
1867....	2,480,868	1884....	736,165	1901....	970,100
1868....	3,372,972	1885....	713,738	1902....	1,073,140
1869....	1,774,978	1886....	903,651	1903....	1,060,420
1870....	1,336,956	1887....	693,709	1904....	1,115,300
1871....	1,799,440	1888....	616,731	1905....	969,300
1872....	1,610,972	1889....	588,923	1906....	948,400
1873....	1,305,749	1890....	490,435	1907....	828,000
1874....	1,844,618	1891....	429,811		
			Total.....		$69,549,103

TABLE VII.—PRODUCTION OF LODE MINES.*

YEAR.	GOLD.		SILVER.		LEAD.		COPPER.		TOTAL VALUES.
	Oz.	Value.	Oz.	Value.	Pounds.	Value.	Pounds.	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	78,996	.....	.....	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	4,446,963	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	2,996,204	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
1907	196,179	4,055,020	2,745,448	1,703,825	47,738,703	2,291,458	40,832,720	8,166,544	16,216,847
To'l	2,191,229	45,070,717	47,034,015	27,289,833	491,663,995	19,917,197	284,237,916	43,713,122	135,990,869

* Not included in above is 1,356 tons of zinc ore—worth $46,100, and 1,500 tons iron ore—worth $4,500.
* The information as to production in the earlier years is obtained from the "Mineral Statistics and Mines" for 1896, Geological Survey of Canada.

TABLE VIII.—COAL AND COKE PRODUCTION PER YEAR TO DATE.

COAL.

YEARS.	TONS (2,240 lbs).	VALUE.
1836-67	222,673	$ 891,704
1868	44,005	176,020
1869	35,802	143,208
1870	29,843	119,372
1871-2-3	148,549	493,836
1874	81,547	244,641
1875	110,145	330,435
1876	139,192	417,576
1877	154,052	462,156
1878	170,846	512,538
1879	241,301	723,903
1880	267,595	802,785
1881	228,357	685,071
1882	282,139	846,417
1883	213,299	639,897
1884	394,070	1,182,210
1885	265,596	796,788
1886	326,636	979,908
1887	413,360	1,240,080
1888	489,301	1,467,903
1889	579,830	1,739,490
1890	678,140	2,034,420
1891	1,029,097	3,087,291
1892	826,335	2,479,005
1893	978,294	2,934,882
1894	1,012,953	3,038,859
1895	939,654	2,818,962
1896	896,222	2,688,666
1897	882,854	2,648,562
1898	1,135,865	3,407,595
1899	1,306,324	3,918,972
1900	1,439,595	4,318,785
1901	1,460,331	4,380,993
1902	1,397,394	4,192,182
1903	1,168,194	3,504,582
1904	1,253,628	3,760,884
1905	1,384,312	4,152,936
1906	1,517,303	4,551,909
1907	1,800,067	6,300,235
Total	25,944,700 tons.	$79,115,658

COKE.

1895–7	19,396	$ 96,980
1898 (estimated)	35,000	175,000
1899	34,251	171,255
1900	85,149	425,745
1901	127,081	635,405
1902	128,015	640,075
1903	165,543	827,715
1904	238,428	1,192,140
1905	271,785	1,358,925
1906	199,227	996,135
1907	222,913	1,337,478
Total	1,526,788 tons.	$7,856,853

TABLE IX.—PRODUCTION IN DETAIL OF THE

DISTRICT.	YEAR	TONS.	GOLD—PLACER.		GOLD—LODE.		SILVER.		LEAD.	
			Ounces.	Value.	Ounces.	Value.	Ounces.	Value.	Pounds.	Value.
				$		$		$		$
Cariboo										
Cariboo Division	1904		15,650	313,000						
	1905		15,000	300,000						
	1906		17,790	355,800						
	1907		15,325	306,500						
Quesnel "	1904		7,500	150,000						
	1905		4,800	96,000						
	1906		1,980	39,600						
	1907		2,200	44,000						
Omineca "	1904		580	11,600						
	1905		500	10,000						
	1906		500	10,000						
	1907		500	10,000						
Cassiar										
Atlin Division	1904		26,500	530,000						
	1905		23,750	475,000						
	1906		22,750	455,000						
	1907		20,400	408,000						
Liard, Stikine and Skeena Divisions.	1904	303	575	11,500	766	15,833	185	99		
	1905	143	1,250	25,000	187	3,866	477	274	5,500	233
	1906	5,394	2,200	44,000	2	41	26	16		
	1907	9,611	1,250	25,000	165	3,410	2,291	1,422		
East Kootenay										
Fort Steele Division	1904	76,895	1,000	20,000			590,186	314,923	21,071,236	817,564
	1905	170,073	708	14,160			1,137,872	652,342	48,248,828	2,045,750
	1906	180,036	520	10,400			1,049,536	665,931	44,487,481	2,264,413
	1907	154,963	550	10,000	6	124	821,367	509 74(	37,526,194	1,801,257
Windermere-Golden	1904	365	50	1,000			20,964	11,186	401,022	15,559
	1905	226	50	1,000	14	289	16,880	9,677	149,584	6,342
	1906	243			10	207	22,174	14,069	167,691	8,535
	1907	64					3,365	2,455	73,842	3,544
West Kootenay										
Ainsworth Division	1904	14,569			2	41	90,004	48,026	3,091,648	119,956
	1905	3,331			28	579	99,781	57,204	1,002,114	42,490
	1906	19,431			19	393	165,915	105,273	3,173,358	161,524
	1907	17,781			118	2,439	301,322	187,000	3,654,775	175,429
Nelson "	1904	74,442	150	3,000	14,100	291,447	198,795	106,077	976,570	37,891
	1905	50,090	150	3,000	17,667	365,177	116,729	66,921	1,368,388	58,020
	1906	50,135	50	1,000	11,677	241,364	211,122	133,957	1,034,553	52,659
	1907	52,693	50	1,000	13,383	276,627	236,837	146,981	1,582,113	75,942
Slocan & Slocan City	1904	70,296			160	3,307	1,540,170	821,835	10,611,227	411,716
	1905	88,279			134	2,770	1,045,948	599,642	5,399,330	228,932
	1906	14,973			69	1,426	571,613	362,688	2,975,674	151,462
	1907	18,412			14	289	550,998	366,773	4,305,826	205,680
Trail Creek "	1904	312,991			133,095	2,751,074	181,830	97,024		
	1905	330,018			129,843	2,683,855	147,753	84,707		
	1906	279,527			105,356	2,177,709	126,174	80,057		
	1907	285,923			94,573	1,954,824	126,661	78,606	4,514	217
Revelstoke, Trout Lake and Lardeau Divisions.	1904	26,494	50	1,000	3,615	74,722	148,201	79,080	485,520	18,838
	1905	22,302	280	5,600	2,707	55,954	121,551	69,685	339,883	14,411
	1906	8,715	200	4,000	2,048	42,332	79,262	50,292	469,000	23,872
	1907	5,845	250	5,000	1,168	24,143	122,232	75,857	566,020	27,169
Lillooet										
Lillooet M. D. and Clinton	1904	40	1,725	34,500	4	83				
	1905	133	1,500	30,000	125	2,584				
	1906	215	840	16,800	170	3,514				
	1907	309	600	12,000	180	3,721				
Yale—BOUNDARY										
(Grand Forks, Greenwood and Osoyoos Divisions.)	1904	801,925	150	3,000	55,505	1,147,288	245,155	130,815	9,021	350
	1905	65,628	90	1,800	78,689	1,626,501	630,407	361,412	67,076	2,844
	1906	1,182,517	165	3,300	94,125	1,945,564	671,661	426,169	100,465	5,113
	1907	1,173,416	75	1,500	81,218	1,678,776	469,203	291,189	25,419	1,220
Similkameen, Nicola, and Vernon Div'ns.	1904		125	2,500						
	1905	88	† 67	1,140	19	393				
	1906	3	125	2,500	6	124				
	1907	11	50	1,000			14	9		
Yale, Ashcroft and Kamloops Divisions	1904	1,906	1,560	31,200	183	3,783	625	334		
	1905	14,642	230	4,600	610	12,608	3,863	2,215		
	1906	3,837	250	5,000	215	4,444	1,034	656		
	1907	348	150	3,000	20	413	209	130		
Coast (Nanaimo, Alberni, Clayoquot, Quatsino, New Westminster and Victoria Divisions).	1904	81,383	150	3,000	14,612	302,030	206,366	110,117		
	1905	61,126	100	2,000	8,637	178,527	118,156	67,739		
	1906	218,846	50	1,000	10,330	213,521	91,745	58,212		
	1907	84,738	50	1,000	5,334	110,254	70,356	43,663		
Miscellaneous ‡ (other metals, building stone, brick, etc.)	1904									
	1905									
	1906									
	1907									
TOTALS	1904	1,461,609	55,765	1,115,300	222,042	4,589,608	3,222,481	1,719,516	36,646,244	1,421,874
	1905	1,706,679	48,465	969,300	238,600	4,933,102	3,439,417	1,971,318	56,580,703	2,399,022
	1906	1,963,872	47,420	948,400	224,027	4,630,639	2,990,262	1,897,320	52,408,217	2,667,578
	1907	1,804,114	41,450	$ 828,000	193,179	$ 4,055,020	2,745,448	$ 1,703,825	47,738,703	$ 2,291,458

† Includes Platinum. ‡ Including 1,356 tons Zinc ore, valued at $46,100; and 1,500 tons Iron ore, valued at $4,500.

METALLIFEROUS MINES FOR 1904, 1905, 1906 AND 1907.

COPPER.		TOTALS FOR DIVISIONS.				TOTALS FOR DISTRICTS.			
Pounds.	Value.	1904.	1905.	1906.	1907.	1904.	1905.	1906.	1907.
	$	$	$	$	$	$	$	$	$
						474,600	406,000	405,400	380,500
		313,000							
			300,000						
				355,800					
					306,500				
		150,000							
			96,000						
				39,600					
					44,000				
		11,600							
			10,000						
				10,000					
					10,000				
						558,573	504,372	555,599	572,809
		530,000							
			475,000						
				455,000					
					408,000				
8,900	1,141	28,573							
			29,372						
293,269	56,542			100,599					
674,887	134,977				164,809				
						1,180,933	2,731,214	2,964,887	2,327,120
		1,152,487							
			2,712,252						
				2,940,744					
					2,321,121				
5,472	701	28,446							
10,606	1,654		18,962						
6,910	1,332			24,148					
					5,999				
						5,806,070	5,257,659	4,548,253	4,707,876
		168,023							
			100,273						
				267,190					
					364,868				
220,500	28,268	466,688							
92,663	14,446		507,564						
216,034	41,651			470,631					
434,222	86,845				587,395				
		1,236,858							
			831,344						
2,861	552			516,128					
					573,742				
7,119,876	912,768	3,760,866							
5,800,294	904,266		3,672,828						
4,750,110	915,821			3,173,587					
5,060,275	1,016,055				3,049,702				
		173,640							
			145,650						
1,145	221			120,717					
					132,169				
						34,583	32,584	20,314	15,721
		34,583							
			32,584						
				20,314					
					15,721				
						4,190,281	6,433,504	8,674,710	8,289,288
22,066,407	2,828,913	4,110,366							
27,670,644	4,313,853		6,806,410						
32,226,782	6,213,323			8,593,469					
31,521,550	6,304,310				8,276,995				
		2,500							
			1,533						
				2,624					
2,506	517				1,526				
328,380	42,098	77,415							
680,808	106,138		125,561						
355,377	68,517			78,617					
36,120	7,224				10,767				
						1,179,295	784,131	1,263,339	771,533
5,960,593	764,148	1,179,295							
3,437,236	535,865		784,131						
5,138,000	990,606			1,263,339					
3,083,080	616,616				771,533				
						600,000	800,000	1,000,000	1,200,000
		600,000							
			800,000						
				1,000,000					
					1,200,000				
85,710,128	4,578,037	$14,024,335				$14,024,335			
37,692,261	5,376,222		$16,949,464				$16,949,464		
42,990,488	8,288,565			$19,432,502				$19,432,502	
40,832,720	$ 8,186,544				$ 18,244,847				$ 18,244,847

TABLE X.

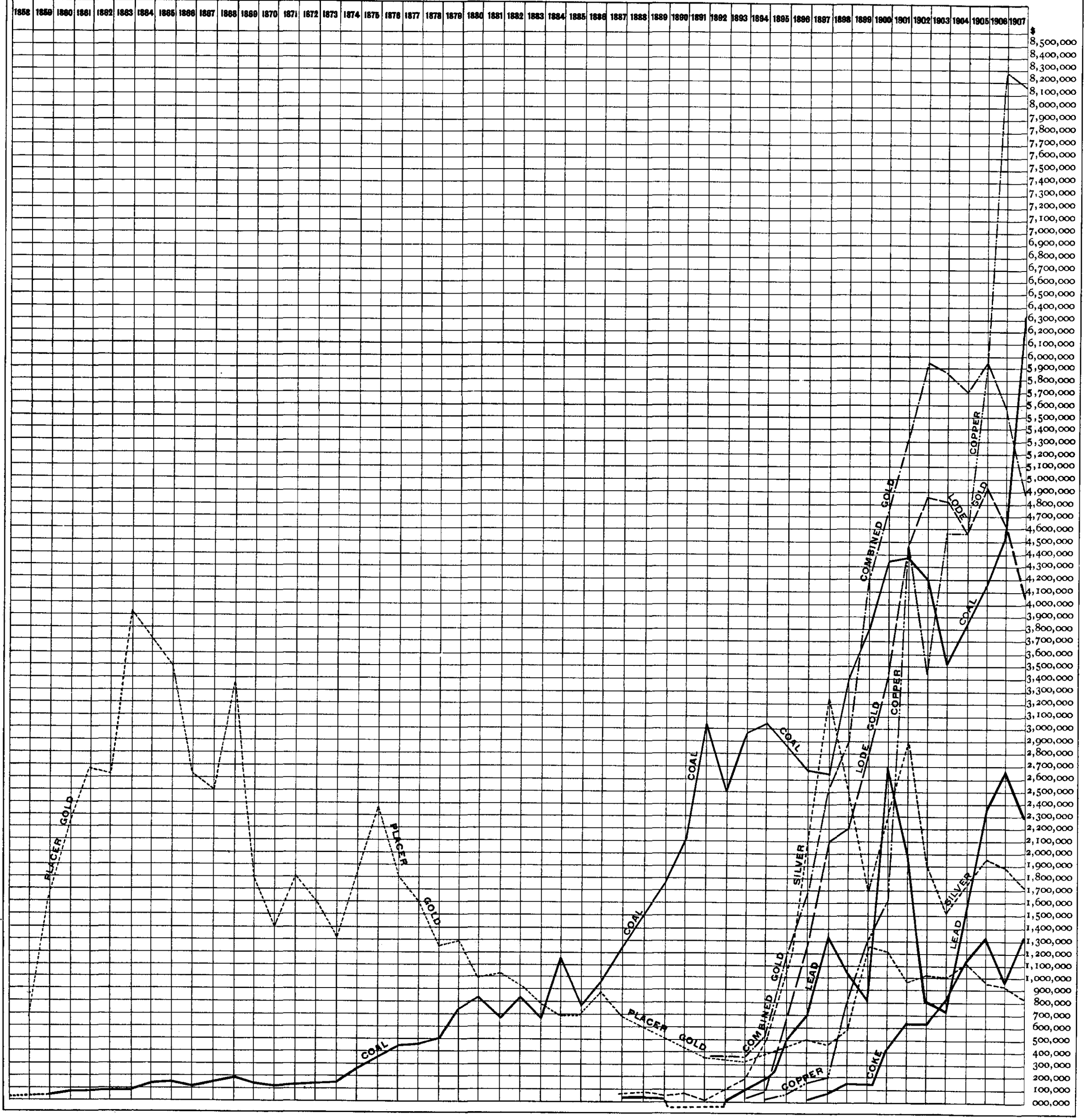
Showing Comparative Mineral Production for 1907 of British Columbia and Other Provinces of the Dominion.

	Dominion Total.*		YUKON TERRITORY. $3,150,000	ALL OTHER PROVINCES COMBINED.
			BRITISH COLUMBIA.	
Gold	$5,114,765	$4,883,020		$ 231,745
Silver	8,329,221	1,703,825		6,625,396
Copper	11,478,644	8,166,544		3,312,100
Lead	† 2,291,458	2,291,458		———
Iron	2,028,214	4,500		2,023,714
Nickel	9,535,407	———		9,535,407
Coal	24,585,983	6,300,235		14,799,792
Coke		1,337,478		2,148,478
Total	63,363,692	$24,687,060		$38,676,632

* Taken from "Preliminary Report on the Mineral Production of Canada in 1907." † At the British Columbia valuation.

TABLE

SHOWING MINERAL PRODUCTION OF BRITISH COLUMBIA



PROGRESS OF MINING.

———:o:———

The value of the mineral products of the Province for the year 1907 is greater than that for any preceding year, and amounts to $25,882,560, showing an increase over the last year of $902,014, equivalent to an increase of 3.6 per cent., and is greater than the output of 1905 about 15.2 per cent., and 36.3 per cent. greater than that of 1904.

An analysis of the returns shows that this increase is due to the greater tonnage of low-grade ore mined in the Boundary district, and also to an increased tonnage from the collieries, both in coal and coke.

The market price for all the metals was unusually high for the first part of the year, but fell so low during the last half of the year that the average market price for 1907 was very little, if any, higher than that of 1906.

The tonnage of ore mined in the Province during the year 1907, exclusive of coal, was 1,804,114 tons. This total tonnage was produced by the various districts in the following proportions:—Boundary, 65.1 percentage of total; Rossland, 15.8; Coast, 4.7; Fort Steele M. D., 8.6; all other Districts, 5.8.

The number of mines from which shipments were made in 1907 was 147; but of these only 72 shipped more than 100 tons each during the year.

There were in the Province 36 mines that shipped in excess of 1,000 tons each during the year, and of these 11 were in the Boundary District, 8 in the Nelson, 6 on the Coast, 4 in the Rossland, 3 in the Fort Steele M. D., 3 in the Slocan District, and 1 in the Lardeau M. D.

The following table shows the number of mines which shipped ore during the year 1907; the Districts in which they are located, and the tonnage produced in each district, together with the number of men employed, both above and below ground:—

TABLE SHOWING DISTRIBUTION OF SHIPPING MINES IN 1907.

	Tons of Ore Shipped.	No. of Mines Shipping.	No. of Mines Shipping over 100 tons in 1907.	Men Employed in these Mines.		
				Below.	Above.	Total.
CASSIAR:						
Skeena	9,611	2	2	45	72	117
EAST KOOTENAY:						
Fort Steele	154,963	4	3	306	116	422
Windermere	64	4	0	6	2	8
WEST KOOTENAY:						
Ainsworth	17,781	19	6	97	32	129
Nelson	52,693	24	12	166	129	295
Slocan	18,412	41	15	236	77	313
Trail	285,923	7	4	563	188	751
Other Divisions	5,845	6	2	53	17	70
LILLOOET	309	1	1	2	2	4
YALE:						
Boundary	1,173,416	22	15	929	312	1,241
Ashcroft-Kamloops	348	2	1	5	3	8
Similkameen-Vernon	11	1	0	1	0	1
COAST	84,738	14	11	176	162	338
Total	1,804,114	147	72	2,585	1,112	3,697

In explanation of the table, it should be said that in its preparation, a mine employing 12 men for four months is credited in the table with four men for 12 months, so that the total given is less than the actual number of individuals who worked in mines during the year.

The "labour employed to the ton of ore mined" forms some criterion of the total cost of mining in a camp, since the cost of labour is in a more or less constant proportion to such total cost. In this respect it is interesting to note in the various districts the number of tons of ore mined to each man employed. An analysis of the above table shows, approximately, that, taking the Province as a whole, there were 488 tons of ore mined for each man employed about the mines. In this respect, however, the districts vary very materially, since in the Slocan District the figures show 59 tons mined to the man in the year, in the Nelson District 179 tons, in Trail Creek (Rossland) District 387 tons, and in the Boundary 946 tons.

Such generalisation, of course, does not apply exactly to any one mine, but only to the district, and in the first two districts mentioned the mines vary in character so greatly, some having high-grade shipping ores, and others low-grade concentrating ores, that care must be taken not to carry these average figures too far.

TABLE SHOWING NON-SHIPPING MINES AND NUMBER OF MEN EMPLOYED, 1907.

DISTRICT.	Number of Mines.	Men employed under ground.	Men employed above ground.	TOTAL.
COAST AND CASSIAR	7	23	49	72
EAST KOOTENAY (Ft. Steele & Windermere)	6	6	1	7
SLOCAN D. (Slocan, Slocan City, Ainsworth)	28	49	66	115
NELSON	6	3	1	4
TRAIL CREEK	1	0	0	0
LARDEAU AND TROUT LAKE	3	12	4	16
BOUNDARY	10	26	6	32
Total	61	119	127	246

STATISTICAL TABLES.

Referring to the preceding Statistical Tables of the mineral production of the Province, the following is a summary of their contents:—

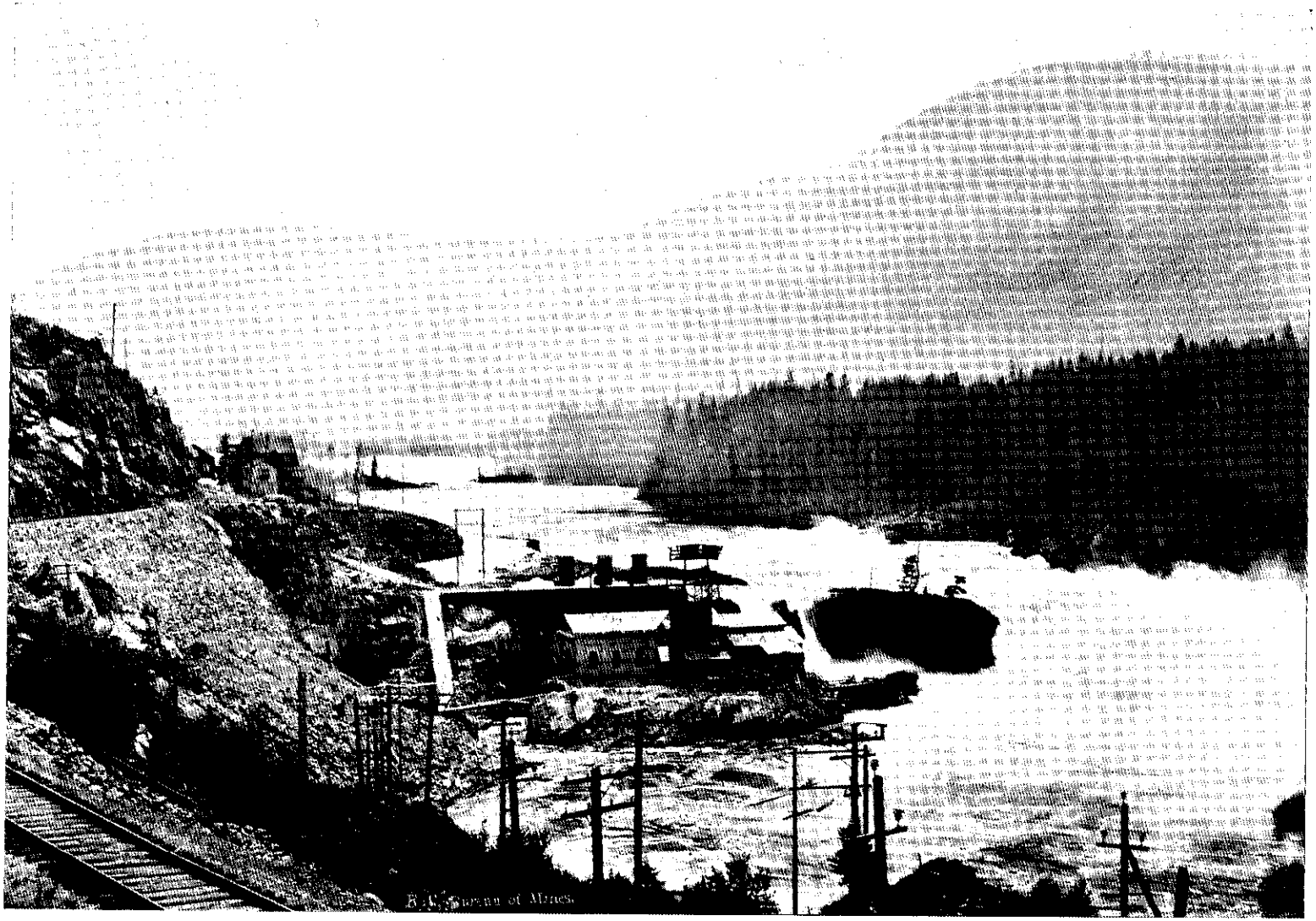
TABLE I. shows the total gross value of each mineral product that has been mined in the Province up to the end of 1907. From this it will be seen that coal mining has produced more than any separate class of mining—a total of $86,972,511—followed next in importance by placer gold at $69,549,103, and third by lode gold at $45,070,717.

The metal gold, derived from both placer and lode mining, amounts to $114,619,720, the greatest amount derived from any one mineral, the next most important being coal, the total gross value of which, combined with that of coke, is $86,972,511, followed by copper at $43,713,122, silver at $27,289,833, and lead at $19,917,197.

TABLE II. shows the values of the total production of the mines of the Province for each year from 1890 to 1907, during which period the output has increased nearly ten-fold, and has now reached a production, for the past year, valued at $25,882,560, or more than double what it was in 1899.

The value of the total products of the mines of the Province up to the end of 1907 is $299,526,282.

TABLE III. presents in graphical form the facts shown by figures in the 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.



BONNINGTON FALLS, KOOTENAY RIVER—THE SOURCE OF POWER FOR ROSSLAND AND BOUNDARY MINES.

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 $17,000,000 line, and the total production has nearly reached the $26,000,000 line.

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

The table shows that there has been a decrease in the production of placer gold of some $120,400, and at the same time a decrease in the output of lode gold of $575,619, making a total decrease of $696,019 in the production of the metal.

The amount of silver produced this past year was 2,745,448 ounces, having a gross value of $1,703,825, a decrease from the preceding year of $193,495, due chiefly to the decreased production of the Slocan District.

The table shows an output of lead in 1907 amounting to 47,738,703 lbs., valued at $2,291,458, which is a decrease from the production of the preceding year of 4,669,514 lbs. of lead.

TABLE V. shows the proportions of the total mineral productions made in each of the various districts into which the Province is divided.

It will be noted that this year again the Boundary District has the honour of first place on the list, followed in order of output by the Coast District and East Kootenay, with West Kootenay, for many years our greatest producer, as only fourth on the list.

The Coast and East Kootenay Districts, however, owe a considerable percentage of their outputs to the coal mines situated within their limits, whereas in the other districts the production is entirely from lode mining.

TABLE VI. gives the statistical record of the placer mines of the Province from 1858 to 1907, and shows a total production of $69,549,103. The output for 1907 was $828,000, a decrease of about 12.7 % as compared with the previous year, and due to a dry season with a shortage of water for hydraulic mining.

TABLE VII. 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 to date is $135,990,869. The production in 1907 was $16,216,847, a decrease from the preceding year of $1,267,255, or about 7.2 %.

TABLE VIII. contains the statistics of production of the coal mines of the Province. The total amount of coal mined to the end of 1907 is 25,944,700 tons (2,240 lbs), worth $79,115,658. Of this there was produced in 1907 some 1,800,067 tons, valued at $6,300,235, a larger amount than has been produced in any previous year.

In these figures of coal production 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 1907 in making coke was 419,541 tons, from which was made 222,913 tons of coke, having a value of $1,337,478, an increase over the preceding year of 23,686 tons of coke, equal to 11.9 %, with an increase in value of $341,343 on the whole production.

While 222,913 tons of coke were actually made, only 215,689 tons were sold, owing to the sudden shutting down of the smelters in the Interior, necessitating the carrying over of 7,224 tons of coke in stock.

Within the last two years the selling prices of coal and coke have risen, and it has been estimated that the average selling prices are now approximately $3.50 per ton (2,240 lbs.) for coal, and for coke $6 per ton of 2,240 lbs., which prices have been used in calculating the values of these productions. The prices formerly used in such calculations were $3 and $5 per ton respectively.

More detailed statistics as to the coal production of the Province and of the separate districts are given elsewhere in this Report.

TABLE IX. gives the details of production of the mines of the Province (excepting coal mines) for the years 1904, 1905, 1906 and 1907, 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 the past year was 1,804,114 ton , having a gross value of $18,244,847.

The following table shows the percentages of such tonnage and values derived from the various districts of the Province :—

Boundary District	65.1	per cent.	of tonnage and	47.6	per cent.	of values.
Fernie Creek, M. D.	15.9	"	"	17.5	"	"
Coast District	4.7	"	"	4.5	"	"
Fort Steele M. D.	8.6	"	"	13.2	"	"
Slocan District	1.0	"	"	3.3	"	"
Miscellaneous and other Divisions	4.7	"	"	13.9	"	"
	100			100		

TABLE X. 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 1907 British Columbia produced of the metals and coal an amount over 35.4 per cent. of that of all the other Canadian Provinces combined.

COAL.

The actual production of coal in British Columbia during the year 1907 has been practically confined to the Crow's Nest Pass Collieries in South-East Kootenay, and to the Wellington Colliery Co. and the Western Fuel Co., operating on Vancouver Island. In addition to these, a new colliery has been opened up at Middlesboro, near Coutlee, in the Nicola valley, by the Nicola Valley Coal and Coke Co., which shipped during the last three months of the year, since it acquired railway connection, some 10,000 tons of coal.

On Vancouver Island three new collieries have begun shipping, as yet on a very small scale, but still a beginning. These new collieries have shipped as follows :—The Gilfillan Colliery at Wellington, operated by Macgowan & Co., 2,848 tons; the Fiddick Colliery at South Wellington, operated by the South Wellington Coal Mines, Ltd. (John Arbuthnot *et al.*), 575 tons, and the new East Wellington Colliery at Nanaimo, operated by the Vancouver-Nanaimo Coal Mining Co., Ltd., 156 tons.

In the tables and statistics the output of the Middlesboro Colliery has been included in the Coast Collieries.

The gross output of the coal mines of the Province for the year 1907 was 2,219,608 tons (2,240 lbs.), of which 44,760 tons were added to stock, leaving a total consumption of 2,174,848 tons of coal; of this amount, 916,262 tons were sold for consumption in Canada, 673,114 tons were sold for export, making the total of coal sales for the year 1,589,376 tons; of the balance of the coal, 419,541 tons were used in making coke, and 165,931 tons under colliery boilers, etc.

From this amount of coal there were produced 222,913 tons (2,240 lbs.) of coke, of which 7,224 tons were added to stock, leaving the net coke sales of 215,689 tons, of which 155,579 tons were consumed in Canada and 60,110 tons exported.

The following table indicates the markets in which the coal and coke output of the Province was sold :—

COAL.	Coast.	Crow's Nest Pass.	Total for Province.
Sold for consumption in Canada.....(Tons—2,240 lbs)	698,041	218,221	916,262
" export to United States..... "	359,666	291,410	651,076
" export to other countries..... "	22,038	.....	22,038
Total for District....	1,079,745	509,631	1,589,376
COKE.			
Sold for consumption in Canada.....(Tons—2,240 lbs)	14,592	140,987	155,579
" export to United States..... "	220	59,890	60,110
" export to other countries..... "	.....	.....	.....
Total for District....	14,812	200,877	215,689

COAST COLLIERIES.

The Coast Collieries mined in 1907 some 1,342,877 tons of coal, which, less the 44,760 tons added to stock, makes the total amount of coal disposed of 1,298,117 tons, distributed as follows :—

Sold as coal in Canada.....	698,041 tons	
" United States.....	359,666 "	
" other countries.....	22,038 "	
Total sold as coal		1,079,745
Used under companies' boilers, etc.....		121,701
Used in making coke		96,671
		1,298,117

The total coal sales of the Coast Collieries show an increase of 99,673 tons, or about 10.2 % over the preceding year, and the increase would have been very much greater but for the financial depression in California, the chief export market. This is evidenced by the fact that 44,760 tons of coal actually mined was not sold but added to stock, and the mines had to be run on "short time" during the fall months.

The consumption of coal in that portion of British Columbia served by the Coast Collieries shows an increase of 166,935 tons, or 31.4 % over last year, indicating an increasing demand for fuel in the home market, the local sales this year amounting to 65 % of the total sales.

On the other hand, the sales for export to the United States show a decrease of 73,517 tons, or about 17 %. The export trade to other countries, while still insignificant, shows an increase over the previous year of about 40 %.

The production of coke on the Coast is confined to one company, the Wellington Colliery Co., which made in 1907 some 16,372 tons of coke from washed screenings; of this 1,560 tons were added to stock, the sales amounting to 14,812 tons.

The sales for local consumption in 1907 were 14,592 tons, as against 14,547 tons in 1906—practically no change, but the export sales of coke, which in 1906 amounted to 8,304 tons, in 1907 were only 220 tons—practically nothing.

The coke sales, however, do not give the true condition of the market, as the great demand for coal at high prices was such that it was more profitable for the company to sell its coal, as such, than to make it into coke, even while a local smelter had to import coke from the Orient, as similarly had to be done in Alaska and, presumably, in California.

Rocky Mountain Coal Field.

In the Rocky mountain coal field, the western slope of the mountains is in this Province, and here there are three separate collieries being worked, viz.:—Michel, Coal Creek, and Carbonado collieries—all operated by the Crow's Nest Pass Coal Co., Ltd., although the last mentioned colliery has made no production this last year, but is now being opened up again.

At Hosmer, between Fernie and Michel, interests connected with the C. P. Ry. are opening up a large and extensively equipped colliery, which will not ship coal until 1908.

The only operating company, the Crow's Nest Pass Coal Co., mined during the year 1907 some 876,731 tons (2,240 lbs.) of coal, the disposition of which is shown in the following table:—

Sold as coal in Canada	218,221 tons	
" United States	291,410 "	
Total sold as coal		509,631
Used by company in making coke		322,870
Used under company's boilers, etc		44,230
		876,731 tons.

The amount of coke made from the 322,870 tons of coal used was 206,541 tons (2,240 lbs.), of which 5,664 tons were carried over the year as stock, while 200,877 tons were sold as coke, 140,987 tons for consumption in Canada, and 59,890 tons exported to the United States. The production of coke in 1907 shows an increase over the preceding year of 17,156 tons, and the sales of coke an increase of 12,831 tons, equally divided between the Canadian and United States markets.

The coke sales of this company would have been considerably greater but that the drop in the selling price of copper, followed by a financial depression, caused the large smelters in the Boundary District, which obtain their coke supply here, to suspend operations for about two months out of the year. The coal and coke production were adversely affected during the earlier part of the year by a shortage of cars, and insufficient labour with which to carry on the work.

GOLD.

Placer Gold.

The production of placer gold during the year 1907 was about $828,000, a decrease of $120,400, or 12.7 %, as compared with the previous year.

The production of placer gold is subject to sudden fluctuations, the discovery of new diggings causing a rise, but, as is always the case with this class of mining, a few years sees the richer ground worked out and it takes some further years to permit of hydraulic and other forms of machine mining becoming established.

The Atlin District is at present the largest producer of placer gold, contributing nearly half of the total Provincial output. Here the larger companies now produce about 70 % of the gold recovered, the remaining 30 % being obtained by individual miners, a large proportion of whose production is obtained from "drifting" operations, which can be carried on in winter. In this district royalty was collected on about $340,000 worth of gold.

The two dredges which were operated for a short time a couple of years ago have been now abandoned, it being admitted that, although the ground carried sufficient gold, the character of the deposit—a clayey gravel containing large boulders, together with a hard and uneven bedrock—rendered the problem a hard one to solve.

After the difficulties to be experienced with a dredge were realised, a steam shovel was established on Tar flats, dredging up the gravel dry and conveying it in cars to an elevated washing apparatus, which obviates many of the troubles met with in dredging. This shovel has been steadily in operation and is reported to have made a good saving and a large production, but neither these figures nor the profit or loss balance can be given.

The Dease Lake section of the Stikine District has been a disappointment this year owing to mishaps to the two companies working there. The individual miner has almost disappeared from this once famous camp.

There is a slight falling off in the gold output of the Cariboo District, but the district has fairly maintained its standard of production, some $350,000 having been recovered this year.

Fort Steele Division still continues to produce a little placer from the old workings on Wild Horse creek.

The lower Fraser river and the Thompson river have almost ceased to produce gold, the dredges established there having been anything but a success.

Gold from Lode Mining.

The value of the gold produced from lode mining in the Province during the year 1907 was $4,055,020, a decrease of $575,619 or about 12.5 %. About 95 % of the gold thus produced is recovered from smelting copper-bearing ores. The only stamp-mill of any importance in operation is at Hedley, in the Osoyoos Mining Division, which mined and milled about 32,000 tons of ore, from which was recovered about $475,000.

SILVER.

The total amount of silver produced in the Province during the year 1907 was 2,745,448 ounces, valued at $1,703,825, a decrease in amount of 244,814 ounces and in value of the product of $193,495.

About 72 % of the silver produced is found associated with lead, in argentiferous galena, the remainder being found in conjunction with copper-bearing ores.

The Slocan District, including Ainsworth Mining Division, provided 32 % of the total Provincial output and Fort Steele Mining Division 30 %, all from argentiferous galena, although the output of both these districts is less than it was last year.

LEAD.

There was produced in the Province during 1907 about 47,738,703 pounds of lead, having a market value of $2,291,458, a decrease, as compared with the preceding year, in amount of 4,669,514 pounds, and in value of $376,120. The lead production is derived chiefly from the Fort Steele Mining Division, as is shown in the following table:—

Fort Steele M. D. produced	37,526,194	lbs. of lead =	78.61	% of total.
Slocan " "	4,305,826	"	9.00	"
Ainsworth " "	3,654,775	"	7.66	"
Nelson " "	1,582,113	"	3.32	"
All other districts "	669,795	"	1.41	"
	47,738,703		100.00	

COPPER.

The output of copper for 1907 was 40,832,720 lbs., having a gross value of $8,166,544. This output is not quite as great as that of the preceding year, which is to be accounted for by the fact that the larger copper-producing mines were only run for about nine months of the year, the smelters having been shut down, at least partially, for a month in the spring, owing to a shortage of the coke supply, while in the fall the drop in the price of copper, accompanied by the financial depression in the East, closed the mines for another two months. For the nine months the mines were in operation the output was greater than ever before for a similar period.

The most serious falling off in production has been in the Coast District, while the greatest increase has been made in the Rossland Camp, followed by the Nelson Division, in a lesser degree.

The following table shows the production of the various districts for the years 1905, 1906 and 1907:—

	1905.	1906.	1907.	
Boundary District....	27,670,644 lbs.	32,226,782 lbs.	31,521,550 lbs.	= 77.2 %
Rossland "	5,800,294 "	4,750,110 "	5,080,275 "	12.4 "
Coast & Cassiar "	3,437,236 "	5,431,269 "	3,757,967 "	9.2 "
Yale-Kamloops "	680,808 "	355,377 "	36,120 "	.1 "
Nelson "	92,663 "	216,034 "	434,222 "	1.1 "
Other Districts.....	10,606 "	10,916 "	2,586 "	0.0
	37,692,251 "	42,990,488 "	40,832,720 "	100.00

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

Boundary, 1.34 % copper; Coast, 1.99 %, and Rossland, 0.885 % copper.

OTHER MINERALS.

Iron Ore. There has been practically no iron ore mined in the Province this past year, with the exception of some 1,500 tons of bog iron ore mined and shipped from Quatsino sound, which deposit having been found unprofitable, owing to its shallowness, was then abandoned. From the numerous known deposits of magnetite no ore was shipped, although considerable work, of a prospecting nature, was done.

Zinc Ore. The mining of zinc ore has been practically at a standstill. The *Lucky Jim* mine, in the Slocan, shipped some 1,120 tons of ore, which had been mined during 1906, but no fresh mining was done. Certain mines in the Slocan District produced small quantities of zinc blend as concentrates, separated from argentiferous galena as a by-product, but this ore has not, as yet, been sold or treated.

Considerable work has been done on the old *Blue Bell* mine, opposite Ainsworth, and a large quantity of zinc ore developed, for the treatment of which a concentrator is now in process of erection.

The Zinc Smelter erected at Frank, in Alberta, for the treatment of British Columbia zinc ores, has not, as yet, been started.

The Canada Zinc Co., Limited, has begun the building of a small plant at Nelson, designed to treat the complex galena-zinc blende ores of the Slocan District by a process of electric smelting under the Snyder patents, whereby it is hoped to recover the lead and zinc in the metallic state, and also save the silver contents with the lead. The electricity for the

process is to be obtained from Bonnington falls. The tightness of the money market delayed the construction of the plant, but the Provincial Legislature, at its 1908 session, advanced a loan of $10,000 to aid in completing the plant.

Platinum. Platinum is known to exist in various parts of the Province, associated with placer gold in alluvial workings, but it has as yet been mined only as a by-product, and as the placer working in these particular districts has this year been slight, no appreciable production of platinum has been made.

Building Stone. The Province abounds in quarry sites from which excellent building stone could be obtained, and doubtless will as soon as building in stone becomes more general, but at present very little stone is used in the Interior, except for special works. On the Coast, building in stone has become more general, and several very good quarries of sandstone, granite and andesite have been opened up on tide water. In a previous report of this Bureau a detailed description was given of the more important quarries.

Brick. The manufacture of red brick is increasing rapidly to supply an increasing demand. Suitable clay deposits are found in all districts, but the manufacture on any important scale has been naturally confined to the vicinity of the larger towns and cities. For the most part, the output is the product of small brick-yards, although two or three larger yards have been established near Vancouver.

Fire Brick. Fire Clay. The fire brick plant at Comox, formerly supplied with clay from the adjacent coal mines, has not been worked lately, but the coal mines shipped some 488 tons of fire clay, to be used in the manufacture of pottery.

At Clayburn, near Vancouver, a very good deposit of fire clay exists, from which a good quality of pressed brick and fire brick is being made.

Lime-Silica Brick. The Silica Brick and Lime Co. has built and is operating a plant near Victoria for the manufacture of lime-silica brick. The output of the plant for the portion of the year 1907 that it has been in operation was, approximately, 1,100,000 brick. The brick is of a light gray colour and serves as a front brick, and is sold at about $15 a thousand.

Lime. The manufacture of lime is carried on in a small way at a number of points, while at Victoria, on Saanich arm, on Texada island, near Vancouver, and elsewhere, are kilns making a considerable output. The greater part of the production is made on the Coast, where the limestone deposits are particularly pure, yielding a lime of exceedingly good quality.

Cement. The only Company actually producing cement in British Columbia is the Vancouver Portland Cement Co., with works at Tod inlet, on the Saanich arm, about 13 miles by road from Victoria. The company sold in 1907 some 143,226 barrels (350 lbs.) of Portland cement, of a total value of $215,000, of which quantity 125,000 barrels were used in the Province. The capacity of the plant now constructed and in operation is considerably greater than this output would indicate, as about 300,000 barrels can be turned out in the year.

Oil and Oil shales. No successful, or very serious, attempts have as yet been made in the Province at drilling for petroleum. A railway into the Flathead country will, in all probability, be built within a couple of years to certain coal fields on the south fork of Michel creek, and, when this is completed, doubtless some serious attempt will be made to develop the oil fields believed to exist in that section of the Province.

BUREAU OF MINES.

—o—

WORK OF THE YEAR.

The work of the Bureau of Mines increases, of necessity, year by year, and this growing activity is due to the following causes:—The extension of the mining area of the Province, with the proportional increase in the number of mines; the increasing desire of the outside public for the free information which the Bureau supplies with regard to the various mining districts and camps; and the appreciation by the prospector of the fact that he may obtain, gratis, a determination of any rock or mineral which he may send to the Bureau.

The routine work of the office, and the preparation and publication of the Report for the year just ended, followed by the examination in the field of as many of the mines and mining districts as the season would permit, together with the work of the Laboratory and instruction of students, fully occupied the staff for the year. The staff of the Bureau consists of the Provincial Mineralogist, the Provincial Assayer, and a junior assistant in the Laboratory, with a clerk as temporary assistant during the publication of the Report.

Provincial Mineralogist.

After the publication of the Annual Report for the previous year and the finishing of office work, the Provincial Mineralogist started on his summer field-work, going first to visit some properties in the vicinity of Ashcroft, and from there continuing south to Highland valley, where a number of prospects had been developed showing copper ore.

From Highland valley a road was followed to Nicola valley, where the new coal field was examined, a return being made to Victoria on August 4th, in time to, on August 7th, catch the steamer "Tees," which runs up the west coast of Vancouver Island to Quatsino sound.

Here, the various hematite iron locations and a couple of coal prospects were examined, after which the trail was taken to Hardy Bay, on the east coast of the island—the dunnage, etc., having to be packed across on one's back.

By arrangement made with the C. P. Railway, prior to leaving Victoria, the steamer "Princess Beatrice" called in at Hardy Bay on August 18th, on her trip north, to pick up the Provincial Mineralogist and his assistant, Mr. Harold Nation, taking them to Queen Charlotte Islands.

Jedway, on the southern end of Moresby island, one of the Queen Charlotte group, was reached on August 24th, at which point the party left the steamer, and from there various trips were made in a gasoline launch to mineral claims on surrounding bays and islands, ending at Skidegate.

On September 9th, the steamer "Princess Beatrice," then bound southward on her succeeding trip, was taken as far as Swanson bay, where the hospitality of Mr. McKinnon was enjoyed for three days, until the steamer "Camosun" was taken northward to Port Simpson.

Here another transfer had to be made, and on September 15th the steamer "Princess Royal" was taken to Skagway, in Alaska, arriving there on the morning of the 17th.

From Skagway a gasoline launch was taken to Haines, Alaska, from whence a trip was made on foot and by canoe, into the Rainy Hollow camp, on the headwaters of the Klehini river, in the Atlin Mining Division.

Returning by the same route, Skagway was reached on September 27th, and on October 2nd the steamer "Princess Royal" was taken to Victoria, arriving there on October 8th.

In May, and again in December, examinations for Assayers were held in the Government Laboratory, Victoria, by the Board of Examiners, appointed under the Act, on which Board the Provincial Mineralogist and Provincial Assayer sat as examiners.

In November the Provincial Mineralogist, under instructions, went to Fernie, East Kootenay, to make an examination of and to report on a fissure in the mountain, above the coal mines there, which was supposed to threaten a mountain slide, similar to that occurring some years ago at Frank, Alberta.

Subsequently a trip was taken into Greenwood, Grand Forks, Rossland and Nelson.

Towards the end of the year a Bulletin was prepared, and issued after the new year, on the mineral locations on Moresby island, of the Queen Charlotte group.

The remainder of the season was employed in the preparation for publication of the notes taken in the field, the collection and preparation of statistics and the routine work of the office, which included, in connection with the various inquiries for information and the collection of statistics, the sending out of, approximately, 1,200 letters, with approximately the same number received.

Provincial Assayer.

In addition to the work performed in the Assay office, which is noted in a separate report herewith, the Provincial Assayer was detached from this Bureau for the summer months and was engaged in making an examination of lands in the Alberni district for the Bureau of Information.

ASSAY OFFICE.

The following is a summary of the work of the Assay Office of the Bureau for the year 1907, as reported by the Provincial Assayer, Mr. Herbert Carmichael:—

During the year 1907 there were made by the staff in the Government Assay Office 905 assays or quantitative determinations, which is a decrease from the number made during the previous year; of these, a number were for the Bureau of Mines, or for the Department, for which no fees were received. The fees collected by the office were as follows:—

Fees from assays	$ 422 00
" melting and assaying gold dust and bullion	455 00
" assayers' examinations	180 00
Total cash receipts	$1,057 00
Determinations and examinations made for other Government Departments for which no fees were collected	400 00
Value of assaying done	$1,457 00

The value of gold melted during the year was $63,540, in 84 lots, as against $85,000, in 117 lots in 1906.

Free Determinations.

In addition to the above quantitative work, a large number of qualitative determinations, or tests, were made in connection with the identification and classification of rocks or minerals sent to the Bureau for a report; of these no count was kept, nor were fees charged therefor, as it is the established custom of the Bureau to examine and test qualitatively without charge samples of mineral sent in from any part of the Province, and to give a report on the same. This has been done for the purpose of encouraging the search for new or rare minerals and ores, and to assist prospectors and others in the discovery of new mining districts, by enabling them to have determined, free of cost, the nature and probable value of any rock they may find.

In making these free determinations, the Bureau asks that the locality from which the sample was obtained be given by the sender, so that the distribution of mineral over the Province may be put on record.

A number of soils, clays and waters have been analyzed.

EXAMINATIONS FOR ASSAYERS.

REPORT OF HERBERT CARMICHAEL, SECRETARY OF BOARD OF EXAMINERS.

I have the honour, as Secretary, to submit the Annual Report of the Board of Examiners for Certificates of Competency and Licence to Practice Assaying in British Columbia, as established under the "Bureau of Mines Act Amendment Act, 1899."

The Act requires that at least two examinations shall be held each year, and such have duly taken place.

Both these examinations were held in the Government Laboratory at Victoria, each occupying a week; the first examination began on May 27th, and the second on December 27th, 1907.

At the first examination the Board consisted of the Provincial Mineralogist, the Provincial Assayer and Mr. D. E. Whitaker, Assistant Assayer, and at this examination two candidates came up for examination, of which number only one passed the required examination. At the December examination the Board consisted of the same examiners, at which two candidates stood for examination and both successfully passed.

The question of holding the fall examination at Nelson was thought of, providing a sufficient number of candidates from the Upper Country entered for the examination. Advertisements were inserted in the Kootenay papers, giving notice of such intention and calling for entries, but no sufficient number applied to justify the considerable additional expense entailed by holding an examination away from Victoria.

In addition to the three candidates mentioned above, who successfully passed the examinations, the Board recommended during the year the granting of three certificates by exemption, under sub-section (2) of section 2 of the Act. In accordance with these recommendations, all these six certificates have been duly issued by the Honourable the Minister of Mines.

The following is a list, up to December 31st, 1907, of those to whom Certificates of Competency have been issued:—

LIST OF ASSAYERS HOLDING PROVINCIAL CERTIFICATES OF EFFICIENCY UNDER THE "BUREAU OF MINES ACT AMENDMENT ACT, 1899."

(Only the holders of such certificates may practise assaying in British Columbia.)

Under section 2, sub-section (1).

Austin, John W	Britannia Beach, B. C.	Collinson, H	Ladysmith.
Baker, C. S. H	Greenwood.	Comrie, George H	Vancouver, B. C.
Barke, A. C	Greenwood, B. C.	Crerar, George	
Belt, Sam'l. Erwin	Boundary Falls, B. C.	Cruickshank, G	Rossland.
Bernard, Pierre	Monte Christo, Wash.	Day, Athelstan	Dawson.
Bishop, Walter	Grand Forks.	Dedolph, Ed	
Buchanan, James	Trail.	Dockrill, Walter R	Chemainus.
Campbell, Colin	New Denver.	Dunn, G. W	Rossland.
Carmichael, Norman	Clifton, Arizona.	Farquhar, J. B	Vancouver.
Church, George B		Fingland, John J	Sandon.
Cobeldick, W. M	Scotland.	Grosvenor, F. E	Nelson.

List of Assayers holding Provincial Certificates of Efficiency.—*Concluded.*

Under section 2, sub-section (1).—Concluded.

Hannay, W. H.....Rossland.
Hart, P. E .....Grand Forks.
Hawkins, Francis.....Silverton.
Hook, A. Harry.....
Hurter, C. S .....
John, D .....Haileybury, Ont.
Kiddie, Geo. R.....Victoria.
Kitto, Geoffrey B.....Ladysmith.
Lang, J. G.....
Langley, A. S .....Crofton.
Ley, Richard N .....Nelson.
Marsh, Richard .....Spokane, Wash.
Marshall, H. Jukes .....Vancouver.
Marshall, William S .....Ladysmith.
Miles, Arthur D.....
Mitchell, Charles T .....Grand Forks.
McCormick, Alan F.....Ruth, Nevada.
MacDonald, Alex. C .....Vancouver.
McFarlane, James A.....Kaslo.
Nicholls, Frank .....Norway.
O'Sullivan, John.....Vancouver.
Parker, Robt. H.....Rossland.
Parsenow, W. L .....
Perkins, Walter G.....Basin, Montana.
Richmond, Leigh.....
Robertson, T. R.....

Rombauer, A. B.....Butte, Montana.
Schroeder, Curt. A.....Hazelton.
Segsworth, Walter.....Houghton, Mich.
Sharpe, Bert N.....
Sim, Charles John .....England.
Snyder, Blanchard M .....Greenwood.
Steven, Wm. Gordon.....
Stimmel, B. A.....Boundary Falls.
Sundberg, Gustave.....Mexico City.
Tally, Robert E .....Spokane, Wash.
Thomas, Percival W .....
Trethewey, John H.....Kokanee, B. C.
Turner, H. A .....
Vance, John F. C. B.....Vancouver.
Van Agnew, Frank .....Siberia.
Wales, Roland T .....
Watson, William J .....Ladysmith.
Welch, J. Cuthbert.....
Wells, Ben T.....Ladysmith.
West, Geo. G .....
Whittaker, Delbert E.....Victoria.
Widdowson, E. Walter .....Nelson.
Williams, W. A .....Grand Forks.
Williams, Eliot H .....Nelson.
Wimberly, S. H.....

Under section 2, sub-section (2).

Archer, Allan .....
Browne, D. J .....Rossland.
Bryant, Cecil M .....Vancouver.
Blaylock, Selwyn G.....Nelson.
Cartwright, Cosmo T .....Vancouver.
Cavers, Thomas W .....Rossland.
Clothier, George A.....Rossland.
Cole, Arthur A.....Cobalt, Ont.
Cole, G. E .....
Cole, L. Heber .....Phœnix.
Coulthard, R. W .....Fernie.
Cowans, Frederick.....
Dixon, Howard A .....Toronto, Ontario.
Galbraith, M. T .....
Gilman, Ellis P.....Vancouver.
Green, J. T. Raoul.....Blairmore.
Guess, George A.....Trail.
Gwillim, J. C .....Kingston, Ontario.
Heal, John H .....
Hilliary, G. M .....Idaho, U. S.
Holdich, Augustus H .....England.
Johnston, William Steele.....Lachine, Que.
Kaye, Alexander .....Vancouver.
Kendall, George.....
Lay, Douglas.....Silverton.
Lewis, Francis B .....
Merrit, Charles P.....

Musgrave, William N.....Mexico City.
Mussen, Horace W .....Siberia.
McArthur, Reginald E.....
McDiarmid, S. S .....
McLellan, John .....Port Simpson.
McMurtry, Gordon O .....
McNab, J. A.....Trail.
McVicar, John .....
Maclennan, F. W.....Rossland.
Outhett, Christopher.....Kamloops.
Pemberton, W. P. D.....
Reid, J. A .....Greenwood.
Ritchie, A. B .....
Scott, Oswald Norman .....
Shannon, S.....Trout Lake, B. C.
Sharpe, G. P .....Midland, Ontario.
Sloan, David .....Three Forks, B. C.
Stevens, F. G .....Mexico.
Sullivan, Michael H .....Trail.
Sutherland, T. Fraser.....
Swinney, Leslie A. E .....
Thomson, H. Nellis .....Anaconda, Montana.
Watson, A. A.....Olalla.
Watson, Henry.....
Workman, Ch. W .....
Wright, Richard .....Rossland.
Wynne, Lewellyn C .....Hedley.

Under section 2, sub-section (3).

Carmichael, Herbert .....Victoria.
(Provincial Assayer.)
Harris, Henry.....Tasmania.
Kiddie, Thos.....Northport, Wash.
Sutton, W. J .....Victoria.

McKillop, Alexander.....Nelson.
Pellew-Harvey, Wm.....London, England.
Robertson, Wm. F.....Victoria.
(Provincial Mineralogist.)
Marshall, Dr. T. R .....Glasgow, Scotland.

Previously issued under the "Bureau of Mines Act, 1897," section 12.

Pinder, W. J.....Dawson, Y. T.

Thompson, James B .....Vancouver.

EXAMINATIONS FOR COAL MINE OFFICIALS.

During the year 1904, under the "Coal Mines Regulation Act Further Amendment Act, 1904," the regulations regarding the qualifications and examinations of officials employed in coal mines were completely revised and at the same time made much more stringent and thorough.

The "Coal Mines Regulation Act," as now amended, provides that all the officers of a coal mining company having any direct charge of work underground, shall hold Government Certificates of Competency, which are to be obtained only after passing an examination before a duly qualified board, appointed for the purpose of holding such examinations, and known as the Managers' Board. The certificates granted on the recommendation of such Board, and the requirements for same are as follows:—

FIRST CLASS CERTIFICATE (or Manager's Certificate).

Such a certificate must be held by every manager or "chief officer having the control and daily supervision of any coal mine" in British Columbia. The statutory requirements for this certificate, in addition to such examination and qualifications as may be imposed by the Board of Examiners are, that the candidate for examination shall be at least 25 years of age, a British subject, and have had at least five years' experience in or about the practical working of a coal mine.

SECOND CLASS CERTIFICATE (or Overman's Certificate).

Such certificate must be held by any person "who has the daily charge of the underground workings of a coal mine under the control and daily supervision of the manager, and next in charge under such manager."

Aside from the requirements of the Board of Examiners, a candidate for such certificate must have had "at least five years' experience in or about the practical working of a coal mine."

THIRD CLASS CERTIFICATE.

This certificate must be held by every shiftboss, fireboss, or shotlighter in a coal mine in British Columbia, and besides the examination by the Board, calls for three years' practical experience.

Experience in a coal mine outside the Province may be accepted by the Board. Any certificate is considered to include that of any lower class.

In addition to the examinations and certificates already specified as coming under the Managers' Board, the Act further provides that every coal miner shall be the holder of a certificate of competency as such. By "miner" is meant "a person employed underground in any coal mine to cut, sheer, break or loosen coal from the solid, whether by hand or machinery."

Examinations for a miner's certificate are held each month at each colliery by a Board of Examiners, known as the Miners' Board, and consisting of an examiner appointed by the owners, an examiner elected by the miners of that colliery, and an examiner appointed by the Government.

Examinations for first, second and third classes were held simultaneously at Fernie, Nanaimo and Cumberland, September 17th, 18th and 19th, 1907.

BOARD OF EXAMINERS FOR COAL MINE OFFICIALS.

First, Second and Third Class Certificates

Report of Secretary of Board, Francis H. Shepherd.

I beg to submit the annual report, covering the transactions of the above Board, appointed under the "Coal Mines Regulation Act."

Examinations for first, second and third class certificates of competency were held September 17th, 18th and 19th, 1907, simultaneously at Nanaimo, Fernie and Cumberland.

The Appointed Examiners were:—Nanaimo, Messrs. F. H. Shepherd and E. Priest. Fernie, Messrs. R. G. Drinnan and John John. Cumberland, Messrs. Charles Graham and J. Kesley.

As the examinations are not held at stated periods, the Board has heretofore been governed in the matter of holding examinations by information procured from the several mining centres, which would lead the Board to believe that a fair response from intending applicants would warrant the Board in fixing the date of the examination and preparing the necessary questions.

The experience of the Board a few years ago was that semi-annual examinations, while meeting the demand and requirements of third class candidates, did not command a sufficient response from candidates for the two higher classes. The expense entailed in preparing for and holding examinations for the three classes simultaneously was not proportionately in excess for holding examinations for second and third class certificates only, therefore the Board decided to return to the original plan of holding them for all classes simultaneously.

The further experience of the Board is that annual examinations create an accumulation of candidates which renders the work of scrutiny and appraisement a long and tedious duty, especially as the appointed examiners have private avocations which cannot be neglected. It also imposes a long and unjust delay upon the candidate, and may, as it did previously to the last examination, cause a shortage in the necessary qualified officials to supply the demand of the operators. It is the intention, therefore, of the Board to hold examinations in the future at more frequent intervals, and in view of the rapidly increasing development of the coal mining industry, the return to the semi-annual plan will receive the consideration of the Board at its next general meeting.

In view of the opening of mines at Nicola, and the attendant expense incurred by the candidates from that District, having to travel to Nanaimo to attend the examinations, the question of holding an examination at that place will also receive the consideration of the Board, and under the proposed changes mentioned by the Hon. the Premier recently in the Legislature in reference to the increase in the number of Coal Mine Inspectors, who are considered ex-officio Assistant Examiners by the Board, I venture to hope that the Board will extend this relief to intending candidates from this new and important district.

The number of candidates at the recent examination was unprecedented in the coal mining history of the Province, there being 56 candidates applying for examination. The number of successful candidates was also unusual, no less than 52 being successful and passing by good percentages.

Class.	No.	Passed.
First	10	7
Second	19	19
Third	27	26

It might appear from the above that the unusually high percentage of successful candidates was probably due to a lowering of the standard heretofore maintained by the Board, but

this is not the case, as the published questions show, and the result is probably due to two reasons:—

(1.) The practice of the Board in publishing the questions after each examination has had the effect of educating intending candidates up to the high standard set by the Board.

(2.) The papers submitted to the candidates were of a more practical character than those hitherto prepared, and at the same time the high standard aimed at by the Board has been maintained, tending to secure safe and efficient mine officials, both from a theoretical and practical standpoint.

This change was the result of the careful and serious consideration of the Board, and was suggested by the very practical character of the British examinations, where the loss of life in mining operations is proportionately much lower than in our own Province, and it was therefore decided to reduce the number of strictly theoretical questions and substitute questions which required practical experience to successfully answer.

The ability to memorise formulæ, for examination purposes only, does not necessarily prove the candidate to be the competent mine official, and, on the other hand, the duties devolving upon the mine officials of the higher classes requires a certain amount of technical education, and the ability to apply, but not necessarily to memorise, the mass of formulæ incident to the science and practice of mining.

With the above precedent to guide it, the Board feels secure in the opinion that the change will admit to the various responsible positions in connection with the industry a class of officials which will tend to greater safety and the reduction of loss of life and personal injury in the coal mines of the Province.

I append hereto a list of the candidates who successfully passed the Examinations, of the various classes, held during the past year.

The Board of Appointment of Examiners consists of: Messrs. Andrew Bryden, Ladysmith, Chairman; Tully Boyce, Nanaimo, Vice-Chairman; T. R. Stockett, George Williams, and A. Dick, Nanaimo; R. G. Drinnan and John John, Fernie; F. H. Shepherd, Nanaimo, Secretary. The office of the Board is in the Provincial Court House building, at Nanaimo.

I have, etc.,

FRANCIS H. SHEPHERD,

Secretary to the Board.

LIST OF SUCCESSFUL CANDIDATES. EXAMINATIONS HELD SEPTEMBER 17TH, 18TH AND 19TH, 1907.

FIRST CLASS CERTIFICATES.

NAME.	DATE.	No.
Graham, Thomas Darbyshire, James Jackson, Thos. R Emmerson, Jos Evans, Evan Keith, Thomas Elliott, Daniel	Filled and issued from Mines Department, Victoria, Nov. 3rd, 1907.	

Second Class Certificates.

Name.	Date.	No.
Biggs, John G	November 2nd, 1907	B 40
Russell, Daniel	" "	B 41
Bastian, John	" "	B 42
Morgan, John	" "	B 43
Devlin, Henry	" "	B 44
Freeman, Harry N	" "	B 45
Spruston, Thos. A	" "	B 46
Russell, John	" "	B 47
White, John	" "	B 48
Parnham, Charles	" "	B 49
Lancaster, William	" "	B 50
Saville, Luther	" "	B 51
Ovington, John	" "	B 52
Daniels, David	" "	B 53
Vanhulls, Peter	" "	B 54
Monks, James	" "	B 55
Stockwell, William	" "	B 56
Richards, Thomas	" "	B 57
David, James	" "	B 58

Third Class Certificates.

Name.	Date.	No.
Malone, Patrick	October 1st, 1907	C 247
Dykes, Jos. W	" "	C 248
Richards, James	" "	C 249
Francis James	" "	C 250
Saville, E. O	" "	C 251
Almond, Aleck	" "	C 252
Ratcliffe, Thomas	" "	C 253
Lane, Joseph	" "	C 254
Sparkes, Edward	" "	C 255
Jarrett, Fred. J	" "	C 256
Raynor, Fred	" "	C 257
Johnson, Moses	" "	C 258
Matusky, Andrew	" "	C 259
Wallace, Fred	" "	C 260
Shooter, Joseph	" "	C 261
Wilson, William	" "	C 262
Nelson, Horatio	" "	C 263
Bushell, James P	" "	C 264
Cunliffe, Thomas	" "	C 265
Birchall, Richard	" "	C 266
Thompson, Thomas	" "	C 267
Thompson, Joseph	" "	C 269
Marsh, Jonn	" "	C 270
Smith, Thomas J	" "	C 271
Wilson, Thomas M	" "	C 272
Thomas, Warriett	" "	C 273

Memo.—No. 268 was spoiled and cancelled.

Registered List of Holders of Certificates of Competency as Coal Mine Officials.

FIRST CLASS CERTIFICATES.—SERVICE CERTIFICATES ISSUED UNDER SECTION 39, "COAL MINES REGULATION ACT, 1877."

John Bryden, Victoria.
Edward G. Prior.
Thomas A. Buckley.
Archibald Dick, Government Inspector of Mines.
James Dunsmuir, Victoria.
James Cairns, Comox, Farmer.

FIRST CLASS CERTIFICATES OF COMPETENCY ISSUED UNDER "COAL MINES REGULATION ACT, 1897."

NAME.	DATE.
Shepherd, Francis H	March 5th, 1881
Gibson, Richard	" 5th, "
Honobin, William	May 1st, 1882
Little, Francis D	" 1st, "
Martell, Joshua	" 1st, "
Chandler, William	December, 21st, 1883
Priest, Elijah	" 21st, "
McGregor, James	January 18th, 1888
Randle, Joseph	" 18th, "
Matthews, John	" 8th, 1889
Norton, Richard Henry	August 26th, "
Bryden, Andrew	December 30th, "
Russell, Thomas	April 20th, 1891
Sharp, Alexander	October 27th, "
Kesley, John	March 4th, 1892
Wall, William H	May 30th, 1896
Morgan, Thomas	" 30th, "
Wilson, David	" 30th, "
Smith, Frank B	" 30th, "
Bradshaw, George B	June 12th, 1899
Simpson, William G	" 12th, "
Hargreaves, James	February 5th, 1901
Drinnan Robert G	" 5th, "
Browitt, Benjamin	August 3rd, "
Stockett, Thomas, Jr	" 3rd, "
Pearson, Robert	" 3rd, "
Cunliffe, John	" 3rd, "
Evans, Daniel	" 3rd, "
McEvoy, James	October 17th, 1892
Wilson, A. R	" 17th, "
Simister, Charles	" 17th, "
Colville, Andrew	" 17th, "
Budge, Thomas	" 17th, "
Mills, Thomas	" 17th, "
Faulds, Alexander	" 17th, "
Richards, James A.	" 17th, "
McLean, Donald	January 21st, 1905
Wilkinson, Geo	" 21st, "
Wright, H. B	" 21st, "
Coulthard, R. W	" 21st, "
Roaf, J. Richardson	" 21st, "
John, John	" 21st, "
Manley, H. L	" 21st, "

AMALGAMATED McKEE CREEK HYDRAULIC WORKINGS—McKEE CREEK, ATLIN M. D.

First Class Certificates Issued under "Coal Mines Regulation Act Further Amendment Act, 1904."

Name.	Date.
Darbyshire, James	November 9th, 1907.
Elliott, Daniel	" 9th, "
Emmerson, Joseph	" 9th, "
Evans, Evan	" 9th, "
France, Thos	" 22nd, 1906.
Fraser, Norman	March 4th, 1905.
Graham, Charles	November 14th, "
Graham, Thomas	" 9th, 1907.
Heathcote, Elijah	March 4th, 1905.
Jackson, Thos. R	November 9th, 1907.
Keith, Thomas	" 9th, "
Millar, John K	" 22nd, 1906.
Strachan, Robert	March 4th, 1905.
Shaw, Alex	November 14th, "
Williams, Thos. H	" 22nd, 1906.

Second Class Certificate of Service.

Name.	Date.	Cer. No.
Corkhill, Thomas	March 4th, 1905	B 7
Morton, T. R	" 4th, "	B 8
Loe, John S	" 4th, "	B 9
Millar, J. K	" 4th, "	B 10
McCliment, John	" 4th, "	B 11
Martin, David	" 4th, "	B 12
Hunt, John	" 4th, "	B 13
Walker, David	" 4th, "	B 14
Short, Richard	" 4th, "	B 15
Powell, William Baden	" 4th, "	B 16
Sharp, James	" 18th, "	B 17
Bryden, Alexander	" 4th, "	B 18

Second Class Certificates of Competency Issued under "Coal Mines Regulation Act Further Amendment Act, 1904."

Name.	Date.	Cer. No.
Barclay, Andrew	July 29th, 1905	B 25
Bastian, John	November 2nd, 1907	B 42
Biggs, John G	" 2nd, "	B 40
Bridge, Edward	October 23rd, 1906	B 33
Brown, John C	" 23rd, "	B 39
Canfield, Bernard	" 23rd, 1906	B 30
Daniels, David	November 2nd, 1907	B 53
Darbyshire, James	October 23rd, 1906	B 32
Devlin, Henry	November 2nd, 1907	B 44
Dunsmuir, John	" 14th, 1905	B 26
Evans, Evan	March 11th, 1905	B 2
Finlayson, James	July 29th, "	B 21
France, Thos	November 14th, "	B 27
Freeman, Henry N	" 2nd, 1907	B 45
Gillespie, Hugh	July 29th, 1905	B 24
Gillespie, John	October 23rd, 1906	B 36
Graham, Chas	March 4th, 1905	B 1
Jackson, Thos. R	" 4th, "	B 5

SECOND CLASS CERTIFICATES OF COMPETENCY ISSUED UNDER "COAL MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904."—*Concluded.*

NAME.	DATE.	Cer. No.
James, David	November 2nd, 1907	B 58
Jones, Wm	July 29th, 1905	B 20
Lancaster, William	November 2nd, 1907	B 50
Lockhart, William	October 23rd, 1906	B 34
McGuckie, Thomas M	" 23rd, "	B 35
McKinnel, David	" 23rd, "	B 37
Monks, James	November 2nd, 1907	B 55
Morgan, John	" 2nd, "	B 43
Nellist, David	March 4th, 1905	B 6
Newton, John	October 23rd, 1906	B 31
Ovington, John	November 2nd, 1907	B 52
Parnham, Charles	" 2nd, "	B 49
Reid, Thomas	July 29th, 1905	B 23
Richards, Thomas	November 2nd, 1907	B 57
Rigby, John	July 29th, 1905	B 29
Russell, Daniel	November 2nd, 1907	B 41
Russell, John	" 2nd, "	B 47
Saville, Luther	November 2nd, 1907	B 51
Shaw, Alex	July 29th, 1905	B 19
Somerville, Alex	March 4th, "	B 4
Spruston, Thos. A	November 2nd, 1907	B 46
Stockwell, William	" 2nd, "	B 56
Thomas, Joseph D	October 23rd, 1906	B 38
Vanhulle, Peter	November 2nd, 1907	B 54
Watson, Adam G	" 14th, 1905	B 28
Webber, John Frank	March 4th, 1905	B 3
White, John	November 2nd, 1907	B 48
Wyllie, John B	July 29th, 1905	B 22

THIRD CLASS CERTIFICATES ISSUED UNDER "COAL MINES REGULATION ACT FURTHER AMENDMENT ACT, 1904."

NAME.	DATE.	Cer. No.
Almond, Alex	October 1st, 1907	C 252
Biggs, John	March 4th, 1905	C 210
Birchell, Richard	October 1st, 1907	C 266
Bridge, Edward	July 29th, 1905	C 223
Bushnell, Jas. P	October 1st, 1907	C 264
Catchpall, Charles	July 29th, 1905	C 227
Cooke, Joseph	March, 4th, "	C 209
Crawford, David	" 4th, "	C 208
Cunningham, G. F	November 11th, "	C 229
Cunliffe, Thos	October 1st, 1907	C 265
Devlin, Edward	" 23rd, 1905	C 241
Doney, John	March, 4th, "	C 211
Douglas, D. B	October 23rd, 1906	C 235
Dykes, Joseph W	" 1st, 1907	C 248
Francis, James	" 1st, "	C 250
Freeman, H. G	November 14th, 1905	C 230
Hodson, R. H	March 4th, "	C 216
Hutchison, Ben	November 14th, "	C 232
Jarrett, Fred. J	October 1st, 1907	C 256
Jemson, J. W	March 4th, 1905	C 205
Johnson, Moses	October 1st, 1907	C 258
Jones, W. T	March 4th, 1905	C 221
Lancaster, William	October 23rd, 1906	C 243
Lane, Joseph	" 1st, 1907	C 254
Liddle, John	July 29th, 1905	C 228
Malone, Patrick	October 1st, 1907	C 247
Mattishaw, Samuel K	" 23rd, 1906	C 237
Marsh, John	" 1st, 1907	C 270

Third Class Certificates Issued under "Coal Mines Regulation Act Further Amendment Act, 1904."—*Concluded.*

Name.	Date.	Cer. No.
Matusky, Andrew	October 1st, 1907	C 259
McAlpine, John	March 4th, 1905	C 217
McGuckie, Thomas	July 29th, "	C 226
McLellan, William	March 4th, "	C 219
Merrifield, George	October 23rd, 1906	C 239
Merrifield, William	" 23rd, "	C 236
Monks, James	November 14th, 1905	C 234
Moore, George	October 23rd, 1906	C 242
Morgan, John	July 29th, 1905	C 224
Nelson, Horatio	October 1st, 1907	C 263
Perry, James	March 4th, 1905	C 215
Plank, Samuel	November 14th, "	C 233
Ratcliffe, Thomas	October 1st, 1907	C 253
Raynor, Fred	" 1st, "	C 257
Richards, James	" 1st, "	C 249
Richards, Samuel	" 23rd, 1906	C 244
Rigby, John	July 29th, 1905	C 225
Saville, E. O.	October 1st, 1907	C 251
Shooter, Joseph	" 1st, "	C 261
Smith, Joseph	March 4th, 1905	C 207
Smith, Thos. J	October, 1st, 1907	C 271
Sparkes, Edward	" 1st, "	C 255
Spruston, Thomas A	March 4th, 1905	C 206
Stewart, James M	October 23rd, 1906	C 240
Stockwell, William	" 23rd, "	C 238
Taylor, Charles M	March 4th, 1905	C 213
Thomas, John B	November 14th, "	C 231
Thomas, Joseph	March 4th, "	C 220
Thomas, Warriett	October 1st, 1907	C 273
Thompson, Thomas	" 1st, "	C 267
Thompson, Joseph	" 1st, "	C 269
Thomson, Duncan	March 4th, 1905	C 218
Wallace, Fred	October 1st, 1907	C 260
Watson, Adam G	March 4th, 1905	C 212
Watson, William	October 22nd, 1906	C 246
Weeks, John	March 4th, 1905	C 214
White, John	October 22rd, 1906	C 245
Wilson, Thomas	" 1st, 1907	C 272
Wilson, William	" 1st, "	C 262
Wintle, Thomas A	July 29th, 1905	C 222

COAL MINE OFFICIALS.

Third class certificates issued under "Coal Mines Regulation Act Further Amendment Act, 1904," sec. 38, s.-s. 2, in exchange for certificates issued under the "Coal Mines Regulation Act Amendment Act, 1901."

Name.	Date.	Certificate No.	Name.	Date.	Certificate No.
Adam, Robert	Oct. 12, 1904	C 42	Marsden, John	May 3, 1904	C 21
Addison, Thos	Dec. 10, 1904	C 52	Marshall, Howard	Dec. 6, 1905	C 127
Aitken, James	Oct. 24, 1904	C 44	Matthews, Chas	April 27, 1904	C 9
Alexander, Wm	Feb. 17, 1905	C 72	Miard, Harry E	March 3, 1905	C 76
Allsop, Harry	Oct. 11, 1904	C 34	Middleton, Robt	Feb. 11, 1905	C 71
Ashman, Jabez	Feb. 5, 1907	C 131	Miles, Thos	Aug. 10, 1904	C 31
Aughinvole, Alex	March 29, 1905	C 89	Miller, Thos. K	Feb. 21, 1905	C 74
Barclay, Andrew	April 27, 1904	C 19	McKenzie, John R	Oct. 12, 1904	C 40
Barclay, James	April 27, 1904	C 20	McKinnell, David	March 29, 1905	C 99
Barclay, John	April 17, 1905	C 111	McKinnon, Arch'd	April, 3, 1905	C 102
Berry, James	Feb. 11, 1905	C 70	McMillan, Peter	March 29, 1905	C 94
Bickle, Thos	Oct. 11, 1904	C 37	McMillan, Henry	May 13, 1905	C 115
Biggs, Henry	April 10, 1905	C 110	McMurtrie, John	March 29, 1905	C 96
Black, John S	April 3, 1905	C 108	Moore, Wm. H	June 17, 1905	C 119
Bowie, James	May 13, 1905	C 116	Morris, John	Dec. 27, 1904	C 57
Briscoe, Edward	Oct. 10, 1906	C 129	Myles, Walter	April 3, 1905	C 100
Campbell, Dan	March 29, 1905	C 93	Nash, Isaac	June 1, 1904	C 120
Carr, Jos. E	Oct. 11, 1904	C 36	Neave, Wm	Oct. 12, 1904	C 43
Carroll, Harry	March 29, 1905	C 98	Nellist, David	April 27, 1904	C 13
Clarkson, Alexander	April 27, 1904	C 18	Nelson, James	April 27, 1904	C 16
Collishaw, John	Feb. 7, 1905	C 68	Newton, John	Oct. 12, 1904	C 39
Comb, John	March 23, 1904	C 2	Nimmo, Jas. P	April 3, 1905	C 103
Cosier, Wm	March 29, 1905	C 86	O'Brien, Geo	Feb. 6, 1905	C 66
Courtney, A. W	Nov. 2, 1904	C 45	Pengelly, Richard	Dec. 27, 1904	C 58
Crawford, Frank	April 6, 1904	C 7	Perrie, Jas	March 15, 1905	C 81
Daniels, David	April 27, 1904	C 12	Perry, James	June 13, 1904	C 27
Davidson, David	April 3, 1905	C 106	Pounder, Geo	Oct. 16, 1905	C 125
Davidson, John	March 29, 1905	C 87	Price, Jas	Nov. 8, 1904	C 50
Devlin, Henry	Oct. 12, 1904	C 41	Rafter, Wm	March 29, 1905	C 95
Dobbie, John	Nov. 27, 1905	C 126	Reid, Thos	Nov. 3, 1904	C 47
Dudley, James	March 22, 1905	C 114	Reid, James	March 23, 1904	C 1
Duncan, Thomas	Aug. 29, 1906	C 128	Reid, Wm	Dec. 15, 1904	C 54
Dunlap, Henry	Nov. 21, 1904	C 51	Richards, Thos	April 27, 1904	C 14
Dunn, Geo	Dec. 19, 1904	C 56	Ross, John	April 3, 1905	C 101
Dunsmuir, John	March 29, 1905	C 90	Roughead, George	Jan. 30, 1907	C 130
Eccleston, Wm	March 15, 1905	C 80	Ryan, John	Dec. 28, 1904	C 59
Evans, Evan	March 13, 1905	C 78	Sanders, John W	April 3, 1905	C 107
Evans, W. H	March 14, 1905	C 79	Shenton, Thos. J	July 25, 1904	C 30
Fagan, David	April 6, 1905	C 109	Shepherd, Henry	June 13, 1904	C 26
Farmer, Bernard	Jan. 31, 1905	C 64	Smith, Ralph	March 7, 1905	C 77
Farquharson, John	April 27, 1904	C 17	Smith, Geo	March 29, 1905	C 84
Findlayson, James	June 6, 1904	C 25	Somerville, Alex	March 24, 1904	C 3
Fulton, Hugh T	April 3, 1905	C 105	Stauss, Chas. F	Feb. 9, 1905	C 69
Gibson, Edward	May 30, 1905	C 118	Steele, Jas	March 29, 1905	C 92
Gilchrist, Wm	March 29, 1905	C 85	Stewart, Duncan H	March 28, 1904	C 4
Gillespie, Hugh	April 6, 1904	C 8	Stewart, John	April 3, 1904	C 104
Gillespie, John	April 6, 1904	C 5	Stewart, Daniel W	May 16, 1904	C 23
Gould, Alfred	April 17, 1906	C 112	Stoddart, Jacob	Feb. 21, 1905	C 73
Green, Francis	Oct. 11, 1904	C 38	Strachan, Robt	April 27, 1904	C 15
Handlen, Jas	June 16, 1904	C 122	Strang, James	April 27, 1904	C 10
Harmison, Wm	Feb. 3, 1905	C 65	Thomas, John	March 29, 1905	C 97
Haworth, Geo	March 29, 1905	C 88	Tunstall, James	June 15, 1904	C 121
Hescott, John	Jan. 16, 1905	C 62	Vass, Robt	Dec. 12, 1904	C 53
Hutchison, Archie	Sept. 8, 1905	C 123	Vater, Charles	April 6, 1904	C 66
John, David	Nov. 8, 1904	C 49	Walkem, Thos	Dec. 16, 1904	C 55
Johnson, Geo	May 9, 1904	C 124	Webber, Chas	Sept. 13, 1904	C 32
Johnson, Wm. R	March 1, 1905	C 75	Webber, Charles F	Sept. 13, 1904	C 33
Kerr, Wm	March 29, 1905	C 91	Whiting, Geo	May 29, 1905	C 117
Lander, Frank	Jan. 9. 1905	C 61	Wilson, Austin	Feb. 7, 1905	C 67
Landfear, Herbert	Jan. 27, 1905	C 63	Wilson, Thos	April 27, 1904	C 11
Lewis, Thos	Oct. 11, 1904	C 35	Woodburn, Moses	March 29, 1905	C 83
Lockhart, Wm	Jan. 6, 1905	C 60	Yarrow, Geo	Nov. 3, 1904	C 46
Malpass, James	Nov. 7, 1904	C 113			

CARIBOO DISTRICT.

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CARIBOO* AND QUESNEL MINING DIVISIONS.

REPORT BY GEORGE WALKER, GOLD COMMISSIONER.

I have the honour to submit herewith my report on mining operations in Cariboo District during the year 1907.

I am pleased to announce a slight increase in the gold output of the district for the past year. This is occasioned by the favourable and wet season for the hydraulic mines, from which the greater part of the gold is produced. I think that the district is on the eve of a prosperous term, from the fact that the revenue of the district is larger than any previous year, and more prospecting has been done than for some years past. The building of the Grand Trunk Pacific Railway through the northern portion of the district will open to the prospector and capitalist a vast area of new country, which, up to the present time, has been forced to lie idle and almost unexplored, owing to its isolation and the almost prohibitive cost of getting in supplies and machinery.

Coal has been discovered and located on Bear river, about 15 miles from the Fraser river, and the seams are reported to be large and the quality good.

QUESNEL MINING DIVISION.

Of this portion of the district I regret my inability to speak with any degree of certainty, not having received reports from the various mine managers, but the report of the Mining Recorder of the division will be found to contain more definite information.

THE 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, and shows a slight increase over that of the previous year.

* The boundaries of this Mining Division have been somewhat altered by an Order in Council gazetted May 3rd, 1906, a copy of which is as follows :—

"Starting on the eastern boundary of the Province at a point where such boundary cuts the southern boundary of the watershed of the Peace river and its tributaries; thence proceeding westerly and southerly along the height of land separating the drainage area of the Fraser river and its tributaries on the south from the drainage area of the Peace river and its tributaries on the north, continuing to and crossing the Salmon river at a point about five miles from where the said Salmon river empties into the Fraser river; thence westerly along the height of land separating the drainage area of the Fraser river below this point and of Nechako river below the junction of the Stuart, on the south, from the drainage area of the Stuart and Salmon rivers on the north, to the mouth of the Stuart river and crossing of the Nechako river; thence southerly and westerly along the height of land forming the boundary between the watershed of the Nechako river above the Stuart on the north and the Chilako (Mud) river and Blackwater on the south and east to a point on such height of land where it intersects the height of land separating the watersheds of the Euchiniko river on the north and upper Blackwater on the south; thence easterly along such divide to a crossing of the Blackwater at the junction of the Nazco river; thence easterly along the height of land between West river and Baker's creek to a crossing of the Fraser at a point half-way between mouths of West and Quesnel rivers; thence easterly following height of land dividing the drainage area of the Quesnel river and tributaries on the south from the drainage area of the Willow and Cottonwood rivers on the north, to a point where such height of land intersects the height of land dividing the drainage area of the south fork of the Upper Fraser from the drainage area of the Canoe river; thence south-east along such divide to the eastern boundary of the Province; thence northerly along such eastern boundary to the point of commencement."

WILLIAMS CREEK AND TRIBUTARIES.

I am favoured with the following report from John Hopp, owner of the *Mucho Oro* claim on Stouts gulch.

"At the *Mucho Oro* claim we employ from 15 to 30 men during the hydraulic season, using approximately 2,000 miner's inches of water under 325 feet pressure, and the plant consists of main pipe line, 18 inches in diameter, using a No. 6 monitor. During the season of 1907 300,000 cubic yards were moved. The result of the season's operations was very satisfactory."

Forest Rose Hydraulic Claim.

Regarding this property Mr. John Hopp, the owner, writes me as follows:—"During the working season we employ from 8 to 15 men. This past season we had a supply of about 200 to 300 inches of water, with a plant consisting of 7-inch and 8-inch pipe-line. About 15,000 yards of gravel were handled at this mine. After testing the gravel, we decided to instal a larger plant, and increased the ditch and flumes to a carrying capacity of about 1,500 to 2,000 inches of water and installed a 15-inch pipe-line with a No. 4 giant, which will very materially increase the capacity of the mine. The result of the season's operation was very satisfactory."

LOWHEE CREEK.

Of this property Mr. Hopp, the owner, says:—"On the *Lowhee* property from 12 to 20 men were employed during the season just passed, the water supply being about 800 inches, under a head of 240 feet, using 15 and 11-inch pipe-line with a No. 2 giant. Approximately, 50,000 yards of gravel were moved. The result of the season's operations was very satisfactory, and it is my intention next season to increase the size of the ditches and plant of this property to a capacity of 2,000 miner's inches of water, and also to construct a reservoir in connection with the property on Ella lake, which will very materially increase the capacity and also lengthen the time for hydraulicing."

LIGHTNING CREEK AND TRIBUTARIES.

I am indebted to the President and Manager of the Lightning Creek Gold Gravels & Drainage Company, Mr. C. H. Unverzagt, for the following report:—

"The season's operations closed on the 1st October, due to a 'run' caused by a 'breaking through' into the gravel from the branch drift, the underground work being at that time nearly completed. The drifts, however, became filled up, and after a month spent in cleaning out the same, it was found that the plunger pumps required so much attention, owing to chocking up of the valves by fine sand, that it was deemed best to discontinue operations and temporarily place in the shaft a new style of pump operating without the use of valves, and therefor operations were closed until the ensuing April.

"During the year a fair amount of additional machine shop equipment was installed and, besides the underground work done, a large timber shed was erected at one end of the works and a similar large lumber platform erected at the other. The property is well equipped for the operation of drift mining, and there is a large amount of material and supplies on hand. It has been closed in condition to resume work at a moment's notice.

"It is the intention of the management to dispense with the Cornish pumps which they had in the operations, and, for the purpose of sinking or of cleaning out any runs, to use a screw-propeller or valveless pump, which will be first installed in the ensuing spring for cleaning out the shaft. In addition to that, 150 H.P. turbine wheel and air compressor will be installed in the old shaft-house to give additional power, as well as to save the expense incident to the use of steam. A small locomotive will be added for yard purposes and trackage up and down the stream. It is the intention to sink a shaft directly into gravel, on the

opposite side of the creek to the present shaft-house, and also about 3,000 feet up-stream, to an intermediate strata which the drilling has shown up rich, in order to have the property producing at two points at about the same time.

"In order to offset the difficulty of going through a strata of wet slum at the present point, an improved Chicago piling, especially adapted for quicksands, will be used. The company has been promised the co-operation of some of the ablest miners in Cariboo, in order to put the property in a going shape without any further delays or mishaps after the spring opening. After the installation of the air plant, the property will then be provided with compressed air, steam and water power for various purposes. Steam, however, is only to be used in an emergency, it being the intention to substitute compressed air for its several uses and thus save fuel expenses.

"The location of the work gives plenty of fall without the necessity of carrying water over 3,000 feet. At the present time, 2,000 feet gives a little over 20 feet fall."

La Fontaine Mine.

The Cariboo Consolidated Company, Limited, which has been operating this mine for several years developing the deep channel of Lightning creek, closed down in the early spring, owing to financial difficulties.

Peters Creek.

J. G. Mathers, whose concessions are situated near the mouth of this creek, has steadily continued work for the whole season, and I am informed that some good pay has been taken out.

A local company has been formed to prospect and develop the deep ground on this creek above J. G. Mathers' concession. This company is at present engaged in building houses, etc., and getting everything in readiness to commence the sinking of the shaft to bed-rock.

Wormald Creek.

The Wormald Creek Mining Company, after sinking the shaft to a depth of 80 feet by means of a bucket and windlass, was driven out by water. It is the intention of this company to instal an over-shot water-wheel and pump to reach the bottom gravels of this creek.

Slough Creek.

Mr. Walter B. Hill, acting manager in charge of the Slough Creek, Limited, says:—

"In January last received and installed two new large boilers and a direct-acting hoisting engine, with two water buckets, each capable of hoisting 500 gallons of water, but reduced to 300 gallons at each lift. Work underground consisted of extending various drives and boring holes in roof of same, for the purpose of tapping the water. A new and extensive scheme is under consideration for the purpose of supplying power for a much increased plant, to be driven by electricity, generated by water power. Owing to the greatly increased consumption of fuel and the yearly additional cost and difficulty of procuring same, it was found to be absolutely necessary to find means, other than by steam, for unwatering the mine; so early in August, it was decided to close down and proceed with the construction of the aforementioned electrical plant, for which preliminary surveys have been taken and other necessary initial work has been done."

Willow River.

The Willow River Mining Company, Limited, continued work for the greater part of the winter season, but during the spring freshet was compelled to shut down until the freshet was over. Work was then commenced, but the breaking of the main shaft of the wheel, by which the pumps are run, caused another delay in developing the deep channel of Willow

river. From the work done on this mine during the winter satisfactory results were obtained. At the present writing a bedrock tunnel some ten feet from the bottom of the shaft is being run to tap the channel.

MOSQUITO CREEK.

The *Alabama* and *Williams* hydraulic claims have kept up their reputations as prolific gold producers during the past season, having had an extra water supply.

EIGHT-MILE LAKE.

The Thistle Gold Company, operating at Eight-Mile lake, owing to the wet season, were enabled to pipe the greater part of the season, the result of which is very satisfactory. A bank blast was put in this fall, thereby loosening a large quantity of gravel, which will be easily moved in the spring.

GROUSE CREEK.

The *Waverly* mine, having had a good season's water, was enabled to declare a dividend of $5.50 per share. This is an increase of 50 cents per share over any previous year.

CANADIAN CREEK.

The Slocan Cariboo Mining and Development Co. is at the present time endeavouring to reach the deep channel of Canadian creek by means of a shaft, which at the present time has been sunk to a depth of 50 feet.

CHINA CREEK.

Mr. B. A. Laselle has continued work on this property, with practically the same result as reported last year.

NUGGET GULCH.

This property, also owned by Mr. B. A. Laselle, and on which a new hydraulic plant was installed last year, commenced operations in the early spring; about 400 feet in length of the channel was uncovered, the result of which I have been unable to determine.

ANTLER CREEK.

Thomas writes me as follows concerning the Russian Creek Mining Co.:—

"The Russian Creek Mining Company has little to say, otherwise than to report that during the past season all the work done was in the line of development. The ditch commenced last season has been completed, a distance of over 3,000 feet having been constructed during the summer. A pipe-line has been purchased and is now on the way to the mine, and we expect to have the mine equipped and ready for piping by the opening of the coming season."

CUNNINGHAM CREEK.

On the *Bear* hydraulic claim, on Cunningham creek, my expectations have not been realized, as the large dam, built by this company for storing water for the season's work, burst in the early part of the summer, and the company was compelled to shut down; but I am pleased to say the damage done by the bursting of the dam has been repaired and the claim is now in readiness for next season's work.

OFFICE STATISTICS—CARIBOO DISTRICT, 1907.

Free miners' certificates issued, company	12
" " " individual	355
Records and transfers of placer mining claims	24
Leaves of absence	26
Water records issued	26
Placer mining leases issued	25
" " cancelled	6

STOPPING PLACE AT KLUKWAN, CHILKAT RIVER—INTERIOR OF CHIEF KODENAHA'S HOUSE.

Revenue Receipts.

Free miners' certificates	$ 2,642 00
Mining receipts, general	25,089 95
Leaves of absence	70 00
Land sales	46,331 46
Land revenue	666 00
Revenue tax	2,907 00
Real property tax	3,385 82
Personal property tax	2,521 44
Wild land tax	970 94
Income tax	417 64
Licences, spirits	2,087 50
" trade	610 00
J. P. Court fines	335 00
Miscellaneous	84 81
Total	$88,119 56

QUESNEL MINING DIVISION.*

Report by W. Stephenson, Mining Recorder.

I beg to submit my annual report upon the condition of mining, together with an estimate of the production of gold made during the year 1907, in the Quesnel Mining Division.

It will be observed that there has been this year but little improvement over the preceding year.

The actual mining work done was very limited, the principal reason for which was that the great amount of construction work carried on in this section during the greater part of the mining season, and the unusually high wages paid for all kinds of labour on these works, absorbed numbers of men that would otherwise have been engaged in actual mining. The smaller hydraulic mines were, for the same reason, short handed, and had to pay unusually high wages, which limited their operations.

The supply of water for hydraulic and other surface mining operations was fairly good this past season, but this advantage was more than offset by the scarcity of labour for mining operations. As there are, at present, no drift or lode mines being operated in this Division, work for the season is practically closed in November, except in a very favourable winter a few persons may continue to work on the bars in the rivers exposed at the low stage of the waters in winter.

There has been very little prospecting done this past year, and there are, consequently, no new developments to report.

Despite the fact that the production of gold in the division for the past two seasons has been unsatisfactory, it is felt that this is attributable to temporary conditions and that the Division will again retrieve its reputation as a placer mining district.

*The southern boundary of the Quesnel Mining Division was slightly changed by Order in Council, which took effect on June 1st, 1906.

The changed boundary line now runs from a point on the height of land between the Horsefly river on north and Bridge and 111-Mile creeks on south, to a crossing of the Cariboo Main Trunk road at the 144-Mile House; thence along the north side of the San Jose river and Williams lake to a crossing of the Fraser river half way between Buckskin and Meldrum creeks. The remainder of the boundaries of the Division are unchanged. This change places the 150-Mile House in Quesnel Mining Division and this point has now been made the location of the office of the Mining Recorder for the Division.

In the Horsefly section no mining has been done for the past two seasons; some prospectting was done this past season on the upper Horsefly, with results that give hope that workable claims will yet be found in that section.

Quartz mining has received very little attention during the past two years—only assessment work having been done and a few new locations recorded.

NOTE BY PROVINCIAL MINERALOGIST.—The most important mining property in the Quesnel Mining Division has, for many years, been the Consolidated Cariboo Hydraulic Mining Company's property at Bullion, on the south fork of the Quesnel river. This property was taken over in 1906 by the Guggenheim Exploration Company, of New York, as was noted in last year's report. This company started in, after a careful examination of the property, to bring in a large additional quantity of water from Spanish lake. The estimated cost of this additional water system was over $500,000, of which amount over $200,000 was spent in 1906. The work was actively renewed in the spring of 1907 and carried on until July, when all work was suspended and since then the property has been idle. The new company has since announced its intention of abandoning the enterprise completely.

The cause of this stoppage of work is not definitely known, but is reported to have been, at least partially, that the then approaching financial panic in the East, which subsequently involved the New York Company, necessitated a curtailment of outlay of capital.

CASSIAR DISTRICT.

:o:

ATLIN MINING DIVISION.

RAINY HOLLOW CAMP.

NOTES BY THE PROVINCIAL MINERALOGIST.

Rainy Hollow is the name locally given to the basin surrounding the headwaters of the Klehini river, a tributary of the Chilkat river, which it enters from the west. The Chilkat river and the Klehini river both have their sources in the territory formerly comprising the Chilkat Mining Division of British Columbia, but which is now included in the Atlin Mining Division, of which it forms the western part. Both these rivers, about midway in their course, pass out of British Columbia into Alaskan territory.

Between Bennett lake in British Columbia, on the line of the White Pass Railway, and the Chilkat river, there is a range of high mountains, which it is impracticable to cross, even with a pack-train, so that the only way to reach the Rainy Hollow camp is through Alaskan territory. The route usually taken to the camp is from Skagway, Alaska, by a small gasoline launch which runs daily, to Haines Mission, an important U. S. military post; thence by waggon road a distance of a couple of miles across the peninsula to Chilkat inlet, into which the Chilkat river flows. Here Indians and canoes can be obtained and the Chilkat river followed up to the Indian village of Klukwan, at the junction of the Klehini.

The U. S. Government has already surveyed a line for a waggon road from Haines to Klukwan along the eastern side of the Chilkat, and it is expected that this road will be built within the next two years. The distance from Haines to Klukwan is about 20 miles, and at present the only method of travel, or for the transportation of supplies, is by canoe.

From Klukwan the Klehini river is followed up to Porcupine City, a distance of 18 miles by a waggon road built by the U. S. Government along the southern bank. Porcupine City formerly suppported a couple of hotels and as many stores, but in 1906 the only occupants of the townsite were the employees of a company engaged in placer mining on Porcupine creek, for whose accommodation the company maintained a store, but the hotels have disappeared.

From Porcupine the waggon road follows up the river bed for some four or five miles, being only available, in summer, during low water, crossing over to the northern bank, connecting there with a crude waggon road, formerly built by R.N.W.M. Police, which is followed for a further distance of two miles to old Pleasant Camp, on the Alaska-British Columbia boundary line, and at one time occupied by the Mounted Police.

The Province of British Columbia is entered at Pleasant Camp, from which point to Rainy Hollow the Provincial Government was last fall engaged in building a trail, or sleigh road, which was, however, not cut through in 1906, so the old trail had to be followed. This follows up the north bank of the Klehini for some three miles to Dalton's cache. The cache is about 500 feet higher elevation than Porcupine City and is about 1,000 feet above sea level.

From the cache the trail turns north, away from the river, rising, by a series of zig-zags, in two miles an additional height of 1,000 feet to the level of the plateau, which slopes slightly to the north and is devoid of trees or vegetation. The trail follows across this plateau for

some six miles, when it gradually descends into Rainy Hollow. The plateau is said to be very dangerous to cross in autumn, owing to the prevalence of dense fogs, which arise without warning, and in winter on account of blinding snow-storms.

To avoid this portion of the trail with its incidental and unnecessary climb—impracticable for even a sleigh-road—the Provincial Government has chosen a line for the new trail following the river valley, and running through wooded country most of the way, which will afford shelter at all seasons, and it also has the advantage of being some two or three miles shorter.

Although there are waggon roads and trails there are no horses to be obtained; the Indians track the canoes with the necessary baggage and supplies up the Klehini to within three miles of Pleasant Camp, but do not carry passengers up stream, so the whole distance has to be walked over very rough roads. After leaving the canoe, the baggage and supplies have to be packed on one's back in and out of the Hollow.

The time taken by the writer in reaching Rainy Hollow from Skagway was as follows:—

1 day, Skagway to Haines;
1 day, Haines to Klukwan;
1 day, Klukwan to Porcupine;
1 day, Porcupine to Pleasant Camp;
1 day, Pleasant Camp to Rainy Hollow.

The possibility of improved transportation facilities by the rivers is very slight, as they are only navigable for canoes, while the swift current and the ever-shifting character of the river-bed render any permanent improvement of the channel impracticable. Should sufficient ore be found to justify it, there are no serious engineering difficulties in the way of building a railway from Haines to Rainy Hollow, while Haines offers first class terminal facilities and a good harbour.

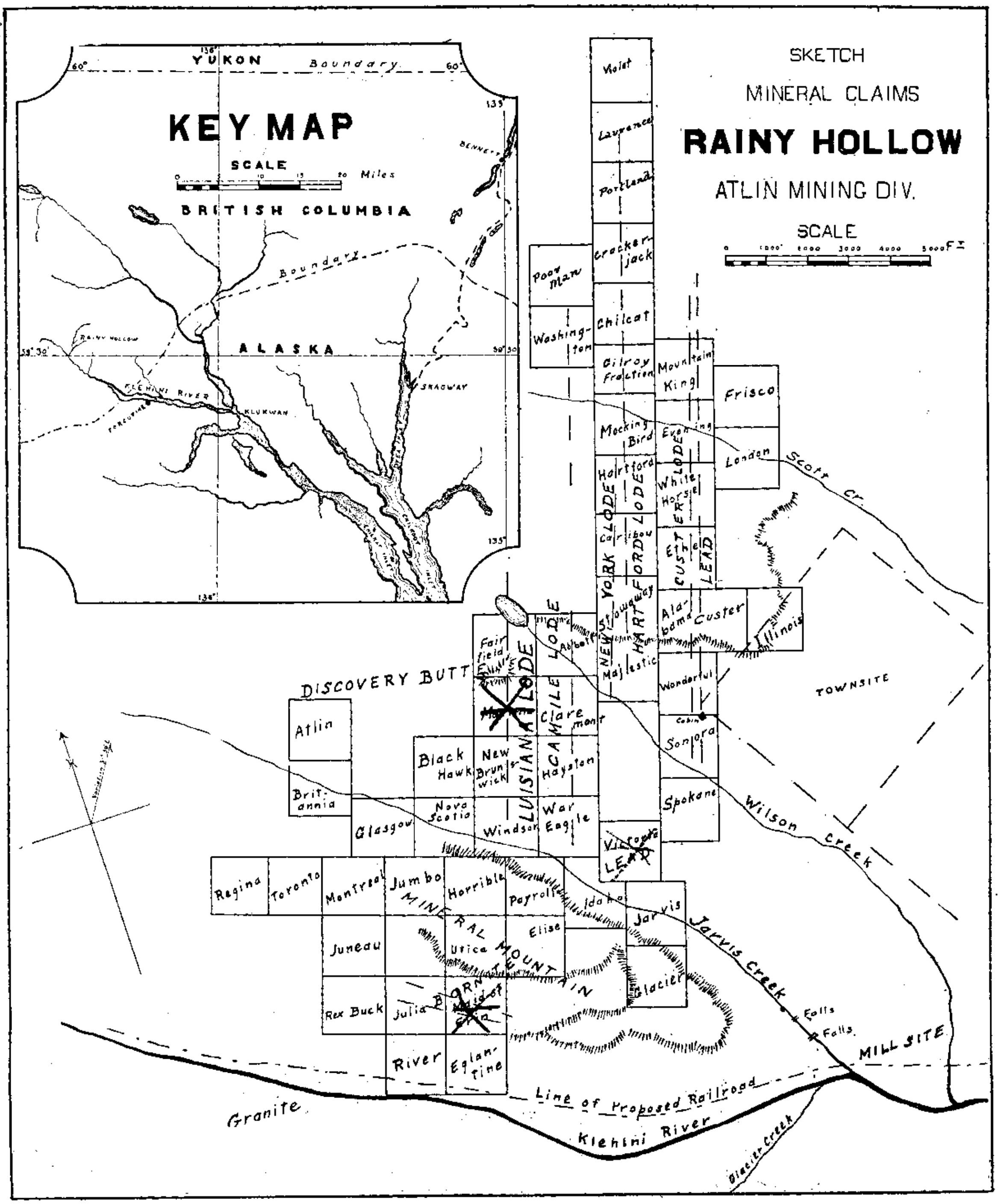
The Provincial Mineralogist, in the fall of 1900, made an examination of, and a report on the mineral claims of Rainy Hollow, which is included in the Report of that year. Since that time little real development work has been done; some prospecting has taken place and many of the claims then in existence, having lapsed, have been re-staked under other names and ownership. Some new ground has been located, but, as the old posts have disappeared, it was found to be impracticable to determine how much of ground examined was of recent discovery.

Prospectors take their supplies to the camp in early spring, over the ice on dog-sledges and toboggans, a proceeding so expensive and arduous that it is not to be wondered at that little or no serious development has been attempted in the district.

Wonderful and Sonora.

The *Wonderful* and *Senora* mineral claims, owned by Richard Kennedy and J. W. Burnham, were located prior to 1900 and are situated on the right bank of Wilson creek, which flows from the east into the Klehini river at Rainy Hollow. The claims are situated on what is locally known as the Custer lead, a contact of one of the three or more large parallel dykes which cut across the country to the south, and along the course of which most of the known mineralisation occurs. The rocks forming the contact are limestone and schist, cut by a dark, fine-grained dyke rock, having a north and south (mag.) strike. The contact is traceable for a long distance, being marked by a prominent iron cap.

The first cropping visited on the *Wonderful* showed much iron oxide and dark red garnets along a lime contact, but no mineral of value was visible. No work had been done at this spot, the cropping merely indicating the extension of lower workings. A second iron-cap, some 20 feet away, showed a certain amount of copper pyrites throughout the mass, but was


SKETCH
MINERAL CLAIMS
RAINY HOLLOW
ATLIN MINING DIV.
SCALE
KEY MAP
SCALE
Miles
YUKON
Boundary
BRITISH COLUMBIA
Boundary
ALASKA
Rainy Hollow
Klehini River
Klukwan
Skagway
Bennett
DISCOVERY BUTTE
TOWNSITE
Scott Cr.
Wilson Creek
Jarvis Creek
Falls
Falls
MILL SITE
Line of Proposed Railroad
Klehini River
Glacier Creek
Granite
MINERAL MOUNTAIN
Violet
Lawrence
Portland
Cracker-jack
Poor Man
Washing-ton
Chilcat
Gilroy Fraction
Mountain King
Frisco
Mocking Bird
Evening
London
Hartford
White Horse
Cariboo
Ethel
NEW YORK LODE
HARTFORD LODE
CUSTER LODE
LEAD
Alabama
Custer
Illinois
Fairfield
LUISIANA LODE
CAMILE LODE
Majestic
Wonderful
Clare mont
Cabin
Sonora
Atlin
Black Hawk
New Brunswick
Haysten
Spokane
Brit-annia
Glasgow
Nova Scotia
Windsor
War Eagle
Victoria
LEAD
Regina
Toronto
Montreal
Jumbo
Horrible
Payroll
Idaho
Jarvis
Juneau
Utica
Elise
Rex Buck
Julia
Glacier
River
Eglan-tine

also undeveloped. Farther down, on the same contact, a tunnel had been run in for 140 feet, which showed a considerable though somewhat irregular deposit of pyrrhotite carrying copper and a small percentage of zinc blende. A sample of the pyrrhotite taken for assay gave: Copper, 2.6 %; silver, 2.2 oz. to ton, and a trace of gold.

The *Sonora* is an extension of the *Wonderful* and on the same contact, nearer Wilson creek. On this claim a tunnel has been driven in for 30 feet and a number of open surface cuts made, with practically the same results.

Victoria.

The *Victoria* mineral claim, formerly known as the *Jarvis* claim, is owned by J. W. Burnham. A pit about six feet deep has been sunk in a white crystalline limestone near the contact of a dyke. The sides of the pit show the lime-stone to be cut by a number of small stringers of mineral—galena, copper pyrites and zinc blende. Some 200 feet distant from this first pit and around a small knoll an old open cut has been recently cleared out. This cut is about 15 feet long by from 3 to 5 feet deep, and the sides show stringers of mineral somewhat similar to the first pit.

Some 30 feet from the first open cut is a second one, also 15 feet long by 5 feet deep, in which is exposed a seam from 2 to 4 inches wide, of mixed sulphides—galena, zinc blende and copper pyrites, which appear to have been deposited as replacements of the limestone.

A sample of the ore taken from the face of the two open cuts gave, upon assay: Lead, 31.5 %; copper, 2.3 %; silver, 8.8 oz. to ton, and a trace of gold.

Maid of Erin.

The *Maid of Erin* mineral claim, owned by J. W. Burnham and Richard Kennedy, is situated on the west slope of Mineral mountain, some 700 feet above the valley of Klehini river, and is, as near as could be determined, a re-staking of the same ground as was formerly occupied in 1900 by the *Carmichael* and *Pretoria* claims. A bed of limestone, lying nearly horizontal, outcrops along the face of a small hill, in contact with which is a highly silicious pink-coloured layer, lying conformably with the lime, and apparently an indurated sandstone. Along this outcrop the limestone appears to have been replaced, for a thickness of 3 to 16 inches, by copper sulphides, chiefly bornite. This outcrop has been exposed at intervals by stripping and open cuts over a distance of several hundred feet, but in no instance has a depth of more than 2 or 3 feet from the surface been attained. The ore exposed is of exceeding high grade as copper ore, and would be of value if reasonable transportation facilities were available, but, of course, cannot be extracted under the present conditions, which accounts, to a large extent, for the very slight amount of work done on the property.

Two separate samples were taken of the ore exposed at different points, which gave, upon assay: Copper, 29.2 %; silver, 50.2 oz. to ton, with trace of gold, and copper, 37.9 %; silver, 60.8 oz. to the ton, with trace of gold.

Adams.

The *Adams* mineral claim, owned by M. J. O'Connor, is another property located on the contact known as the *Custer* lead, which contact has been exposed for some distance by surface stripping. The mineralisation is chiefly pyrrhotite, with a small amount of galena and molybdenite. In an open cut on the hill top the mineralisation is some 4 feet wide. A sample of this exposure assayed 0.04 oz. gold and 0.5 oz. silver to the ton. On the contact on the other side of the diorite dyke there is an outcrop of iron sulphides, with some galena and zinc blende. At the time no work had been done to determine the extent of this mineralisation, but a cross-cut had been started for the purpose and was within a few feet of the ledge visible in outcrop. This deposit was not sampled.

Storraway.

The *Storraway* mineral claim, owned by M. J. O'Connor, is also on Custer hill, along the line of what is known as the *Hartford* lead, which is indicated by iron croppings extending for miles to the northward. This is on ground formerly occupied in 1900 by the *New York* mineral claim, and is about a quarter of a mile from Wilson creek. The first open cut showed a trap dyke carrying iron sulphides. A short distance to the south, in an open cut, is a pit some eight feet deep sunk prior to 1900, in which there is exposed a large body of pyrrhotite, shown to be at least four feet thick, and it is probably considerably greater. This exposed mineral was thoroughly sampled and assayed for copper, gold and silver, but did not show values of any importance.

Fairfield.

The *Fairfield* mineral claim, owned by Michael Cassin, is situated near the head of Wilson creek, on the east side of Copper butte, and was formerly the *Columbia* mineral claim. Near a small lake there was an open cut 20 feet long, from which a tunnel has been driven in for some 10 feet on the contact of a mass of limestone with diorite. Along this contact there is a deposit of pyrrhotite, which was sampled and assayed, giving copper, 0.6 %, with traces of gold and silver.

Montana.

The *Montana* mineral claim, owned by W. S. Brown, is situated on the west side of Copper, or Limestone butte, as it is sometimes called. This was the only claim in the camp upon which men were found at work, and they were engaged in erecting a cabin, the timbers for which had to be hauled some three miles, and from a lower elevation, as the hills around Rainy Hollow are bare.

The claim was surveyed in 1907 by E. S. Wilkinson, P. L. S. Some little stripping has been done for about 100 feet up the hillside, from which there had been extracted one or two tons of very nice copper ore—bornite. As far as could be determined from the rather erratic workings, the bornite occurred along the contacts of limestone with several quartz-porphyry dykes, occurring associated with garnets, etc. No defined vein or lead could be seen, although there were various outcrops carrying ore, and it is probable some of them were slides from a main ledge in place. Preparations were being made to drive in a tunnel, cross-cutting the country, so that whatever ledges exist may be developed at some depth. The occurrence of mineral is very similar to that seen on the *Maid of Erin* mineral claim.

A sample of the selected ore taken for assay gave: Copper, 26.5 %; silver, 33.2 oz. to the ton, and a trace of gold.

The *Atlin* mineral claim, owned by Richard Kennedy, is on a hill lying to the north of Copper or Limestone butte. A small tunnel had been started and run in about six feet on an outcropping of iron and copper sulphides with some zinc blende, but this ore body was cut off by a quartz-porphyry dyke and could not be traced further. The showing was unimportant.

The *Mocking Bird* mineral claim, owned by Mike Cassin and Jos. Chisholm, is on the *Hartford* lead, and is an extension of the *Storraway* or *New York* claim, and also shows a deposit of pyrrhotite of the same character as found on that claim.

Horrible.

The *Horrible* mineral claim, owned by Mike Cassin, is situated on the steep east face of Mineral mountain. A very narrow tunnel had been driven in for about 20 feet through a hard, white, silicious rock, classed upon microscopic examination as an altered porphyrite. The face of the tunnel was in what was apparently a gray, silicious lime, very hard, showing small specks of iron pyrites. Some 100 yards to the north of the tunnel, along the face of the precipice, an open cut had been run into the hill for 10 feet, in which was exposed a number of small patches of iron pyrites which gave, upon assay: Copper, 0.86 %; silver, 0.8 oz. to the ton, with trace of gold. A few patches of copper pyrites were also visible, and, although the quantity of mineral was

very small, gave unexpectedly high assay values as compared with other exposures in the vicinity, as a picked sample of the mineral assayed: Copper, 15 %; silver, 8.6 oz., and gold 1.04 oz. to the ton.

The *Nova Scotia* mineral claim, owned by David Fraser, is located below the *Horrible*, on Jarvis creek. A tunnel had been driven in some 20 feet, showing bands containing iron sulphides, which upon assay, however, showed no values.

ATLIN MINING DIVISION.

REPORT OF J. A. FRASER, GOLD COMMISSIONER.

SIR,—I have the honour to submit my report on mining operations in the Atlin Mining Division of Cassiar District for the year ending December 31st, 1907.

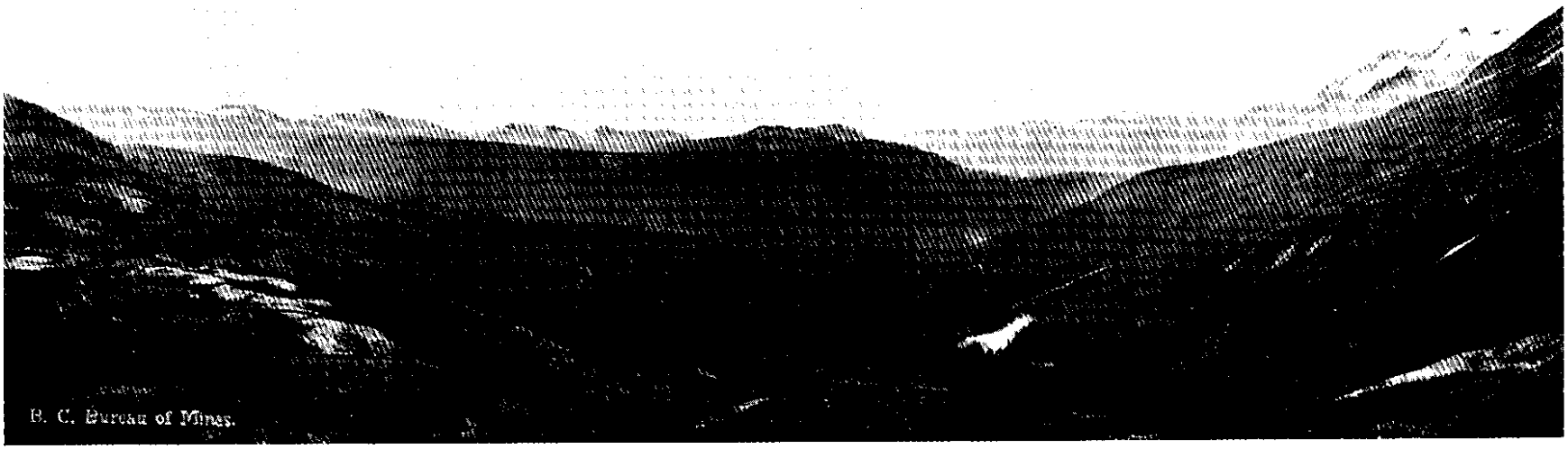
Notwithstanding the fact that the number of men engaged in mining during last season was less, by about 100, than in any previous year, the output reported and revenue therefrom was considerably in excess of that of 1906 and compares very favourably with that of the year 1905; in fact, except in the matter of lease rentals, in which there was a large decrease as compared with last year, there was a general increase in revenue from mining sources, which, coupled with the general satisfaction expressed by the operators, might be deemed sufficient justification for regarding the year's operations as quite satisfactory. The keen disappointment experienced from the scarcity of water, the scarcity of labour, and the failure of certain promotors and bondees to carry out contemplated development and installation work, tended to mar the general satisfaction that otherwise obtained throughout the camp.

The drifting operations of last winter were, as usual, satisfactory, the only regret being that so few were thus employed. Drifting operations are being carried on this winter also, and the reported success of the operators is better than in any previous winter, but again I must note decreased numbers, there being only 75 to 80 men so employed this winter, as compared with 100 last winter, 190 the winter before, and so on.

Drifting operations are being carried on this winter on Spruce, Pine, Gold Run, Boulder and Ruby creeks, and possibly on Wilson creek.

MCKEE CREEK.

Only four individual operators were engaged on this creek this last season, and they for but a comparatively short time. Their ground being pretty well worked out and water being scarce, the results were not as satisfactory as in former seasons. The whole creek being practically under one management, although held by two companies, the McKee Consolidated Hydraulic, Limited, owning the leases on the upper portion of the creek, was granted exemption from the operating conditions of said leases on account of the scarcity of water, and so as not to embarrass the operations of the Amalgamated McKee Creek Mining Company, Limited, on the lower portion of the creek. This company, under the superintendence of Mr. S. H. Plumbe, with Mr. Geo. Adams as foreman, and latterly under the direct supervision of Mr. Fletcher T. Hamshaw, president and general manager, commenced operations about the middle of May and continued as water would permit until October 8th. About midsummer the company was compelled by the scarcity of water to reduce the width of the sluices to make the available quantity more effective. Notwithstanding these and other difficulties, this company, according to the president's report, moved about 500,000 cubic yards of overburden, washed



LOOKING DOWN VALLEY OF RAINY HOLLOW, CHILKAT DISTRICT—ATLIN M. D.

nearly 60,000 cubic yards of pay gravel, thereby uncovering nearly 7,000 square yards of bedrock and recovering therefrom nearly $24,000. The last pit worked was the best, and according to said report averaged $8.45 per square yard of bedrock. It also removed a great quantity of overburden (nearly 400,000 cubic yards), which leaves a large amount of pay gravel exposed for next season's operation. About $8,000 was expended on new plant, pipe-lines, etc., which, with the amount of dead-work already done, leads to the expectation of a good start and excellent results for next season. A force of about 20 men was employed during the season.

Pine Creek.

Not more than 12 individual miners operated on Pine and Gold creeks this season, but those who did were very well rewarded for their labour.

On the upper portion of "Gold Run" Mr. L. B. Harris, with two assistants and a steam (Keystone) drill, spent the entire open season prospecting for the pay-streak which is confidently believed to exist there, as well as farther down stream. The valley being wide and the area large, he did not succeed in satisfactorily locating it, but he intends continuing next season and either locating it or demonstrating to his own satisfaction its non-existence.

Of the companies operating on Pine creek, from the standpoint of number of men employed and output, the Atlin Consolidated Mining Company, Limited, under the superintendence of Mr. Thos. D. Harris, led the van this year. This company, locally known as the "Guggenheims," commenced operating with the steam shovel on June 8th and closed down on October 18th. The operating plant consists of one 70-ton traction steam shovel, three 5-ton electric locomotives and about 40 dump cars, an elevated screening and washing plant, with under current and tailing sluices, one 75 h.p. motor-generator, transformer, station, etc., driven partly by steam and partly by electric power. During that time they employed from 45 to 55 men (average of about 50) and moved an immense quantity of gravel, with, I believe, very satisfactory results. This company found it expedient and economical to run in "powder drifts" ahead of the shovel and shake up the gravel with dynamite. The superintendent, Mr. Harris, also introduced a new feature in methods of operation here by installing a 10-inch rotary pump driven by a 50 h. p. electric motor, by which water was taken from Pine creek, just adjacent, practically on the level, and was supplied with such force and volume as to provide a stream with which quite an area of bedrock was successfully worked (sluiced) hydraulically. But for the lack of certain necessary portions of the plant, which were delayed in transportation, the shovel might have commenced operating a month earlier.

The Pine Creek Power Company, Limited, and North Columbia Gold Mining Company, under the superintendence of Mr. J. M. Ruffner, president and general manager of both companies, with a force of from 30 to 50 men, operated their hydraulic properties both above and below Discovery and had a very successful season. They commenced operations early in May and continued until about the 12th of November, thus putting in just about six months actual hydraulic work, and working up to the last quite as effectively as in mid-summer; in fact, the best returns secured were during the last month of operation. These companies installed a small steam shovel on a scow (which floats in the ditch) and commenced the enlargement of their main ditch early in the season, but only completed about two miles of it, and it will take them the greater part of next season to complete the work. The ditch thus far constructed is about 25 feet wide on top and 5 feet deep, and is calculated to carry 15,000 miner's inches of water, and when completed will certainly place these companies in an excellent and very enviable position for carrying on their hydralic operations and washing out the famous "yellow gravel" which is so uniformly auriferous and of which their properties appear to cover a very large quantity.

The British-American Dredging Company, Limited, whose name has been changed to the British Columbia Electric Mining Company, Limited, has done nothing this year except that its power plant at Pine Creek falls has supplied the A. C. M. Co.'s steam shovel with the electrical power used.

From 90 to 115 men were employed on Pine creek and Gold Run during the summer.

SPRUCE CREEK.

Only from 100 to 120 men were employed on this creek during the summer, but the results of individual operation were as remunerative as in any previous year, and some of the best results were obtained from re-sluicing "tailings" that had been washed once or twice already. The reduced numbers operating on the creek left the diminished water supply more generally available, and there was consequently less wrangling than in former years, although troubles of that nature have not entirely disappeared. The drifting operations of last winter were generally very satisfactory, and reports from there this winter are more than satisfactory. About 45 men are drifting there, and there are about 65 people of all classes on the creek.

The Spruce Creek Power Company, Limited, under the management of Mr. W. C. Hall, with a force of 12 men, spent the early part of the season hydraulicing in the same place as in former seasons, but with what result I cannot say, as I was not favoured with a report by the manager. During the latter part of the season the force was engaged opening up and installing a plant at Spruce creek falls, some distance down stream, where I understand things are in shape for a good start next spring.

The Northern Mines, Limited, allowed its steam shovel to remain unused during this season, but its ground was being worked by a crew of about 16 men, on a "lay," who had returned to the original pick and shovel methods and, I believe, realised good returns.

Considerable desultory work of a prospecting nature was carried on at various points along the creek, but none worthy of special mention. Practically no fresh ground has been broken, such work as has been done being confined to the portions that have been under development for several seasons.

BIRCH CREEK.

About a dozen men operated on this creek with better than usual results, the scarcity of water being the only drawback. A small crew of individual miners did very well on the upper portions.

Messrs. Pearse & Co., operating the ground and plant of the Dominion Trust Co., commenced piping on May 4th and continued until November 1st, but were limited to about two hours a day use of the monitor, the water supply not affording any more.

BOULDER CREEK.

Between 45 and 50 men operated on this creek during the season, including the French Company's employees. The results were, as usual, good in general and very good in some cases. Those who drifted on the creek last winter realized splendid results. About 15 people are employed drifting there this winter.

The Société Minière de la Colombie Britannique, under the management of Mons. Tade Obalski, M.E., employed about 13 men during the summer, and realized the best returns, with least cost, of any season since it has undertaken to operate on the creek, cleaning up nearly $40,000. Even with these satisfactory results, some ground was worked over that had been "drifted" during the winter, demonstrating that the "pay" on this creek is more generally distributed throughout the gravel and is not all found within the range of drifting operations.

Ruby Creek.

The Ruby Creek Syndicate, under the foremanship of Mr. Rob't. Mackay, opened up its property and, with a small force, continued prospecting underground from the middle of May until September 20th. The average value of the gravel handled was satisfactory. The owners, unfortunately, have not yet secured the necessary capital to properly equip the property with a suitable plant.

Wright Creek.

About 11 miners operated on this creek throughout the summer season, and, I believe, with perhaps one exception, were well satisfied with results. Messrs. Gierke & Co., in particular, did very well and are being repaid for their several seasons of unremunerative labour on the creek.

Otter Creek.

On this creek Messrs. Carmichael, Moran & Co. (the Otter Creek Development Company), who own the Otter Creek Consolidated group of hydraulic leases, situated on upper Otter creek, worked with a force of five men throughout the season, and were again rewarded by very fair returns. They commenced operations on April 25th and continued until October 21st, while active piping was carried on from May 25th to October 15th. During this period they moved about 20,000 cubic yards of gravel, uncovering over 2,000 square yards of bedrock, from which they recovered gold averaging upwards of $2.50 per square yard of bedrock. They also constructed dams for the conservation of water and performed other dead-work which is calculated to enable them to make a much improved showing next season.

On lower Otter creek the Otter Creek Hydraulic Gold Mining Company, which controls a group of 11 leases, under the superintendence of Mr. M. R. Jamieson, had a crew of from four to eight men employed from June 1st to October 15th, preparing for the installation of hydraulic plant, in the course of which was constructed about 2,100 feet of ditch and flume 4′ x 3½′, with necessary head-dams, etc., and a larger dam on the "divide" between Otter and Spruce creeks, thus establishing a reservoir capable of conserving a large quantity of water. Everything is in readiness for the installation next spring of a hydraulic plant, with which to at once commence operations and be able to make a fair showing before the end of the season.

Wilson Creek.

Although a large number of claims were located on this creek last year, no work worth mentioning was done on any but *Discovery* claim. On this claim the discoverer, Mr. Andrew Grier, and his partner, Mr. May, did very well indeed. This year Mr. Grier, who acquired sole ownership, operated throughout the summer with a crew of about seven men, commencing to sluice on June 24th and ceasing on October 15th. Although they, at times, got off the "pay-streak," at no time did they average less than wages and, I believe, they averaged upwards of $10 a day to the man for the whole season.

At intervals, during the past season, some fresh report from the creek would cause a stampede, with the result that from seven to eight miles of the creek has been located in individual claims, but with two or three exceptions no continued or systematic prospecting has been done, except on *Discovery* claim, as above mentioned. About 1½ miles below *Discovery* one man made upwards of $20 a day "panning" for a short time, but that was not continuous. There are four men on the creek this winter.

O'Donnel River.

On this river several leases have been located, but, with the exception of Mr. Rob't. McKee's operations, no work whatever has been done by any of the locators. Mr. McKee brought in supplies last winter and commenced operations last spring with three men, but

ceased early in the season at the instance of a party to whom he had bonded his property and who was preparing to institute extensive development operations when the financial stringency overtook him and upset his calculations for the time being.

On Graham, Consolation and Lincoln creeks some prospecting was being done, but without definite results.

On Gold Bottom creek an American company acquired bonds on a group of leases thereon located and, in the fall of 1906, built cabins, etc., and commenced prospecting by sinking a shaft, which, however, encountered water at the usual depth in this district, viz., somewhere between 20 and 30 feet, and work was suspended until they could procure suitable pumping apparatus.

MINERAL CLAIMS.

The impetus given to prospecting for mineral claims in 1906, by the active development undertaken by Col. Conrad and his associates around Windy Arm, was not sustained in 1907, the enthusiasm subsiding in sympathy with the restricted development maintained by those same parties, and a glance at the statement of locations and certificates of work recorded conveys the impression that not many new properties have been located and that a number previously located had been abandoned. It is encouraging, however, to note that all the principal properties are being protected, if nothing more, and that the assessment work, where properly done, in most cases reveals increasing values, as the properties are opened up. I am pleased to be able to state that the *Beavis* mine, situated about three-quarters of a mile north of Atlin, under the management of Mr. C. E. Wynn-Johnson, and the Table Mountain property, situated on Taku Arm and about 12 miles from Atlin, under the superintendence of Mr. J. A. Oliver, are being systematically developed this winter.

RAINY HOLLOW.

The anticipated development of the properties in this district, unfortunately, was not vigorously entered upon this year by the bondees, so that they are practically no further ahead than they were a year ago, except in one case, where the representative of American capital is building cabins, etc., preparatory to active development. The recent visit of the Provincial Mineralogist to that district will have provided you with fuller and more reliable information with reference to the district than anything that I can offer, so that I will conclude by stating that trails have already been built along the Klehini river and across the divide from Pleasant Camp to the head of Boulder creek, which will materially assist the prospectors and pave the way for the waggon road that will probably follow.

I may say that the falling off in the amount of revenue collected, as compared with 1906, is represented almost entirely by the great discrepancy in the amount collected from lease rentals, as already noted, which alone amounts to more than the difference, the amount collected for free miner's certificates (more than usual of which were taken out elsewhere) and the lesser amount collected (and collectible) for taxes, both real and personal. There was a considerable advance in the amount collected under most of the other heads representing sources of revenue.

OFFICE STATISTICS—ATLIN MINING DIVISION.

No. of free miners' certificates issued	(individual)	607
" " " " "	(individual special)	5
" " " " "	(companies)	9
" placer records issued		124
" " re-records issued, 420, representing claims		445
" leaves of absence, issued, 137, representing claims		360
" grouping permits issued		21

Office Statistics—Atlin Mining Division.—*Concluded.*

No. of abandonments (placer)	8
" permits to move stakes, etc	8
" bills of sale (placer)	170
" " " (hydraulic)	27
" " " (mineral)	45
" mineral records issued	177
" certificates of work issued	266
" filings (mineral)	33
" abandonments (mineral)	3
Gold reported	$ 339,989 62
Royalty paid	5,192 99

Revenue Collected, 1907.

Free miners' certificates (individual)	$ 2,924 75
" " " (companies)	700 00
Mining receipts, lease rentals	8,420 00
" " lease deposits	540 00
" " water records and rentals	1,447 50
" " bedrock flumes	200 00
" " other sources	8,433 70
Leaves of absence	900 00
Land sales, $280.00, leave of absence $2.00	282 00
Timber royalty	1,025 77
Hand loggers' licences	20 00
Licences, trade	155 00
" liquor	1,637 50
" deposits on account of expenses advertising	149 00
" marriage	30 00
Real property tax	2,303 60
Personal property tax	222 65
Wild land tax	12 65
Income tax	55 00
Mineral tax	5,192 99
Revenue tax	867 00
Tax on Crown-granted mineral claims	361 25
Small Debts and Magistrate's Courts	189 10
Miscellaneous	108 50
	$36,177 96

Gold Recovered—Atlin District, 1907.

Name of Creek.	Individual Miners.			Companies.		
	Ounces.	Value.	Royalty.	Ounces.	Value.	Royalty.
Birch	.....	.....	.....	378	$ 5,670 00	.....
Boulder	1,058	$ 16,393 50	$ 118 95	2,490	38,600 00	$ 732 00
McKee	.....	.....	.....	1,458	23,329 00	426 60
Otter	.....	.....	.....	345	5,347 50	66 95
Pine	829	12,847 59	114 10	9,041	140,134 53	2,602 69
Ruby	103	1,596 55	.....	.....	.....	.....
Spruce	3,248	51,969 00	467 25	1,820	29,111 20	502 40
Wilson	405	6,481 50	82 70	.....	.....	.....
Wright	543	8,509 25	79 35	.....	.....	.....
Total	6,186	$97,797 39	$862 35	15,532	$242,192 23	$4,330 64

Summary.

	Ounces.	Value.	Royalty.
Individual miners	6,186	$ 97,797 39	$ 862 35
Companies	15,532	242,192 23	4,330 64
	21,718	$339,989 62	$5,192 99

STIKINE AND LIARD MINING DIVISIONS.

REPORT OF JAMES PORTER, GOLD COMMISSIONER.

I have the honour to submit my seventeenth annual report on mining operations in the Stikine and Liard Mining Divisions of Cassiar District for the year ending 31st December, 1907.

The year has an exceptionally light record in mining from the point of view of the actual output of gold, and this fact is in most part attributable to the unsuccessful operations of the Berry Creek Mining Company, Ltd. It is deplorable that this energetic and deserving company has not met with better success, for its own welfare and for the advancement of prosperity in the district generally. I think it is safe to say that the successful operations of the company would mean a great deal for the place, as, no doubt, it is being closely watched by "people on the outside" who are ready and willing to advance capital towards opening and working hydraulic diggings here if they had the assurance of one fruitful venture.

Very little attention has been paid during the year to outside prospecting, and apart from the recording of quite a number of quartz locations and several hydraulic leases, I have nothing to report in the way of new finds other than what will appear later in this report.

STIKINE MINING DIVISION.

ISKUT RIVER.

This stream is probably the largest tributary of the Stikine river; it flows from the north-east and joins the main river a few miles above the crossing of the International boundary. Some attention was paid to prospecting for quartz on the lower part of this river during 1906, the operations being taken up again this season, and in October nine locations were recorded in my office by the party residing in Wrangel, Alaska. It is said that rock taken from some of the claims gives very encouraging assays. The place is easy of access, and it would not require very high grade ore to make it pay for handling.

FIRST NORTH FORK OF CLEARWATER RIVER.

There have been no new developments on this creek, and the facts regarding it remain the same as reported last season. The one company operating there has not done well, on account of a late freshet that washed out its ditch-head and otherwise prevented the carrying on of successful mining, as the water remained high for considerable length of time. Nothing more than assessment work has been done on the three mineral claims which are owned by Mr. Lewis Kirk on the opposite side of the Stikine river from Clearwater river.

LIARD MINING DIVISION.

Dease Creek.

On this creek there are five hydraulic and one creek lease. Four of the hydraulic leases were re-staked and recorded during the year. Not any of the claims on the creek have been fitted with machinery, and the only work in progress there during the season was in the hands of four white miners and as many Chinese, who have small holdings on the creek.

Thibert Creek.

This stream is so well known that it would be a waste of time for me to attempt to give a description of it here. Suffice it to say that it is on this creek that the Berry Creek Mining Company, Limited, has ten hydraulic leases, of approximately 80 acres each, which lie on the right or south side of the stream. Seven of these claims adjoin, with a frontage each of 1,500 feet on Thibert creek. The other three are above the mouth of Berry creek. Although this company was in thorough shape to operate on a large scale, it is regrettable to say that the season ended most discouragingly, owing to several caves or land-slides from the hills overhanging the workings completely filling the diggings and doing much damage to the pipe-lines and machinery generally about the works. The most destructive cave of all occurred late in August or early in September, burying the works and causing the manager to send the greater part of the men employed out of the District, as they could not be worked longer to any advantage. From all indications, the ground is quite rich enough to pay well if these mishaps could only be avoided, but the problem is how to prevent them.

Any other mining on the creek has been of a desultory nature and of little account.

Little Deloire Creek.

This stream is a tributary of Thibert creek. It rises in the height of land lying between Dease and Thibert creeks and flows with a gradual trend towards the north, joining Thibert creek at a point about three miles above the junction of that stream with the Dease river. The creek is small and does not exceed seven or eight miles in length. During the early days considerable placer gold was taken from it where the ground was found shallow, and some of the high bars and points paid very well. One or two unsuccessful attempts were made to bottom the deep ground. After that the creek was abandoned for several years, until prospecting was again resumed by the Mitchell brothers a few years ago. This season found these not-to-be-discouraged men again in the field, fully equipped and prepared to bottom the creek if possible, as they had brought with them a steam pumping outfit and a party of eight men. They put a shaft down to bedrock, which was reached in 25 feet, and I am pleased to report that they were rewarded by finding coarse gold in paying quantities. The shaft in question was sunk close to the present channel, and after reaching bottom a tunnel was run to cross-cut the channel. This was continued for 40 feet on good pay, without a raise in the rock, when, unfortunately, the shaft collapsed and allowed the diggings to fill with water. It was extremely lucky, however, that there was no one in the mine at the time. On account of this mishap, further operations for the season were abandoned and everything is being put in readiness for a start next spring. These people have secured three creek leases of half a mile each.

McDame Creek and Tributaries.

This creek is also well known, so I shall not on this occasion enter into any unnecessary detail regarding it. Several creek and hydraulic leases have been recorded on the main creek and one of its tributaries, but so far nothing more than development work has been done on

any of these holdings. Some are now in bad standing, from delinquency in rentals and development work. Some individual mining is carried on, both along the main stream and some of its tributaries, with no marked success. There is good reason to suppose that when this once famous old creek is properly taken hold of and rightly handled by strong hydraulic companies it will prove itself to be worthy of more attention than what it is receiving at present.

It is encouraging to note that several new quartz locations have been recorded during the year in the McDame creek country, and assessment work has been recorded on a great many of the claims previously located and recorded. Seventeen mineral claims have been turned over to Messrs. James Rosenthal and Adolph Kurz, of Chicago, Illinois, who had a Provincial Land Surveyor in the district during the summer surveying their holdings, in view of Crown-granting them. These claims are mostly situated on the first south fork of McDame creek and Haskins mountain. In the summer of 1906 an expert, on behalf of the Chicago gentlemen mentioned, visited McDame creek for the purpose of examining the different ledges covered by their present holdings, and his report was so favourable that a deal was made and the claims in question acquired. It is said that some of the claims are rich in gold, silver, copper, zinc and other values. I shall hope to be in a position when I make my next annual report to insert reliable facts and figures relating to the values of these properties.

Rosella Creek.

The Rosella Hydraulic Mining and Development Company, Ltd., of Victoria, B. C., has not made any marked headway this season with the work in hand on the hydraulic and creek holdings of the company on this creek. This may, in a measure, be owing to the regrettable and sudden death of the company's manager, the late Mr. John W. Haskins.

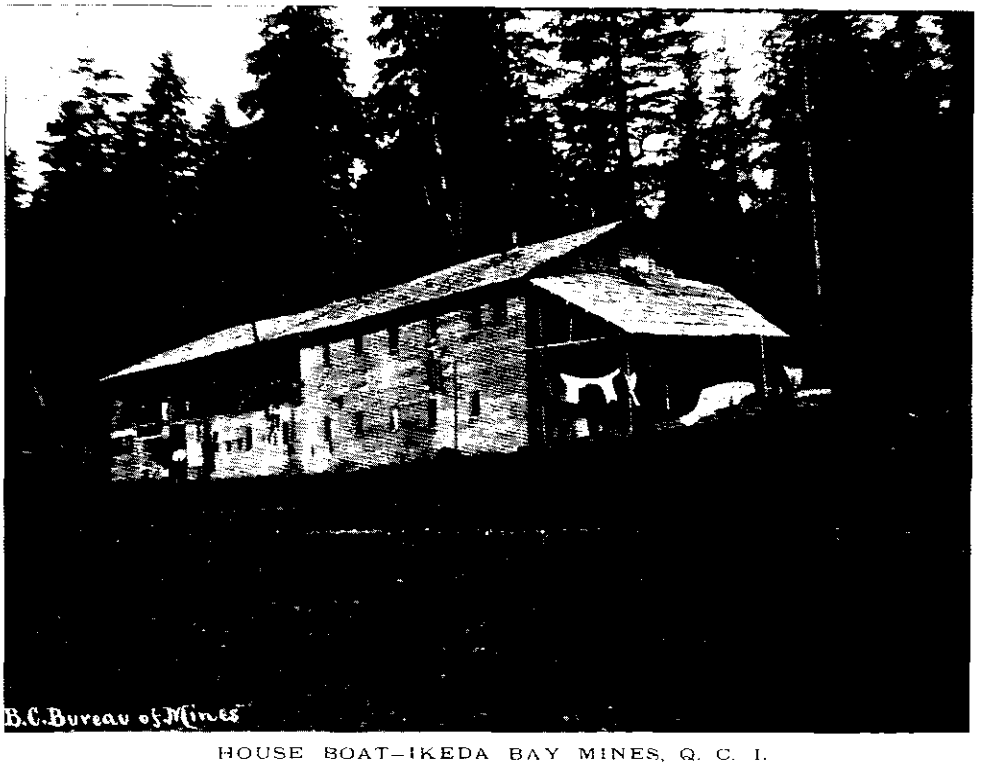
The mineral locations made last season some distance to the south-east of McDame creek have been kept in good standing, and I understand that ore taken from them runs high in copper and other values. Two or three other claims were located there last spring.

It must be understood that, under present conditions, the whole of this interior country will have to remain undeveloped, for the short seasons, high prices, slow and excessive transportation rates, all tend to retard its growth and to keep it in the background. Under more favourable conditions, however, I feel certain the country would soon show much activity, for there is little doubt about its richness from a mineral point of view. The advent of railroads into the country from the south will bring about great changes.

Office Statistics—Stikine and Liard Mining Divisions.

Revenue collected from general mining receipts	$3,176 40
" other sources	2,584 01
Total revenue	$5,760 41

ROSE M. C.-EXPOSURE OF MAGNETITE-IKEDA BAY, Q. C. I.



HOUSE BOAT—IKEDA BAY MINES, Q. C. I.

SKEENA MINING DIVISION.*

QUEEN CHARLOTTE ISLANDS.

Report by Wm. Fleet Robertson, Provincial Mineralogist.

The Queen Charlotte group of islands lies between the 52nd and 54th degrees of north latitude and about 85 miles westward of the mainland, at the mouth of the Skeena river. The distance from these islands to the nearest of those islands lying adjacent to the coast of the mainland is from 60 to 70 miles across an open stretch of water—Hecate straits—sufficiently open to the Pacific ocean to share its waves and winds, which have proved enough of a barrier to prevent much intercourse by small boats between these islands and the mainland, while, until within the past year, communication by steamer was only to be had once a month. These islands, so commandingly situated off the main coast, have therefore remained sufficiently *terra incognita* to stimulate the imagination and create much interest.

In the earlier days the Queen Charlotte Islands were peopled by the Haida Indians—the finest and most warlike tribe in British Columbia—whose raids and incursions into the districts of the mainland and Georgia straits, with, in many cases, the decimation of the tribes in these districts, forms an important part of the Indian history of the province. The warlike character of the Haidas, coupled with the remote and insular position of the district, has undoubtedly deterred prospecting or any very close investigation, as is evidenced by the fact that the islands are to-day practically uncharted, save in a very approximate way.

The outline of the west coast of the islands, as shown on the Admiralty charts, is from a rough survey made by Vancouver in 1793, while cruising along the coast in a sailing ship. The east coast line is a little more accurately marked, as this was investigated in 1878 by the late Dr. G. M. Dawson, of the Geological Survey, who made a rough reconnaissance survey, the comparative accuracy of which, though a tribute to that wonderful explorer, still leaves much to be desired.

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*The boundaries of this Mining Division were somewhat altered by an Order in Council gazetted May 3rd, 1906, a copy of which follows :—

"Skeena Mining Division.

"Starting on the International boundary in Dixon's Entrance opposite Cape Muzon; thence easterly and northerly along said International boundary to the height of land between the Unuk River and Iskut river; thence north-easterly, following the height of land dividing the drainage area of the Stikine river on the north from the drainage area of those streams emptying into the Pacific Ocean south of Portland canal to a point where such height of land intersects the height of land separating the watershed of the Skeena river on the east from the Nass river on the west; thence following the height of land between said rivers to a point where such height of land joins the height of land forming the north-western boundary of the watershed of the Kitsumgallum river; thence along this latter divide to a crossing of the Skeena river three miles below the mouth of the Copper (Zymoetz) river; thence south-easterly along the height of land separating the drainage area of the Copper (Zimoetz) river from that of Thornhill creek; thence continuing south-easterly along the height of land between the Copper (Zimoetz) river and its tributaries on the north-east and the Kitimat River on the south-west to a point on the height of land dividing the drainage area of Gardner canal on the west and the tributaries of the Nechako river on the east to a point on the height of land separating the drainage area of Gardner canal and its tributaries on the north from that of Dean canal and its tributaries on the south; thence south-westerly, following the height of land to a point north of Salmon bay opposite Oscar pass; thence through Oscar pass and Millbank sound, passing south of Price island; thence westerly, passing to the south and west of Queen Charlotte islands; thence northerly to the point of commencement in Dixon's Entrance."

By a subsequent Order in Council passed in April, 1908, and taking effect on May 15th, 1908, the Queen Charlotte group of islands was detached from the Skeena Mining Division and formed into a separate Mining Division under the name of the Queen Charlotte Mining Division, of which the Mining Recorder's office is to be at Jedway, on Harriet harbour, in the southern part of Moresby island.

HISTORICAL.

The early voyages of discovery to the vicinity of the Queen Charlotte islands, and in fact the entire northern Pacific coast, were all in search of a supposed northern passage for vessels from the Atlantic to the Pacific ocean—in other words, a short waterway from Europe to China.

As early as 1592 the Spanish Viceroy of Mexico fitted out an expedition for this purpose under Juan de Fuca, who sailed as far north as Vancouver island, although it is not known that he ever reached the Queen Charlotte islands.

In 1639 the Court of Spain appointed Bartholemew de Fonte to command a squadron, fitted out in Peru, which sailed in 1640. In June, 1640, he records entering an archipelago of very many islands, called by him St. Lazarus, in latitude N.53°—the latitude of the centre of the Queen Charlotte group—and that he sailed for many leagues through intricate channels between islands. These may have been the Queen Charlotte islands, but some doubt has been entertained as to the accuracy of both these early voyagers.

In 1774, Juan Perez, in the Spanish corvette "Santiago," saw and named the north cape of Queen Charlotte islands Cape de S. Margarita, but, finding no anchorage, did not land.

In 1775, another Spanish expedition, under Bodega and Maurelle, coasted along the shores of the islands but did not land.

In 1787, Dixon, in the British ship "Queen Charlotte," spent over a month on the coast of the islands, tracing the west coast from the north to the south end and sailing up the east coast as far as as Gumshewa inlet, and named the group of islands after his ship. He traded with the Indians, buying furs, etc., the real object of his voyage.

During the next few years the islands were frequently visited by fur traders in British, French, Spanish and American vessels.

In 1792, Capt. George Vancouver, in H.M.S. "Discovery," arrived on the west coast of America, and during the next three years was engaged in a series of surveys and explorations which to-day form the basis of our present charts of the west coast of these islands.

Attention seems to have been withdrawn from the islands with the abandonment of the search for the "North-West Passage," until 1852, when H.M.S. "Thetis" visited the islands on a surveying expedition, followed, in 1853, by H.M.S. "Virago," and by H.M.S. "Alert" in 1860.

"In 1852, the Hudson Bay Company despatched a party of men in the brig 'Una,' Captain Mitchell, to discover the locality from which several specimens of gold had been brought by the Indians. This was found to be on Gold harbour, in Kuper inlet, on the western coast of Moresby island. The gold was found in a small irregular vein, which soon proved to 'run out' in every direction. The quantity of gold obtained by the expedition was considerable, but has been variously stated. The enterprise was soon abandoned, but the discovery for a time created quite a *furore*—the first gold excitement in British Columbia—and the locality was visited by a number of miners, but with no further success."

As to the amount of gold actually obtained in this first expedition, no very authentic data is obtainable; tradition makes it very large, but Major Downie, mentioned further on, who visited the locality a few years later on a similar errand, places the amount at $5,000.

In 1859, Major William Downie, a miner, with a party of 27, in a schooner, under Capt. Robinson, went to Gold harbour, and he records in his book "Hunting for Gold" that the party found quartz but no amount of gold. They "examined the spot where a large quantity of gold had been taken out some time before, but could not find anything worth working."

Major Downie, however, reports that he found coal on Skidegate inlet, and he is the first to have mentioned its existence on the islands. He, however, did not follow up his discovery, but soon left for the mainland.

"About this time a Capt. Torrens also went with a party to prospect on the Queen Charlotte islands, and narrowly escaped massacre by the Skidegate Indians."

In 1862 the "Queen Charlotte Mining Company" was formed in Victoria, and a party of men under Mr. Francis Poole—an Englishman, claiming to be a mining engineer—was sent north, landing on Skincuttle island in the inlet of that name, on which island and the adjoining island, Burnaby, they remained until 1864, engaged in prospecting. Their prospect shafts, etc., are still visible to-day and have been re-staked by present-day prospectors, more, it seems, on their historic fame than on the amount of mineral visible. Mr Poole gives an account of his expedition in a book, "Queen Charlotte Islands," published in London in 1872.

So far as known, this constitutes the sum of the recorded early prospecting ventures on the Queen Charlotte islands. That there have been some unrecorded ventures is evidenced by the fact that at Copper bay, some nine or ten miles south of the Sand Spit, there is the remains of an old shaft, now being unwatered and cleaned out, which has been proved to be at least 100 feet deep, and of which there is no record. Even traders who have frequented the islands for 25 years say the Indians know nothing of its origin or by whom the work was done; a tree, growing on an old dump, would indicate that it was over 40 years ago.*

Despite the fact that the early prospectors had all found enough to indicate the probability of extensive mineralisation on the islands, for many years these early discoveries were not followed up and little or no serious prospecting took place. It was only when attention was focussed on this northern part of the coast, by the location therein of the terminus of a trans-continental railway, that the Queen Charlotte islands again received attention from the prospector, and the more valuable discoveries that have been made have been all located within the last two years, many within the past year. Consequently, it is not to be wondered at that, up to the present, little more than very meagre development work has been done on the various claims recorded. In addition to this fact, the area found to contain mineral is so extensive that prospectors, having performed sufficient work on their respective claims to hold them for the year, have stopped at that and spent their time in trying to locate further mineral deposits.

As a result, it was found on examination that, with one or two exceptions, there were to be seen only surface prospects, of which no very definite future can be foretold; the most that can be done is to point out the probabilities from such indications as have been disclosed.

As was natural, when prospecting was resumed, it began in the vicinity of the indications found many years ago, and has proceeded along the "line of least resistance," that is, in the direction from the initial point which could most easily and safely be reached by small boats.

Skincuttle inlet was the starting point, and the majority of the claims so far staked have been in the bays or harbours opening off this inlet, viz., Huston harbour, Harriet harbour, Ikeda bay and Collison bay, with a few, and, at present, not so important localities farther south.

From Skincuttle inlet prospecting continued north, and some important locations have been made along the east coast from Klunkwoi bay to Gumshewa inlet, in a formation quite different from that found in the vicinity of Skincuttle inlet. As yet, all the locations have been made close to the sea shore, within distances that could be reached in a day from a boat.

The formation, which has been found copper-bearing, at Klunkwoi and Gumshewa bays, appears to continue N.W., parallel to the length of the island, and is again found on the north

end of Moresby island, on Skidegate channel, between the Narrows, where also it is impregnated with copper, but whether the metal is here in commercial quantities has not yet been demonstrated.

GEOLOGICAL OBSERVATIONS.

The first geological examination made of the Queen Charlotte islands was in 1872, when Mr. James Richardson, of the Geological Survey of Canada, visited certain coal mines on Skidegate inlet. Mr. Richardson's time was limited to a few days and his examination did not extend beyond the vicinity of Skidegate inlet.

In 1878, Dr. George M. Dawson made an examination of the east coast of the main islands; the full text of his report may be found in the Report of the Geological Survey of Canada for 1878-9. The following extract from Dr. Dawson's report bears upon the geology of Moresby island:—

"The mountainous axis of the Queen Charlotte islands, from Cape St. James to Skidegate channel (Moresby island), and probably still farther northward as far as Hippa island, is composed of a mass of much disturbed, and in some places highly altered, rocks, which have at first sight an appearance of great antiquity, but are found on closer inspection to owe this appearance to the inclusion of great masses of easily altered contemporaneous volcanic materials, and to the fact that they have been subjected to an extreme of flexure and disturbance which very frequently takes the character of actual fracture and displacement, as has been observed elsewhere on the Pacific coast. To work out the intricacies of these older rocks, which may be looked on as the nucleus of the islands, would be a work of time and would involve much patient labour.

"In a preceding report on British Columbia it has been found necessary to include for the present the Palaeozoic and Triassic rocks under a single heading. They lie together, unconformably, beneath well-characterised Cretaceous beds, but are so much involved that no attempt has been made to separate them except locally. In the southern part of the interior of British Columbia both Carboniferous and Triassic fossils have been found among these older rocks, but no forms of greater antiquity. In the Queen Charlotte islands, now reported on, fossils have been discovered in the rocks unconformably underlying the Cretaceous in a number of places. These serve to characterise a certain zone of argillites and limestones, which is frequently repeated in sections along different parts of the coast, as distinctively Triassic; and shows it to represent the so-called Alpine Trias, which is so largely developed in California and Nevada. No forms distinctively Carboniferous or Palaeozoic have yet been discovered, but from the intimate association of Carboniferous and Triassic rocks in the southern interior of the Province, and more particularly from the occurrence of a great mass of rocks largely volcanic in origin and believed to be Carboniferous in age, in the southern part of Vancouver island—which forms part of the same axis of elevation with the Queen Charlotte islands—it is highly probable that rocks of this age may come to the surface in some places.

"The limestones of these localities may, therefore, possibly be of Carboniferous age, and if so, a large portion of the associated rocks of volcanic origin must be attributed to the same period. As it is at present impossible to unravel the structural complexity of the sub-Cretaceous rocks of the islands, it has been thought best to colour them together on the map as Triassic, in correspondence with their characteristic fossils."

In 1905, Dr. R. W. Ells, of the Geological Survey, made an examination of the northern large island of the group, Graham island, his work being practically confined to the coal-bearing formation of Graham island and its environment. Dr. Ells' report is to be found in Part B. of Vol. XVI. of Reports of the Geological Survey, while a summary of his report has been reproduced in the report of this Bureau for the year 1906, on pages 74 *et seq.*, together with a map of Graham island.

In 1901, Mr. H. Carmichael, Provincial Assayer, made an examination for this Bureau of certain of the islands near and of the east coast of Moresby island. His report is to be found in the Report of the Minister of Mines for 1901, on pages 999 *et seq.*

In 1902, Dr. T. R. Marshall, D. Sc., M. I. M. M., of Glasgow, on behalf of this Bureau, made an examination of the coal prospects in the interior of Graham island. His report is contained in the Report of the Minister of Mines for 1902, on pages 54 *et seq.*

Climate.

The climate of Moresby island is particularly favourable to prospecting and to subsequent mining operations, since in summer it is never very warm, while in winter there is seldom snow or frost in the lower lands, although both are to be found on the higher mountains, the highest peaks retaining snow-caps well into the summer.

The west coast of the island is always dangerous to approach owing to the rocky character of its shores and the prevailing west wind, causing an ever-present ocean swell, which renders landing from a small boat very difficult except in the sheltered bays, and these bays, though quite numerous, are still uncharted and unknown save to a few prospectors, who have bought their knowledge by hard experience.

The east coast is in summer usually safe, as it is protected from the west wind by the main island, and the fringe of smaller islands along its shores affords some protection, and offers ample refuge, from all winds, the inner passage being always navigable for small boats.

The warm winds off the Pacific, striking the high mountainous backbone of the island, produce in winter a great deal of rain and in summer a mist, which, however, seldom develops into fog.

As compared with the shores of Vancouver island, those of Moresby island are comparatively free from troublesome underbrush.

The timber, though small for lumbering, is admirable for mining purposes, and is very plentiful, while the damp climate does away with the dangers of forest fires.

There is little soil to hamper prospecting, the surface being, however, heavily carpeted with moss.

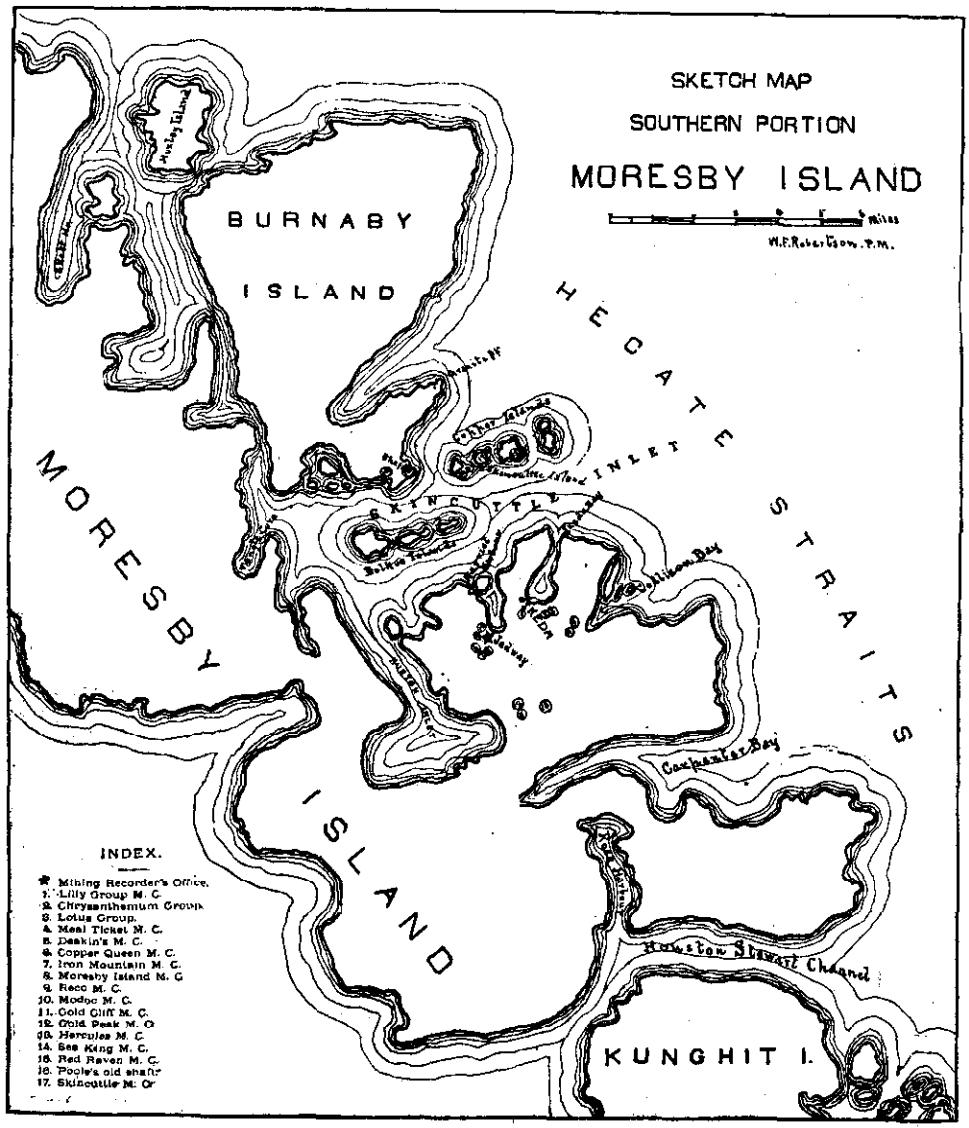
Game.

Game on the island is unusually scarce, there being no deer, rabbits or even squirrels, while grouse are not plentiful, which fact is strange, seeing that the natural enemies of these animals, the wolves, coyotes and foxes, are also unknown on the island. Bear are present, but not plentiful. There is no area in the Province so well suited for a game preserve—the climate, topography, vegetation and position are ideal—and the island should be stocked and placed under reserve.

Nature has, however, somewhat compensated for the dearth of land game by the bounteous supply of fish found in the sea and small streams, and the clams, rock oysters, abalonies and other shell-fish along the sea-shore.

Skincuttle Inlet.

As already remarked, the greater amount of prospecting that has been done on Moresby island is in the vicinity of Skincuttle inlet, which was in 1862 the scene of early prospecting. The general geological formation of almost all Moresby island has been placed as Triassic by Dr. Dawson, with a possibility of some Carboniferous measures. Lithologically, the formation was originally composed of limestones, shales, etc., with heavy deposits of volcanic matter from some local point of issue.



On the lower end of Moresby island, as seen in the exposures in the various harbours bordering on Skincuttle inlet, whatever may have been the original formation, it has been subsequently subjected to such an upheaval, with the accompanying faulting and bending, and has been so cut by innumerable feldspathic dykes, that no sign of the original formation was traceable. The dyke intrusions are so numerous and extensive as to form the greater part of the rock mass, the sedimentary rocks showing as patches, or isolated masses, without any apparent relation to the next.

The important part, however, is the existing mineral deposits rather than the geological formation, and from the number of mineral locations seen it would appear as though the whole promontory between Huston inlet and Carpenter bay was extensively mineralised, the locations so far made simply serving as an index to its general character. The first locations in recent years were made on the shores of Harriet harbour, from which point prospecting extended to Ikeda bay and Huston inlet, and later to Collison bay and Carpenter bay.

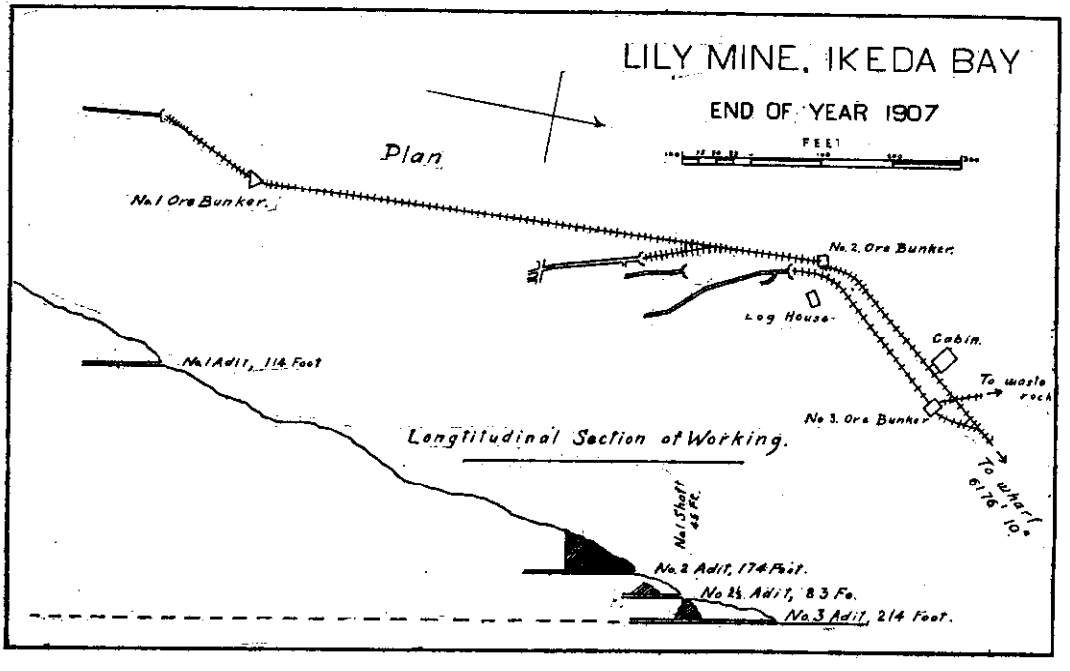
The mineral claims examined in this vicinity during this trip were all within the area mentioned. Speaking generally of these claims the mineralisation is always found in the immediate vicinity of, if not in the actual contact of, limestone with one of the larger dykes and consists primarily of magnetite, with a greater or lesser amount of chalcopyrite and occasionally considerable pyrrhotite.

Ikeda Bay.

The Japanese firm of Awaya, Ikeda & Co., of Vancouver, originally interested in the fishing off the Queen Charlotte islands, has staked claims on all the hills surrounding Ikeda bay, and this Company was found to be the only one on the island making any serious attempt at mining. It is employing more than 100 men, mostly Japanese, in mining, mining construction and prospecting the claims already staked.

At the inner end of the bay the company has erected a large and substantially built wharf, capable of receiving the largest of the coasting steamships. Connecting the wharf and the mine workings a 36-inch gauge tramway has been built, over which, on cars drawn by horses, the ore is brought down for shipment.

Lily Group. While some development work has been done on all the Company's holdings in the vicinity, the greater amount and all actual mining has been focussed on the *Lily* group, which consists of eight claims, the *Lily*, *Sweet Pea*, *Apple*, *Carnation*, *Orchid*, *Lemon*, *Peach and Pansy*. The development work for the group has been performed on the *Lily*, upon which the most available outcrop appeared This outcrop showed up in a small creek, the water of which had washed clear an outcropping of magnetite carrying chalcopyrite. This outcrop occurs in places along the actual contact and elsewhere near the contact of limestone and an igneous rock, apparently a diorite, there being evidence of much movement and some faulting. This deposit, as is the nature of such deposits, does not assume the characteristics of a fissure vein, and is not very clearly defined, nor is it of uniform width or tenure of copper.



The development consists of what is called No. 1 tunnel, which is really an open cut in the creek-bed along a contact of limestone and diorite, much altered, along which is a deposit of magnetite with copper pyrites; this has been exposed by the work done for some 30 or 40 feet, and has a width of from one to two feet. It would be difficult to estimate the copper contents of the exposed ore body, as this mineral is far from uniformly disseminated throughout the lead, occurring sometimes in bunches of quite rich ore, again scattered through the ore body, while in places the magnetite is practically barren.

Some 400 feet farther down the creek is the No. 2 tunnel, and here most of the development work has been done, and all the mining, some 700 tons of copper ore having been shipped from this opening in 1907, assaying about 9 % copper, 3.5 oz. silver, and 0.25 oz. gold to the ton. This tunnel had been driven in on the strike of and following the vein for some 160 feet in a S. 10° E. direction. For the first fifty feet the ore has been stoped out up to the surface, the hanging-wall, dipping at an angle of about 80°, being supported by timbers, although in the tunnel proper no timber is required. The tunnel is about ten feet wide, and in places the vein-matter occupied pretty well the whole face of the drift.

In the latter part of August the face of the drift was not in ore, the vein having been temporarily lost, but when the property was again visited about two weeks later, it was found that a cross-cut had been driven to the left, towards the hanging-wall, in which the vein had been again found and the main drift was being deflected to pick it up.

The ore from the tunnel is run out on cars and dumped on to an incline, at the bottom of which is a picking shed, where the ore is broken and hand-sorted, the sorted ore being sacked and run down to the dock on cars drawn by horses, a distance of little over a mile, in which distance there is a drop of about 300 feet. On each car two tons of ore are carried, and one horse is required to bring back the empty car; a driver takes down two cars at a trip.

All the work about the mines is performed by Japanese. The miners working "single handed" are very efficient and compare favourably with the average white miner at this class of work, but the timbermen work very slowly.

Some 100 feet from No. 2 tunnel, and 65 feet lower down, No. 3 tunnel has been started and has been laid out as the main working tunnel, the entrance being very heavily and solidly timbered where it runs through the gravel surface wash. This tunnel had, in August, only been driven through the wash to solid formation in which no work had then been done.

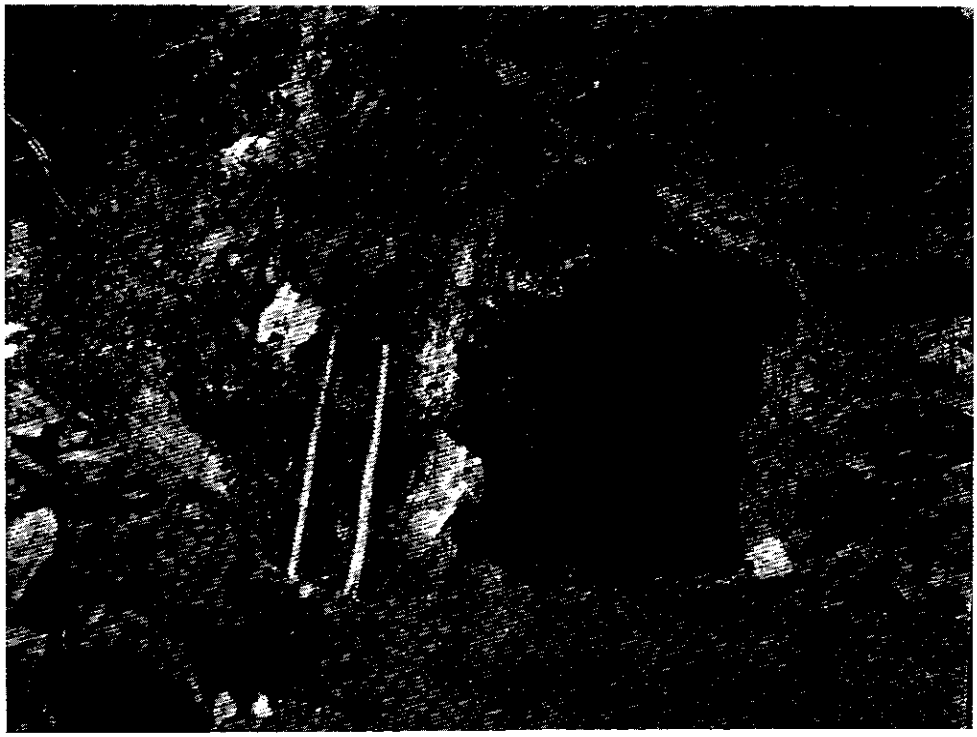
There were employed in actual mining operations:—At No. 1 tunnel, about 14 men; at No. 2 tunnel, about 12 men; at No. 3 tunnel, about 8 men.

Chrysanthemum Group.

The same Company has also staked out the *Chrysanthemum* group of eight claims, viz.:—*Peony*, *Chrysanthemum*, *Rose*, *Violet*, *Cherry*, *Apricot*, *Bamboo* and *Maple* mineral claims. This group is located on the south-west side of Ikeda bay, at an elevation of about 400 feet above, and about half a mile back from the sea; the approach being a gradual slant. On the *Chrysanthemum* mineral claim there is a large exposure of mineral, some 50 feet long by 20 feet wide and about 15 feet high, consisting of four feet of nearly solid magnetite, with a small percentage of iron sulphide, between defined walls of diorite, and dipping nearly vertical, with strike north and south.

Lying adjacent to this, and to the east, is a zone of from 4 feet to 8 feet wide of magnetite of a much finer grain, but not as pure, being considerably impregnated with iron pyrites and some copper pyrites. The amount of sulphide in this latter zone is so high as to render it valueless as a commercial iron ore, whereas, as far as developed, the percentage of copper is too low to be profitably worked.

ROCK FORMATION—ENTRANCE IKEDA BAY, Q. C. I.



TUNNEL, MEAL TICKET M. C., COLLISON BAY, MORESBY ISLAND.

On the *Rose* mineral claim, of the same group, there is naturally exposed in a bluff a mass of magnetite which, on the surface, is some 20 feet high and 50 feet long. This occurs along a diorite-limestone contact, the ore lying nearly horizontal underneath the limestone. In the limestone there is a cave, which was followed in, and up, for over 50 feet, formed by the leaching of a stream of subterraneous water, and in this there is considerable hydrated iron oxide.

At other points in the group, higher up the hill, there were seen a number of smaller exposures of magnetite, all of which are quite undeveloped or even explored, so that it is quite impossible to say whether the various outcrops and exposures are in any way related or connected.

Speaking generally, the explorations made indicate that the group contains a great deal of mineralisation, masses of magnetite of undetermined sizes, all carrying an appreciable percentage of sulphides of iron and copper, but in no instance has copper in marketable quantity been discovered.

Lotus Group.

The *Lotus* group, consisting of six mineral claims and also owned by the Awaya-Ikeda Company, is located on the south-east side of Ikeda bay, about half a mile back from the shore and at an elevation of some 500 feet above the sea. The mineral here exposed is pyrrhotite, the magnetic sulphide of iron, of which a very large body has been exposed with comparatively little work. This exposure is about 20 feet wide and is visible for a height of 20 feet, while 15 feet more depth of mineral is reported as covered by the dump made in the work done. This mass of mineral is bounded on either side by diorite country rock, the contact of which with the pyrrhotite is not sharply defined, but is a gradual replacement. Included in the mineral mass are bunches of limestone, although solid limestone formation was not visible. A sample made up of fragments broken from the various large pieces of mineral on the dump assayed three quarters of one per cent. of copper, with traces of gold and silver; while an average sample broken from the exposed face assayed: Copper, 0.4 %, with traces of gold and silver. The work done on the group was also more of an exploratory nature than development work, and while the great mass of mineral exposed has no present economic value, it strongly emphasises the extensive mineralisation of the vicinity and encourages further exploration of the group and its surroundings.

Collison Bay.

Collison bay lies next to Ikeda bay to the south-east and is separated therefrom by a range of mountains forming a narrow neck of land running out into Skincuttle inlet.

On August 26th, a gasoline launch was taken from Ikeda bay around to Collison bay but, unfortunately for the writer, the prospectors interested in claims there were absent from their claims and cabins, and it was with some difficulty, and much uncertainty, that the various claims mentioned were found; therefore, it is quite possible that there may be some confusion in the names of claims seen and that some of the workings may have been overlooked.

Meal Ticket.

The *Meal Ticket* mineral claim and the adjoining claim, the *Cash Box*' are located on the north side of Collison bay, about 280 feet elevation and about one third of a mile back from the water. The claims are reported as located by R. J. Leckie in October, 1906. On the *Meal Ticket* a tunnel has been driven in about 33 feet, and at 21 feet in cuts obliquely a four-foot lead of pyrrhotite, which continues on the left side of the tunnel to the face. The tunnel having been deflected to the right where the mineral was struck, has consequently not cut through the lead, and the thickness of the lead must be inferred from its outcrop on the surface, to the left of the tunnel mouth, at which point a fault plane is observed, along which the lead has been shifted a couple of feet north and its continuation to the east is seen in the dump in the mouth of the tunnel. A general sample of the pyrrhotite exposed was taken and assayed less than half of one per cent. copper,

with traces only of gold and silver. The country rock in the vicinity of the tunnel is very much altered volcanic rock, probably originally a diabase.

To the north of the tunnel, and on the *Cash Box* mineral claim in the cliff, there is, over a length of 100 feet, an exposure of magnetite carrying a considerable percentage of sulphides, chiefly pyrrhotite with some chalcopyrite.

Deakin's Claim. To the north of the previously mentioned claims, and at an elevation of some 200 feet above sea level, there is an exposure of highly crystalline limestone cut by a number of small diorite dykes, along the contact of which was a small amount of copper pyrites. Some of these contacts have been exposed along the course of a small creek—dry in summer, on which an open cut some eight to ten feet long had been made. No sample was taken of the mineral exposure.

HARRIET HARBOUR.

Harriet harbour lies to the west of Ikeda bay and to the east of Huston inlet, and is separated from each by mountains which run out into the sea in narrow arms, not over a mile wide at the head of the harbour, but two or three miles long.

The townsite of Jedway, with a wharf, store, Post Office, and several cabins, has been located on the south-west end of Harriet harbour, and here the office of the Mining Recorder of the district is situated. It was on the shores of this bay that the first of the more recent mineral discoveries of the district were staked, by Watson and Thompson, in 1905. These discoveries may be considered the origin of the present activity in Moresby island.

Copper Queen. Probably the best known claim on this harbour is the *Copper Queen*, now held under bond by J. S. McMillan, of Seattle. The claim is situated on the south-west side of Harriet harbour, some 5,000 feet from the water and 880 feet above it. On this claim, as on most of the claims in the district, the mineralisation consists of magnetite carrying variable amounts of copper pyrites, and upon the percentage of this latter mineral found depends the value of the deposits. When visited, the only development work done consisted of a large open pit in a small draw, made to expose and develop an exposure of magnetite found in a bluff on one side of the "draw." The work had succeeded in exposing a very considerable body of magnetite in a country rock, which appeared to be a much altered diabase. In the side of the cut there was visibly exposed, dipping at an angle of 48°, a body of magnetite 6 feet thick, of which the lower 4 feet 6 inches was almost solid magnetite, containing irregularly distributed bunches and stringers of copper pyrites. The upper 1 foot 6 inches of the ore body, although chiefly magnetite, was more mixed with rock matter and appeared to the eye to carry a lower percentage of copper. This face stood exposed for a height along its slope of 25 feet, with indications that it continued down under the dump and into the hill for some farther distance ; at its highest point the ore body came out practically to the surface. An average sample of the exposed face of the ore body was carefully chipped off across the whole six feet exposed and at different places in its length ; this sample assayed, copper, 1.4 %, with traces of gold and silver. Some 50 to 75 tons of mineral was piled up on the dump, and this also was roughly sampled, giving about 1.5 % copper.

Some little distance up the creek from the open cut, and also about 300 feet to the east, are bodies of limestone, although none show in contact with the ore body.

On the opposite side of the draw, or gully, referred to, from the open cut, some little surface stripping has been done, showing further bodies of magnetite, the connection of which with the main body is somewhat obscure.

Iron Mountain.

The *Iron Mountain* is another claim in the immediate vicinity, held by J. S. McMillan. On this but little actual development has been done, but stripping has exposed a similar body of magnetite of considerable size, showing copper pyrites along its margin.

Moresby Island.

The *Moresby Island* mineral claim lies somewhat to the south of the *Copper Queen* and is also held by J. S. McMillan. This claim overlaps to a considerable extent the *Tate* mineral claim, owned by T. J. Watson, as to the merits of which dispute no opinion is expressed. The first open cut seen showed a country rock consisting of a decomposed diabase or diorite, with a considerable quantity of secondary red garnets, in crystalline form, all showing copper stain and a small percentage of copper.

In the second open cut, near where a fine-grained igneous dyke, of later origin, cuts through the country rock, there is a strong impregnation of iron pyrites and nearby a small seam of copper pyrites, while a certain amount of copper carbonate occurs in the rock matter, but no considerable body of ore has been exposed. A sample was taken of the exposed face of the cut, which gave, upon assay, copper, 2.7 %, wet assay, with traces of gold and silver. The face of the cut is about 10 feet long and 10 feet high, and was in at the bottom only 6 to 8 feet.

Reco.

The *Reco* mineral claim, held by J. S. McMillan, is located nearer the bottom of the hill, only 200 feet above and a quarter of a mile from the water. The country rock here is a much altered diabase, in which a deposit of magnetic iron, about 3 feet thick, is seen dipping into the hill at an angle of about 40°, accompanied by a black hornblendic dyke and overlayed by a close-grained silicious rock. The magnetite carries sulphides of iron and copper, the copper contents in the exposed face of the magnetite being estimated at from $\frac{3}{4}$ to 1 % copper. The exposure was visible for some 50 feet up the bed of the creek and was fairly uniform in character.

An inclined shaft had been sunk on the deposit and 3 sets of timbering, 5 feet apart, set up, below which the shaft is reported to have been sunk about 6 feet, but as it was full of water it could not be examined. A 16 h.-p. boiler and a steam drill were on the ground, covered by a rough board shed. This boiler had formerly been used in prospecting the claims farther up the hill.

Modoc.

The *Modoc* mineral claim, also held by J. S. McMillan, lies about 1,000 feet north of the *Reco*. Here there was visible, in the bed of the creek, an irregular exposure of impure magnetite, carrying a considerable percentage of iron sulphides and a very small percentage of copper pyrites. The deposit appears to be cut off by a dyke and no ore of commercial value was visible.

Huston Inlet.

Huston inlet lies immediately to the west of Harriet harbour and is a fine body of navigable water. Some little prospecting has been done on its eastern shore, on the range of hills which separates it from Harriet harbour, but the locality must as yet be considered as unexplored. The few recorded claims are quite unprospected and undeveloped, only a little surface scratching having been attempted.

Gold Cliff.

A small cabin, known as Camp Surprise, has been erected on North bay, a small arm of the main inlet, from which a crude foot-trail leads up to the *Gold Cliff* mineral claim, a claim staked in the names of John McLennan, Smith and Frank Watson. Here, on a lime-diabase contact, dipping with the hill at an angle

of 35°, and a strike S.W. and N.E., there was visible a deposit consisting of 12 inches in thickness of magnetite, overlain by 24 inches of calcite, carrying copper pyrites and iron pyrites, and again, above this, a thin seam of quartz and calcite, fairly crystalline, and above these the country rock was exposed. This exposure was visible for some distance along a very steep hillside, the outcrop being nearly horizontal, broken somewhat by vertical faults which interfered with its continuity. Some bunches of very pretty copper ore were visible, but they were small. As a prospect, there is encouragement to some further development, but nothing so far shown has any economic values. An assay, showing considerable gold, was reported from the claim, but it has not been confirmed by any subsequent samples and is regarded as doubtful.

The *Gold Peak*, an adjoining claim held by the same owners, was not visited, but was reported by Frank Watson, one of the owners, to be about the same as the *Gold Cliff*, but with even less development done.

On the opposite side of the valley of a small creek was the *Surprise* mineral claim, staked by Frank Watson and sold to C. H. Parks. It lies at an elevation of about 500 feet, and is three-quarters of a mile from the inlet, and is undeveloped. The ore, from samples seen, is pyrrhotite, carrying some copper pyrites.

About a mile from the sea, and farther up on Thunder mountain, on the north bank of the creek, the *Hercules*, *Ida* and *Dusky Maiden* mineral claims have been staked by McMillan, McEacheran and Frank Watson, and on these one assessment has been recorded. These claims were not visited, but are reported to contain a deposit of magnetite carrying copper sulphides.

BURNABY AND COPPER ISLANDS.

Red Raven.

The *Red Raven* mineral claim, on the south side of Copper island, a claim recently re-staked by Abe Johnson and so named by him, is of interest as having been the spot upon which Francis Poole and his party did their work in 1862-3, and where, about five years ago, a prospector named Abe Heino, having re-located the property, did considerable work, the remains of which are still visible and excite in visitors much curiosity as to "what he was driving at."

Geologically, the island is very similar to that portion of Moresby island immediately to the south, and some two or three miles distant. The sedimentary rocks are so cut up by later volcanic rocks as to give the appearance of the limestones being the intrusions and the volcanics the country rocks.

In a little cove running into the island some 30 to 40 feet, with nearly perpendicular walls and a rocky floor, submerged at high tide, a tunnel was driven from the level of the rock floor for a distance of 35 feet, and from this tunnel a cross-cut had been started off to the right, towards the water, for some 10 feet. The work had been done along a limestone diabase contact, along which was visible a little magnetite carrying some copper pyrites, but in no place was the mineralisation sufficient to be of any importance. The present owner has done no work on the property, the work seen having been done years previously. The property is interesting, as showing what Poole spent two years upon, while so many much more promising showings were "sticking out of the ground" within three or four miles, on the larger island.

On Burnaby island more of the old work done by Poole in 1863 was visible. On the south side of the island there was found a shaft, with very old timbers, sunk about 12 feet deep, which had followed down a limestone diabase contact on which a small quantity of copper sulphides was visible. Some short distance to the east, along the steep rocks of the

shore, on a contact of crystalline limestone and trap rock, a shelf had been blasted out, sufficient for a foothold, from which a tunnel had been driven in for 12 feet, at the inner end of which was a winze nine feet deep. The contact carried a little copper pyrites and some magnetite, but was unimportant. It could not be learned if these old workings had been recently re-staked.

Sea King.

The *Sea King* mineral claim is a recent staking on the south-west side of Burnaby island, by Captain Locke, of the steamship "Princess Beatrice." On the beach, between high and low water, there is exposed a contact of limestone and fine-grained trap, along which stands, exposed by action of the waters, a contact deposit of magnetite, from two to three feet wide, dipping at an angle of 80° to the west. The magnetite carries some iron pyrites and a small percentage of copper pyrites.

In a small gulch, a short distance to the west, there is a light gray coloured igneous dyke, fairly crystalline, and showing some horneblende, having a width of four or five feet, containing some stringers of calcite and also some magnetite and copper pyrites. Some little surface stripping had recently been done, with an idea of tracing out the contact, which was found to contain some copper pyrites.

Skincuttle Island Claims.

On Skincuttle island was seen more of the prospecting work done by Poole in 1863, for the Queen Charlotte Mining Company, of Victoria. Here a shaft had been sunk about 15 feet deep, near which some open cuts had been made. The shaft was full of water, but had evidently been sunk down on one of the fissures exposed to the open cut, which was from 12 to 15 inches wide and contained a considerable percentage of iron pyrites and some copper pyrites. Messrs. Raper, Hamilton, Law, *et al.*, of Texada island, had re-staked this property and did some work on it, but do not appear to have recorded the last work done.

Klunkwoi Bay.

On Saturday, August 31st, thanks to the courtesy of Mr. Ikeda, of the Ikeda Bay mines, the writer was loaned a gasoline motor boat with two men, and a start was made for a group of claims situated on Klunkwoi bay, at the north end of Darwin sound and inside of Lyell island. The passages inside of Burnaby and Lyell islands were taken, as being more protected from wind and sea. This inside passage is at all seasons suitable for a small boat, although the channel inside of Burnaby island is only one fathom deep at low water and is most tortuous and difficult to follow. The distance from Ikeda bay to Klunkwoi bay is about 45 miles, and the run was made in less than eight hours.

Swede Group.

None of the claims in this section of the island have been long staked, the first being the *Swede* group, staked in January, 1907, by Larsen, Pearson and Rogers. The group consists of eight claims, the *Excelsior*, *Pearson*, *Larsen*, *Keystone*, *Bob*, *Anaconda*, *Seattle* and *Homestake* mineral claims. The claims are so located as to cover a small peninsula projecting into Klunkwoi bay and separating two smaller bays or fiords. This peninsula is not over 2,500 feet across and rises to a height above the water of about 1,000 feet, the average slope of the hillside being about 46°, and this steep slope continues under the sea level, giving deep water at which any vessel can lie almost along the shore line. Although the claims had only been located for about six months, it was found that the owners had done a very considerable amount of development work, which, as far as it had progressed, proved more than encouraging. This work consisted of a number of open cuts running horizontally along the hillside at intervals from the sea-level to a height of 700 feet above. These cuts are on the *Larsen* claim, and may be said to have prospected a strip of hillside about 250 feet wide extending from the shore up to an elevation of 700 feet.

The line of these cuts continued over the hill on to the south slope, has been further prospected on the *Anaconda* claim, and found there to be similar in all respects; therefore, it is to be presumed that the mineralised zone is continuous over the peninsula along the line prospected in a N. 63° E. direction.

A short distance to the west of the workings a fault plane has cut across the peninsula, the line of its break showing clearly on the mountain side. To the west of this break the prospectors claim not to have found mineral, but it is suspected their investigation has not been very thorough, as the geological conditions are the same on either side of the break, and it has not been a channel of infiltration of mineral. The country rock right across the peninsula appears to be uniform and the same, a much altered diabase,* cut by a few later trap dykes, which, however, do not appear to have any effect upon the mineralisation.

As far as disclosed in the cuts, the 4 or 6 feet of the rock lying next the surface contain very little mineral, but when this depth is reached the rock is found to become impregnated with copper pyrites and occasionally bornite, and this impregnation in the deeper cuts appears to be growing greater with depth as far as the work has proceeded; this is, at the greatest, a depth of some 15 feet. Sometimes the chalcopyrite occurs in little granules, peppered all through the rock, and again it occurs in little veinlets, constituting an ore difficult to estimate the copper contents of by the eye.

Samples were taken from the most extensive of the open cuts, viz., the one at an elevation of about 75 feet above the sea level; of these a general sample gadded off the face over a distance of 75 feet horizontally, and for the height of the cut, except the upper "barren" six feet, gave upon assay better than 2 % copper, with traces of gold and silver.

Another sample, taken by the writer, and which was intended to represent ore as it would be roughly hand-picked, gave copper, 5.7 %, silver, 0.2 oz. to ton and trace of gold.

A third sample, taken on the south slope of the peninsula from an open cut on the *Anaconda* claim, gave 2.9 % copper, with traces of gold and silver.

The occurrence of the mineral is such as to render hopeless any form of water concentration, and the ore would have to be smelted direct, but for such treatment it is admirably suited, as the gangue matter is self-fluxing and very easily melted.

To summarise the situation, the claims have not as yet been developed sufficiently to absolutely prove their ultimate value. They are still only prospects, but the success attending the development done commands attention and gives promise of an exceedingly large, but low grade, deposit of copper ore. The location of the properties is ideal for the cheapest kind of mining, and the facilities for cheap transportation by vessel could scarcely be improved upon.

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

Last Chance Group.

The *Last Chance* group of six claims, the *Last Chance*, *Goodenough*, *Jumbo*, *All Right*, *No Doubt* and *Star*, owned by Messrs. Wintermute, McEachern and Jones, lies to the S.W. of and adjoining the *Swede* group near the shore of the next bay to the south. These claims are more recently located than the

Microscopic examination made by Dr. Dresser, of McGill University (4,613).—This is a massive, dark green, fine-grained rock, showing spots of epidote, and a few grains of pyrite and pyrrhotite. It is found to consist essentially of plagioclase, feldspar and pyroxene. There are also present accessory magnetite, as well as the secondary minerals, chlorite and leucoxene. No quartz or olivine could be found. The structure is ophitic, and the rock is consequently a *diabase*.

Swede group and have not had the same amount of development work done, but such as has been done, a couple of large open cuts, discloses conditions almost identical with those found in the *Swede* group, and, as the ore found is also in direct line with the mineralised zone on the *Swede* group, it is fair to suppose it to be a direct continuation of the *Swede* group deposit. The most important development work has been done on the *Last Chance* claim, at a distance of 1,600 feet from the bay, at an elevation of about 200 feet, and consists of an open cut in rock 45 feet long in a N. & S. direction, across the ore body, and has a face of six feet in depth. A general sample, made up of small pieces broken off the ore already mined, gave, upon assay, copper, 2.7 %, silver, 0.4 oz. to ton, and trace of gold.

The country rock has been classed, after microscopic examination, as a "Porphyritic diabase." †

As far as the development has gone, these claims give promise similar to the *Swede* group, and the camp as a whole indicates the presence of very large quantities of low-grade copper ore. The deposits are so admirably situated for cheap mining and transportation, and the character of gangue matter is such as to permit of very cheap smelting, that it is estimated that such ore is well within the commercial limit and can be treated at a profit, despite the fact that there is no appreciable quantity of gold or silver present.

The formation in which these deposits occur would appear to extend for a considerable width east and west, and is found again to the north-west on the shores of Skidegate channel, near the Narrows, constituting a large area of territory which may prove productive, and is, at least, well worth prospecting.

This past summer a number of claims have been staked in the vicinity of the *Swede* group and farther up the coast, but, at the time, no work of any sort had been done on them and they were not visited.

Old Shaft.

On September 2nd, the trip northward was resumed in the gasoline launch to Skidegate, a further distance of 45 miles, a stop being made at the *Old Shaft*, some seven miles south of the Sand Spit.

Old Shaft.

The *Old Shaft*, judging by the size of trees growing on the old dump, was sunk some 40 to 50 years ago, but by whom it is not known, nor does there seem to be any Indian tradition regarding it. *The property has recently been taken up again by Shelden & Shabbard, who have bonded it to D. R. Young and associates, who were unwatering it, employing one white man and two Indians. At that

†As result of microscopic examination, Dr. Dresser, of McGill University, reports:—"The rock is fine grained and of a uniform green colour. The slide is found to be much decomposed. Feldspar is present in a few phenocrysts and in more numerous small lathe-shaped crystals of plagioclase. There are numerous grains of augite and epidote with much chlorite, the latter being in larger irregular masses. It is a Porphyritic diabase.

*Since the above report was written the following appeared in a local paper:—"In 1862 a miner from Australia arrived in Victoria with the intention of going to Cariboo, but as there was some excitement about copper on Queen Charlotte Island at that time, decided to try his luck in copper up there. On his arrival at Skidegate he prospected down the coast, and found the copper cropping on which he put down the mysterious shaft. He and his men worked there to the end of the year, then came down to Victoria to spend the winter, and early in the spring of 1863 he returned to the mine, taking with him two shifts of men, in order to sink the shaft as rapidly as possible. In August, 1863, the writer was prospecting on Queen Charlotte Island and called at the shaft, which at that time was down about 60 feet, and the men were driving down night and day. In conversation with the owner, I stated: 'You have not much of a cropping of copper for going to so much expense.' He replied: 'I expect to strike a large body of copper when I get deeper.' But what he found deeper I do not know, but at the end of the year 1863 he covered up the shaft and came down to Victoria, and from there he started back to Australia *via* San Francisco, and has not been heard of since. In conclusion, I may tell you that the Australian miner's name was Waddington, a nephew of Alfred Waddington, a pioneer of British Columbia, well known to all old-timers here.

"C. McK. SMITH."

date the shaft had been unwatered to about 90 feet depth, and the foreman reported having sounded it for a further depth of 45 feet. Some short distance above the 90-foot mark, two cross-cuts had been found, one to the east and one to the west, extending about twenty-five feet from the shaft. The shaft had not been cleaned out, so, of course, nothing was visible in it as to ore.

The country rock in the vicinity, as exposed on the beach, is an agglomerate, in which a fissure was seen a few inches wide, carrying copper pyrites in quartz. Selected samples of clear mineral assayed 10 % copper and two oz. of silver to the ton. This fissure led directly to the old shaft, distant only a few feet, and it was evidently on this fissure that the shaft had been sunk and along which the two cross-cuts had been driven. The fissure, as seen on the beach, was too small to be of any importance, and the old dump exhibited no commercial ore. The owners claim to have discovered a more extensive fissure, running north and south—that is, at right angles to the first, at a distance of some 100 feet to the west of the shaft and in the woods—to which it is proposed to drive a cross-cut from the shaft at some depth. The white man in charge did not know where the exposure of this north and south vein was, and it was consequently not seen by the writer.

GOLD HARBOUR.

Mr. John McLellan, a British Columbia Assayer, has been working during the past summer at Gold harbour, a bay of Moore channel, on the west coast of Moresby island, just south of Skidegate channel. It was at this point the Hudson Bay Company, in 1852, found and mined a deposit of gold-bearing quartz. Mr. McLellan examined the old workings but could find no continuation of the values, though he discovered in the vicinity another small quartz vein carrying gold in considerable proportions. He reports the vein as being rich but very small; he erected last season an arrastra driven by water power and managed to extract a certain amount of gold, bringing a small "brick" to Victoria.

SKEENA MINING DIVISION.

REPORT BY WM. MANSON, GOLD COMMISSIONER.

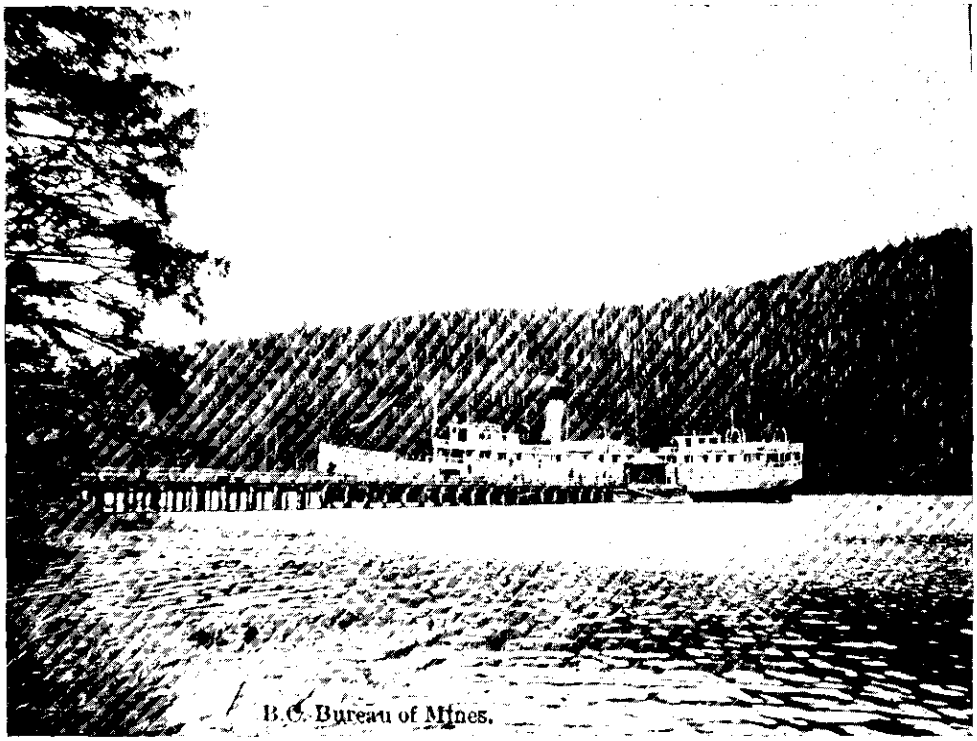
I have the honour to submit the annual report on mining operations in the Skeena Mining Division for the year 1907.

During the year considerable interest has been manifested in mining in the district, and indications from various points give promise of important development in the near future.

Two mines have made shipments during 1907—the *Outsiders* mine, Maple bay, Portland canal, operated by the Brown Alaska Company, and the *Ikeda* mines, at Ikeda bay, Moresby island, operated by Awaya, Ikeda & Co., Ltd. Other claim owners are rapidly developing their properties, and it is expected before long that many mines will be added to the shipping list.

QUEEN CHARLOTTE ISLANDS.

Important mining activity is in progress on Queen Charlotte islands, principally on Moresby island. I have recently had an opportunity of visiting several of the properties at Jedway, Ikeda bay, and Klunkwoi bay, and was much impressed with the appearance of the mineral and with the confidence of the prospectors and mine-owners as to the future of this section. Much interest has been created by the recent discovery of coal, which is said to be a coking quality, found in that vicinity. If this should prove to be a suitable coal, and in sufficient quantity, it would very materially aid in the development of mineral properties which will soon require facilities for smelting the ore on the ground.



IKEDA BAY WHARF-MORESBY ISLAND Q. C. I.

TOWN OF SKIDEGATE Q. C. ISLANDS.

At the present there are three Deputy Recording offices on Queen Charlotte islands ; one each at Masset and Skidegate, on Graham island, and one at Jedway, on Moresby island. The volume of business being done there, particularly at the latter point, will warrant the creation of a separate Mining Division for Queen Charlotte islands at an early date.*

It is unnecessary for me to go into details in regard to the various properties at this point, as Bulletin No. 1, 1908, recently issued by the Provincial Mineralogist, gives full particulars.

Bear River, Portland Canal.

The principal development work at this point has taken place on Glacier creek, where the Portland Canal Mining and Development Co., Ltd., has sunk a shaft 75 feet in depth and has made several deep open cuts on its property, the *Gipsy* group. Three tunnels have also been run, respectively 26 feet, 115 feet and 120 feet, with cross-cuts from these tunnels, aggregating 36 feet on the *Little Joe* claim. A favourable report has been made on this property by W. J. Elmdorf, a mining engineer of Spokane, Washington, a copy of which has been transmitted to you.

The *Columbia* group, owned by Messrs. Rush and Bagg, is situated on the north fork of Glacier creek. A tunnel 28 feet long was driven last season, besides a number of trenches and open cuts.

On the *Lake View* group, owned by Messrs. McKay and Ribeau, a shaft was sunk to the depth of 15 feet with a cross-cut at the bottom 10 feet, and an open cut on the ledge was run for a distance of 75 feet.

Good values of gold and silver have been found on the *Jumbo* and *Ben Bolt* mineral claims, owned by Samuel Gourley. A considerable amount of work has been done on these two claims, as well as on the *Rex*, *Ajax*, *Minnie* and *Maid of Erin*.

The Stewart Mining and Development Company recently acquired the property consisting of the claims *Sundown*, *Sunbeam*, *Ben Hur* and *George E.*, on which a good deal of work has been done. It is the intention of this company to prosecute the operations during the coming season.

A number of other claim-holders have done assessment work on their properties, the showings and values proving to their satisfaction.

Bitter Creek.

The *Grizzley* group of claims, owned by Messrs. Chambers and Rainey, is situated on this creek, on which a tunnel 20 feet long has been driven.

American Creek.

The *American Girl* group, situated on the above creek, has had additional tunnel work done for a distance of 20 feet and is again in ore.

Salmon River.

The *Buena Vista* group and the *Nabob* mineral claim are situated on the Salmon river, and are owned by Lindeborg Bros. Thirty-two feet of tunnel work was done during the past year on the *Buena Vista*, and an open cut 12 feet long and 10 feet deep has been cut on the *Nabob*. These claims all show good values in gold, copper and silver.

The foregoing are the principal properties at the head of Portland canal, which carry gold, silver-lead and copper ore. Quite a number of locations have been made during the year, and the outlook for the camp is very promising.

See foot-note page, 57.

MAPLE BAY, PORTLAND CANAL.

The *Outsiders* mine, at this point, was in operation for nearly two years by the Brown Alaska Company, and was making good progress as a shipping property until last October, when, unfortunately, owing to the financial depression and the fall in the price of copper, the management was compelled temporarily to cease operations.

OBSERVATORY INLET.

A number of locations were made on Observatory inlet during the year. A deposit of molybdenum was discovered last fall on the *Mammoth* and *Conundrum* claims.

The *Hidden Creek* group of mineral claims is considered a valuable property and recently changed hands at a good figure.

BELLA COOLA.

The Bella Coola section has recently been included in the Skeena Mining Division.

Mining in this vicinity is comparatively new and previous to last year very little had been done. During the year 44 free miners' certificates were issued and 62 claims recorded.

Development work has been done on the *Sure Copper* group, consisting of two tunnels 40 feet and 100 feet long, respectively. On an average, 8 men have been employed during the season.

The *Bella Coola* group of claims, owned by the Bella Coola Copper Co., Ltd., is situated on the north side of Burk channel, on the Bella Coola mountain. Considerable surface work and open cuts have been done on this property.

KITIMAT.

A tunnel 155 feet long has been driven, with cross-cuts 17 and 24 feet; also surface work and open cuts on the *Golden Crown* group of claims, owned by Messrs. Steele and Dunn.

The *Bimetallic* group of claims is also situated at Kitimat, and is owned by Lindeborg Bros. During the last year a tunnel has been driven for a distance of 32 feet, making in all a tunnel of 72 feet. The ore-body is over 100 feet wide.

The Deputy Recorder's office at this point has been closed for some time, but for the convenience of the people in this locality it should be opened again during the coming spring.

From the sub-recording offices at Prince Rupert, Essington, Hartley bay and Unuk river there is very little new to report. Claims have been recorded, prospecting is going on, and the necessary assessment work is being done.

OFFICE STATISTICS—SKEENA MINING DIVISION.

Free miners' certificates issued	578
Mineral claims recorded	561
Certificates of work issued	373
Bills of sale, bonds, etc., recorded	178
Certificates of improvements	31

Revenue.

Free miners' certificates	$2,501 45
Mining receipts	5,808 95
Total	$8,310 40

OMINECA MINING DIVISION.*

REPORT BY F. W. VALLEAU, GOLD COMMISSIONER. (OFFICE AT HAZELTON.)

I have the honour to submit herewith my annual report on the progress of mining in the Omineca Mining Division for the year ending December 31st, 1907.

This year's report, I am sorry to say, must necessarily be very incomplete, on account of my only taking charge of my district on the 1st of September, arriving here about the middle of October, as I was detained at Essington for 12 days before I could procure a canoe and crew to take me up the Skeena river, all the steamers, as you are aware, having been either lost or put out of service during the past season.

This Division being the largest one in the Province, and the distances so great between the sub-mining recording offices at St. John, Fort Grahame, and Stuart lake, with no communication between them and Hazelton either by travel or mail, I have not been able to hear from them as to what is being done in their sections, but I hope to get returns from them during the winter, when I will forward them to you in a supplementary report.

In and around Manson, Slate and Lost creeks, the following work has been done during the past season :—

The Kildare Gulch Mining Company, of Ottawa, had about 12 men engaged in prospecting its ground on Slate creek during the entire season, but, from what I have been able to learn, the returns for this season's work have not been satisfactory. I am sorry to have to report the death by drowning on the Skeena river of Mr. James Munroe, late manager for this company.

Lost creek is being worked by Messrs. Steele, Martin and Mullon, who are on the ground this winter prospecting their ground by running a tunnel into the east bank above the canyon. A few Chinamen worked on Germansen creek this past season, but as they had gone down the river before I reached here I am unable to say what they took out.

* The boundaries of this mining division have been somewhat altered by an Order in Council gazetted May 3rd, 1906, a copy of which follows :

"OMINECA MINING DIVISION.

"Commencing on the eastern boundary of the Province at a point where such boundary crosses the divide separating the drainage area of the Hay river on the north from the drainage area of the tributaries of the Peace river on the south ; thence westerly along height of land forming divide separating the drainage area of the Hay river and tributaries of the Liard river on the north from the drainage area of the Peace river on the south, to a point where such height of land intersects the height of land separating the headwaters of the Skeena river from the headwaters of the Stikine and Liard rivers ; thence south-westerly following the height of land separating the drainage area of the Skeena river on the east from the drainage area of the Naas river and tributaries on the west to the intersection of the height of land forming the north-western boundary of the watershed of the Kitsumgallum river ; thence along this latter divide to a crossing of the Skeena river at a point three miles below the mouth of the Copper (Zymoetz) river ; thence south-easterly along the height of land separating the drainage area of the Copper (Zymoetz) river from that of Thornhill creek ; thence continuing south-easterly along the height of land between the Copper (Zymoetz) river and its tributaries on the north-east and the Kitimat river on the south-west to a point on the height of land separating the drainage area of Gardner canal on the west from the tributaries of the Nechako river on the east ; thence southerly and easterly following the height of land forming the west and southern boundaries of the watershed of the Nechako river above the junction of the Stuart to the crossing of the Nechako river at the mouth of the Stuart ; thence easterly along height of land between the drainage area of the Nechako on the south and the Salmon river on the north, crossing the Salmon river at a point five miles from where the said Salmon river empties into the Fraser river and still following the height of land to a point between Summit lake on the north and the Fraser river on the south ; thence northerly and easterly along the height of land dividing the drainage area of the Fraser and its tributaries on the south from the drainage area of the Peace river and its tributaries on the north, continuing to a point where the southern boundary of the watershed of the Peace river is cut by the eastern boundary of the Province ; thence north along such eastern boundary to point of commencement."

Tom creek is still being worked by the Messrs. May and Condit Brothers, who report that work has been carried on continuously from the opening of the season until the middle of October. The depth of ground averaged about 20 feet, 16 feet of which was removed by ground-sluicing, and the remaining 4 feet shovelled through the slices. Five men were employed throughout the season. This is the only property now being worked on this creek. The Messrs. May and Condit are also running a tunnel on the lower portion of their ground and are now in some 260 feet.

No work has been done on Vital creek this summer by either of the two companies holding leases thereon, a couple of Chinamen being the only persons on this creek.

In the Aldermere section of this Division there has been great activity in quartz mining, and a large number of very promising locations have been opened up, notably in the Howson basin, Telkwa valley, and the Hudson Bay mountain. A number of these claims have been bonded to outside capitalists and some of the bonds have been taken up.

A new mineral zone has been discovered in the Babine range to the east of these camps, and some valuable finds are reported; these also have been inspected by intending purchasers and some sales made. The nature of the ore found was galena and copper pyrites.

The camps on the divide between the Telkwa and Zymoetz rivers have also had a large amount of development work done this season, and are reported to be showing some very fine ore.

Work on the different claims at Kitsilas canyon is progressing favourably, and these claims seem destined to become shipping mines when the Grand Trunk Railway is built.

There has been a discovery of placer gold made in the Ingenika river this past season, which promises to be the making of a good camp there. The Jenson Brothers came through from there this past fall and reported having found good prospects on McConnell creek, a tributary of the Ingenika river, and have now returned to the creek with five miners and provisions for a year, to prospect the ground.

OFFICE STATISTICS—OMINECA DISTRICT.

Mineral claims recorded	132
Hydraulic leases applied for	2
" " issued	2
Bills of sale (recorded) mineral	55
Free miners' certificates	237
" " " (special)	1
" " " (company)	1
Water records in force	7
Certificate of work issued	163
Mining receipts issued	317
Payment in lieu of work	4
Bills of sale	55
Placer claims recorded	6

REVENUE COLLECTED.

Free miners' certificates (individual)	$1,238 00
" " (company)	137 00
Mining receipts, lease rentals	520 00
Water rents	225 00
Mineral claims recorded	337 50
Payment in lieu of work	500 00
Placer claims recorded	5 00
Carried forward	$2,962 50

Office Statistics—Omineca District.—*Concluded.*

Brought forward	$2,962 50
Placer claims re-recorded	15 00
Mining receipts, general	1,615 95
Revenue tax	360 00
Trade licences	110 00
Packers' licences	90 00
Liquor licences	665 65
Land revenue	1,878 00
Timber dues	1,150 00
Marriage licences	10 00
Magistrate's Court	1,007 00
Miscellaneous	1 50
	$9,865 60

As regards the land revenue collected, I beg to point out that the total given here is only that collected by myself since being in charge of my District, the year's collections from January to the end of August having been paid into the Port Simpson Office; and as this has been a year when the land revenue has been abnormally heavy, the returns from this District, as shown herewith, do not give credit to it anywhere near the amount due. I cannot close my report without making mention that to Mr. Kirby, Provincial Constable, who has been acting as Mining Recorder, is due a great deal of praise for the very perfect and efficient manner he has kept all mining records in this office for the past year.

THE BULKLEY VALLEY, B. C.

By W. W. Leach.

(*From Summary Report of Geological Survey of Canada, 1907.*)

According to instructions, work was continued in the Bulkley valley and vicinity during the past season. The topographical map compiled last year, and now in the engraver's hands, was used as a base, being extended both to the north and south, but chiefly to the north, including the Bulkley valley as far as Moricetown, the Hudson Bay mountains and the head-waters of the Zymoetz (Copper) river, as well as some work done on the head of Paint creek and the Morice river.

A carefully made transit and chain traverse was run from the town of Telkwa to Moricetown, as a check on the triangulation of last year.

The season, on the whole, was unfavourable for topographical work, a late wet spring being followed by an exceptionally dry, hot summer, with, as the result, many forest fires and a dense, smoky atmosphere during the short season in which work is possible in the higher mountains.

The greater part of the season was spent in the upper part of the Telkwa river and the country lying between that river and the Zymoetz; this district has been very little prospected and the absence of trails made progress slow.

Topography.

The Telkwa, above the south fork, occupies a wide, flat valley, the river meandering through swampy meadows; its course here is approximately north-east and south-west. About twelve miles from the south fork, near Mill creek, the valley turns sharply to the south

and at the bend an unexpected and low pass leads off to the west to Summit creek, a branch of the Zymoetz; this pass may be of great importance, for it has been occupied by one of the several surveyed lines of the Grand Trunk Pacific Ry.

Milk creek rises in a high and rugged range of mountains forming the divide between the Zymoetz and the Telkwa rivers; this range rapidly decreases in height to the eastward, forming a plateau-like country, where the highest point reaches an elevation of only 6,600 feet, finally dropping down to a low pass, in which Pass creek rises, and which separates it from the Hudson Bay mountains.

The last named range, though quite rugged, the highest points reaching at least 8,000 feet, is cut off on all sides by low country and, therefore, forms a very conspicuous feature of the district.

In most cases the headwaters of the Zymoetz occupy wide, flat valleys interspersed with many small lakes and much meadow land.

The country, as a whole, with the exception of the Coast range, is characterised by a series of isolated groups of mountains surrounded by low valleys in which the river and creek systems have little regularity.

GEOLOGY.

By far the greater part of the country traversed is underlain, as described in last year's report, by rocks of the porphyrite group, mainly composed of andesites, tuffs, and agglomerates, and almost entirely of volcanic origin.

From the head of Milk creek westward the rocks which are all of the Coast crystalline series, have not been studied in detail, no minerals of economic importance having yet been discovered in them.

The most important rocks, from the miner's point of view, are those which have been called "the later eruptives," as all the important mineral discoveries of the district are situated in the volcanics near their contact with these rocks, or in or alongside dikes from their main bodies. These eruptives have also had an important influence on the quality of the coal. They constitute the youngest rocks of the country, cutting both the volcanics and the coal formation, and are found usually either as a pinkish syenite porphyry, or as a light greyish granite porphyry, the dikes from them varying greatly in appearance.

Two important areas, one on Scallon creek, the other at the head of Glacier creek, were referred to last year. Another small area was noted on the ridge between Morice river and Goldstream, and yet another near the head of the north fork of the Telkwa; little or no prospecting has been done in the neighbourhood of either. A large area of these eruptives was found on the western ridges of the Hudson Bay mountains. This locality has received much attention of late and many mineral claims have been located.

MINERAL CLAIMS.

Immediately on arriving at Telkwa (at the mouth of the Telkwa river) a short trip was made to Hankin's camp, situated at the head of Goat creek, where a group of claims has been located by Messrs. Loring, Forrest and the Hankin brothers. These are among the oldest mineral locations in the district, and a good deal of prospecting, consisting of open cuts and several short tunnels, has been done on them.

The country rock consists of typical beds of volcanics, tuffs, agglomerates, andesites, etc., belonging to the porphyrite group and here lying nearly horizontal and well exposed at many places on both sides of the rather deep, narrow valley. These beds are cut by a number of roughly parallel, light-coloured quartzose dikes with a nearly vertical dip and crossing the valley approximately at right angles.

The mineral deposits occur in nearly horizontal beds following the bedding planes of the volcanics and show decided enrichment in the immediate vicinity of the dikes; the mineral bearing solutions have apparently ascended along the walls of the dikes and thence, following the bedding planes, have decomposed the more readily attacked volcanic beds.

On the *Eldorado, Naiad* and *Telkwa* claims the best showings of mineral are to be met with; here at least two beds of ore, each about five feet in thickness, may be seen, consisting of iron pyrites, copper pyrites, a little pyrrhotite, and magnetite, in a gangue of altered country rock, epidote, quartz, etc. The percentage of copper is small, but, according to the owners, fair values in gold are to be found. The ore bodies are very much thicker in places, more particularly immediately alongside of the dikes.

Many of the claims on Howson creek were described in last year's summary, but this locality was again visited this year, considerable development work having been done and various new claims located.

At the *Evening* claim a cross-cut has been run for 70 feet in low-grade ore, the main body, exposed by cuts on surface, not having been yet reached.

On the *Duchess* a tunnel has been driven for 60 feet, starting at a very good exposure of copper ore and following the foot-wall of the ore-bearing dyke. The ore is continuous for the length of the tunnel. Several open-cuts have been made up the hill on what is supposed to be the *Duchess* dike; one of these shows six feet of good ore, the others very little, but the dike is much decomposed and iron-stained.

There are a number of parallel dikes here, some of them ore-bearing, which have a general north and south strike, about at right angles to the direction of the valley. As the ground is mostly drift-covered, and the dikes are often quite close to one another, it is a difficult problem to ascertain, for any distance, which dike one is following.

The *Countess* claim, owned by the same company as is the *Duchess* (The Telkwa Mines, Limited), is situated near the top of the ridge on what is probably a similar and parallel dike. An open cut has been made here, but not much ore is in sight; a small cut, however, on the same dike at the top of the ridge has a much better appearance, the ore there being similar to that at the *Duchess*.

Across the ridge, to the north, in a small basin in which rises a branch of Howson creek, a number of claims have been staked. Among these the *Standard, Princess* and *Contention* are also owned by the Telkwa Mines, Limited; on only one of these, the *Standard*, was any work seen. It consisted of a small open cut showing from 18 to 20 inches of good ore, composed of chalcopyrite and specular iron with a little quartz. The ore occurs in a dike along the hanging wall.

In this basin, as at the *Evening* and *Duchess*, a number of parallel dikes occur, with approximate north and south strikes and cutting the bedded volcanics; the ore is found in the dikes, usually near the walls, and at times extends into the country rock.

The Telkwa Mining, Milling and Development Company have also a number of claims here, among others the *Whispering Wind* and *Silver Heels*. On the latter a large dike from 50 to 60 feet wide exists, striking north and south and dipping 75 to 80 degrees east; on the easterly or hanging wall about 4 feet of chalcopyrite and specular iron ore was seen, but no work has been done; on the westerly wall, however, a large open cut shows 15 feet of good ore, consisting of chalcopyrite, specular iron and a little iron pyrites with a gangue of quartz and altered country rock.

On the south side of Howson creek a number of claims owned by the Telkwa Mining, Milling and Development Company were visited, the most important being the *Walter, Iron Colt, Granville, Strathcona* and *Anna-Eva*. All of these were seen last year, and little has been done since. The ore occurs in dikes from the large porphyry area on Scallon creek cutting

the rocks of the porphyrite group, and is generally much decomposed. A sample of black, earthy material from the *Strathcona* was found to consist of oxides of copper, manganese and iron.

Most work has been done on the *Anna-Eva*, an open cut over 150 feet in length having been made across the face of the dike. The mineralisation is irregular and not very heavy, and the whole dike is much decomposed, the ore consisting of copper carbonates, chalcopyrite, iron pyrites and specular iron. A short distance to the south, on top of the hill, where the ground is heavily drift-covered, a new cut had been started, showing much higher grade ore, chiefly chalcopyrite and specular iron with a good deal of quartz, across a width of about 25 feet.

The Hudson Bay mountains were visited late in the summer, but as all the prospectors had left for the season, it was almost impossible to find where the chief claims were situated. However, a few were seen.

At the head of Lyons creek, on the eastern slope of the range, two claims, the *Copper Queen* and *Iron Mask*, are near the edge of a small granite area cutting the volcanics, and the mineralisation appears to follow the bedding of the decomposed andesites. The ore consists almost entirely of arsenical pyrites in a quartzose gangue, but not enough work has been done to show the extent of the deposit. A specimen of this ore gave by assay: gold, $8; silver, 0.52 ozs. to the ton.

About one mile down Lyons creek, on the south side, some work had been done, but the name of the claim could not be ascertained. The ore occurs in a large dike, about 75 feet wide, near the hanging wall, and shows about 3 feet of fairly well mineralised material consisting of arsenical pyrites, some copper carbonates and a very rusty quartz in bands parallel to the dike wall.

On the western slope of the mountains, near the head of a small stream running into the Zymoetz river, the *Tower Hill* claim is situated. The country rock here, consisting chiefly of red and greenish andesites, has been tremendously disturbed, and some splendid samples of folding on a large scale may be seen. A number of open cuts have been made in what appears to be a thin bed of greenish andesite, much altered and containing some copper carbonates, a very little bornite, some quartz, calcite, epidote, etc.

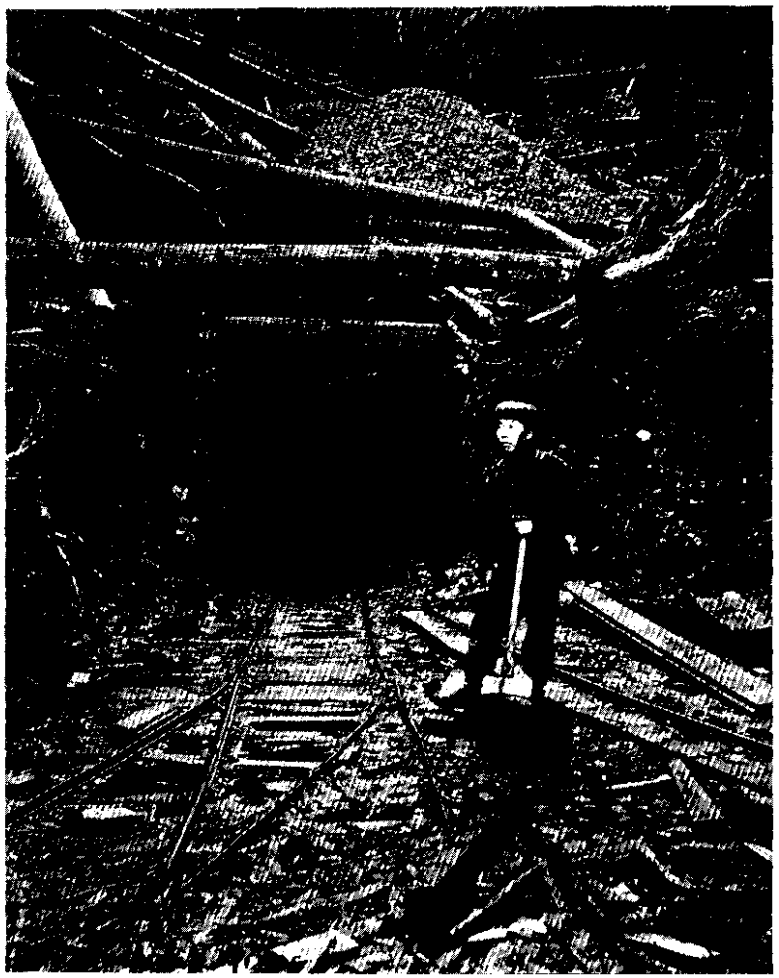
There are said to be other and better showings in this neighbourhood, but the writer was unable to find them.

COAL.

During the past year practically nothing has been done on the coal properties of the Kitimat Development Syndicate, the Cassiar Coal Company, or the Transcontinental Exploration Syndicate, all situated on the Telkwa river or on Goat creek, one of its tributaries. Until the route of the Grand Trunk Pacific railway is finally decided on, it is not probable that much development will be undertaken.

On the property of the Telkwa Mining, Milling and Development Company, located on Coal creek, at the headwaters of the Morice river, a little exploration work has been carried on, and the limits of this are fairly closely defined. Although the area is small, the coal is of very high grade, as the following analyses show:—

All Non-Coking.	Moisture.	Volatile Combusti'e Matter.	Fixed Carbon.	Ash.
1.—5 ft. 6 in. seam	1.36	10.87	80.82	6.95
2.—7 ft. 3 in. seam	0.80	11.10	78.90	9.20
3.—4 ft. 0 in. seam	0.58	10.80	82.70	5.90



No. 1 TUNNEL. LILY GROUP IKEDA BAY, MORESBY ISLAND.

No. 2 TUNNEL, LILY GROUP--IKEDA BAY, MORESBY ISLAND.

The anthracitic quality of this coal may be explained by its contiguity to two areas of later eruptive rocks, one at the head of Glacier creek and the other on the north side of Goldstream, and to the great heat and pressure consequent on their intrusion.

On Goldstream, a little below its junction with Coal creek, and separated from the above area by a short distance only, a new coal area was discovered this year. This area, about two by two miles and one-half, at its greatest diameters, is in the form of a basin, the coal outcropping on both sides of, and from 400 to 500 feet above the floor of, the valley. The coal dips towards the creek from both sides with a slope rather greater than that of the hills, so that it underlies the bed of the stream, although at no great depth.

Up Goldstream this area is separated from that on Coal creek—probably by an anticline, the coal measures having been removed from its axis by denudation. At the lower end the limits of the coal-bearing strata are not so clearly defined, but, in all probability, the creek has there cut through the coal measures to the underlying volcanics, this cutting being accentuated by another anticlinal fold.

The coal has been opened up at only one place, where two seams have been uncovered, the upper one showing 5½ feet of clean coal overlain by about 1½ feet of soft impure coaly material, the cut not having been extended far enough to locate the roof clearly. The lower seam shows 3½ feet of clean bright coal. No analyses have as yet been made of these coals, but in appearance they closely resemble the coal from Coal creek, analyses of which have been given above. At several other points across the basin the coal outcrop was noted, but no time was available to open up the seams.

No evidences of local disturbances or faulting of any great extent were noted.

Another and smaller area was seen about two miles farther down Goldstream, but has not been opened up.

Other areas of the coal-bearing rocks were noted at Driftwood creek, Moricetown, at the head of the Zymoetz river, and on Hudson Bay mountain, but at none of these localities has any workable seam been yet found, and it seems probable that the seams reach their maximum thickness in the Telkwa-Morice River district, and thin out rapidly, at least towards the north.

It is now fairly certain that no great coal field exists in the Bulkley Valley district from Hazelton to the headwaters of the Morice, but many comparatively small, isolated areas are known in which the coal varies from a lignitic to a semi-anthracite. In some of these areas the strata are greatly disturbed, much faulting and folding being in evidence.

The quality of the coal seems to depend on the proximity of the measures to the newer eruptive rocks, which are younger than the coal, and in places have sent out dikes cutting the seams.

A number of fossils were collected from the coal measures and adjacent beds; although none of these have as yet been determined, there is sufficient evidence to state that these rocks are probably lower cretaceous, though possibly jurassic.

PEACE RIVER–YUKON TRAIL.

NOTES BY THE PROVINCIAL MINERALOGIST.

For the last two years the R. N. W. Mounted Police have been engaged in making a trail from Fort St. John, on the Peace river, across British Columbia, *via* Fort Grahame and Fort Connelly, to the Yukon Telegraph line, which is then to be followed, with certain local variations, to Telegraph Creek, Atlin and White Horse in the Yukon. As the cutting out of this trail renders a section of the northern part of the Province more available to prospectors and others, the following particulars of the trail are given, taken from the Report of Commissioner Perry, of R. N. W. Mounted Police, for 1907, and from other sources.

From Edmonton a good waggon road leads to Athabaska Landing—a distance of approximately 100 miles—over which a stage runs twice a week, also numerous freight teams. There are excellent stopping houses on the road and a good hotel at the Landing. The Hudson Bay Company and Revillion Frères have large stores at the Landing, where ordinary supplies can be obtained,

From Athabaska Landing travel in winter is by sleigh road up the river on the ice to the mouth of Lesser Slave river, which is then followed up to the lake of the same name, to the Lesser Slave Lake post of the Hudson Bay Company.

In summer there is a steamer running on the Athabaska, from the Landing up to Lesser Slave river, from which point to Lesser Slave Lake post travel is up the river and lake by canoe or York boat, or, after leaving the steamer, horses can be taken over a trail following the north bank of the river and lake to the Post. The distance from the Landing to Lesser Slave Lake post is about 200 miles. At the Post there are a couple of good stores, etc., run by the Hudson Bay Co. and Revillion Frères. There is considerable settlement in this vicinity and a large half-breed colony, so that horses and packing outfit can usually be obtained here.

From the Post to Peace River Crossing is a distance of about 100 miles over a rather poor waggon road. At the Crossing there are two stores, and a North-West Mounted Police Barracks. The Peace river is crossed by a ferry, and the road continues along the north side of the river to Dunvegan and on to Fort St. John, a distance of 180 miles.

Dunvegan is the best point to leave the waggon road, for the Pouce Coupé country in British Columbia, as a few miles south of the river, opposite Dunvegan, there is the half-breed settlement of Spirit river, where horses can be obtained, and from where to the Pouce Coupé prairie there is a good trail and possible waggon road.

Fort St. John is the first place met with in British Columbia in coming from Edmonton, and here is located a Deputy Mining Recorder's office, where free miner's licences may be obtained and claims recorded. The police trail really only begins at Fort St. John, as the road to this point has been built for some years.

Leaving Fort St. John, the trail leads westward up the north side of the Peace river for 22 miles to the mouth of Cache creek, which it follows up to the north-west for 22 miles, when it crosses the north branch of the Halfway river. It then follows up the main Halfway river, now on the bench, now in the valley, to the junction of the Cypress river, 97 miles from Fort St. John. Here it turns westward, following up the valley, and enters the first range of mountains (Rocky mountains) at the 114-mile post, and, by an easy grade, crosses the range through Laurier pass. It now drops rapidly, crosses Ottertail creek above the forks and, mounting a low ridge, dives into a small valley, entering immediately the gorge of a small stream flowing from the west; this it follows up, crossing and re-crossing the bed of the

stream. Leaving this stream on the right, it climbs upwards for 1,000 feet to the summit of the second range, known as the Devil's canyon, 154 miles from St. John.

It soon drops again, by a steep descent, into the valley of a westward flowing stream, the bed and banks of which it follows down, with a mile or more of rough going, when the trail improves, until the crossing of the Ospika river—at 172-mile post—is reached, when it commences a long, steady climb to the summit of the third range—Herchmer pass—180 miles from St. John. From Fort Grahame it is 20 miles to the month of the Ingenika river, on which recent finds of placer gold are reported. At Fort Grahame the Hudson Bay Company has a post at which ordinary camp supplies can usually be had, but it is better to learn from the Company's head office in Victoria as to the stock on hand this season, before counting on supplies at Fort Grahame.

From Fort Grahame, the distance to Bear lake (Fort Connelly), is 116 miles in a general south-westerly direction. In that distance the trail crosses three mountain ranges, the first and second by easy grades and at no great elevation, but the third range is crossed at an altitude of 7,000 feet, by barometer, some 2,000 feet above the valley of the Omineca, the climb being made in six miles. Fort Connelly has been abandoned as a trading post and no supplies are to be obtained there.

From Fort Connelly to the line of the Yukon Telegraph trail is 53 miles, in a westerly direction, the trail meeting the Telegraph line four miles north of the "Fourth Cabin," which is 100 miles from Hazelton. This stretch of trail is said to be very good. Hazelton is the head of steamboat navigation on the Skeena river. It is the seat of the Gold Commissioner and Mining Recorder of the District, and has three or four stores where supplies of all sorts can be obtained; three hotels, post office, telegraph office, hospital, &c. Steamboat navigation opens on Skeena river about 1st of May and closes about end of October—both dates depending somewhat upon the season and state of water in the river.

Distances by R. N. W. M. Police Trail between Edmonton and Hazelton.

Explanation. To find the distance between any two points:—Read, from starting point in vertical list of names, across to column headed by place of destination and find distance there.	Edmonton.	Athabaska Landing	Lesser Slave Lake.	Peace River Crossing.	Dunvegan.	Fort St. John.	Cypress River.	Laurier Pass.	Devils' Canyon.	Ospika River.	Herchmer Pass.	Fort Grahame.	Fort Connelly.	Junction with Telegraph Line.	Hazelton.
Edmonton	0	100	300	400	470	580	677	694	734	752	760	788	904	957	1061
Athabaska Landing	100	0	200	300	370	480	577	594	634	652	660	688	804	857	961
Lesser Slave Lake	300	200	0	100	170	280	377	394	434	452	460	488	604	657	761
Peace River Crossing	400	300	100	0	70	180	277	294	334	352	360	388	504	557	661
Dunvegan	470	370	170	70	0	110	207	224	264	282	290	318	434	487	591
Fort St. John	580	480	280	180	110	0	97	114	154	172	180	208	324	377	481
Cypress River	667	577	377	277	207	97	0	17	57	75	83	111	227	280	384
Laurier Pass	694	594	394	294	224	114	17	0	40	58	66	94	210	263	367
Devils' Canyon	734	634	434	334	264	154	57	40	0	18	26	54	170	223	327
Ospika River	752	652	452	352	282	172	75	58	18	0	8	36	252	305	409
Herchmer Pass	760	660	460	360	290	180	83	66	26	8	0	28	144	197	301
Fort Grahame	788	688	488	388	318	208	111	94	54	36	28	0	116	169	273
Fort Connelly	904	804	604	504	434	324	227	210	170	152	144	116	0	53	157
Junction with Telegraph Line	957	857	657	557	487	377	280	263	223	305	197	169	53	0	104
Hazelton	1061	961	761	661	591	481	384	367	327	409	301	273	157	104	0

SOUTH-EAST KOOTENAY DISTRICT.

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FORT STEELE MINING DIVISION.

REPORT OF J. F. ARMSTRONG, GOLD COMMISSIONER.

SIR,—I have the honour to submit a report on the progress of mining in the Fort Steele Mining Division for the year 1907.

The following table shows approximately the number of mineral claims held during each year since 1899 :—

Year.	Held under Crown Grant or Certificate of Improvement.	Certificate of Work.	New Locations.
1899	37	718	729
1900	71	704	470
1901	104	642	455
1902	117	451	253
1903	142	335	200
1904	167	260	169
1905	189	193	181
1906	241	235	160
1907	254	160	115

MINERAL CLAIMS.

The assessment work done on mineral claims again shows a large decrease and the number of new locations is smaller than in the previous year.

The shipping mines have been the *St. Eugene* group at Moyie, and the *Sullivan* and *North Star* groups at Kimberley.

The *Cambrian* is a property lying under Moyie lake; it is now held under Crown grant. A double compartment shaft is being sunk through the alluvial deposit on the bed of Moyie lake a couple of hundred feet from the east bank; it has now reached a depth of 90 feet from the surface of the water. The management expect to reach bedrock by sinking 10 feet farther. Three shifts a day are now at work and an air compressor, two pumps and drilling machinery have been installed.

The *Aurora* group, on the west side of Moyie lake, is being developed by local capital. Good progress is being made, but, so for, no ore has been shipped.

The *Victor* group, on Maus creek, near Fort Steele, has been developed to a considerable extent. The management is gratified with the result and await increased facilities of transport as the present railways are too far away for shipping.

The *North Star* has only shipped 3,000 tons of ore. Much development has been done.

The *Sullivan* group has been shipping and smelting ore all the year. The results will be shown in the report of the Provincial Mineralogist. The ore is now of such a nature that no additional flux is required.

The *St. Eugene* has been at work during the whole year. As no reports are made to me, I would refer to the annual Report of the Provincial Mineralogist.

Note by Provincial Mineralogist.

St. Eugene.

The *St. Eugene* mine, at Moyie, on Moyie lake, is owned and operated by the Consolidated Mining and Smelting Co. of Canada, and has been in continuous operation during the year. About 125,000 tons of ore were mined and concentrated in the company's concentrator, producing about 22,600 tons of lead concentrates, the ratio of concentration being about 5.5 tons of ore to 1 of concentrates. These concentrates, containing about 607,000 ounces of silver and 27,000,000 pounds of lead, were smelted, for the greater part, at the Trail smelter, owned by the same company.

A full description of the mine and concentrator will be found in the Report of this Bureau for 1904. This mine is the largest producer of lead in the Province, producing about 56 % of total output.

Sullivan.

The *Sullivan* group of mines, owned by the Sullivan Group Mining Co., is located near Kimberley, on Mark creek, and was in operation almost continuously until within the last three months of the year, when the drop in the prices of lead and silver, combined with the financial depression, caused a shut-down and the property did not start up again during the year. A very large tonnage of ore was developed in the mine, but it is a very low grade, in lead and silver, and contains a high percentage of zinc blende. The nature of the ore is such that no attempt has been made at concentration by water, and the ore is smelted direct at the company's smelter, erected at Marysville, on Mark creek, at its junction with the St. Mary's river, which place is connected by a branch with the main Canadian Pacific Railway at Cranbrook. The company mined and smelted in 1907 about 28,000 tons of ore, carrying about 179,000 ounces of silver and 9,200,000 pounds of lead.

A description of this property was also given in the Report of 1904.

North Star Mine.

The *North Star* mine, also situated at Kimberley, is interesting as having been the first large producer in the district. The known ore-body—an immense lens of very pure galena—was seemingly exhausted several years ago, and repeated attempts by various engineers failed to locate any extension of the then known ore-body. The property was turned over to the charge of the then accountant, Mr. Curran, to clean up the little ore left in the old stopes, but he has somehow managed to find ore and has continued shipments of about 3,000 tons in 1906 and about the same amount in 1907.

These three properties produced in 1907, 821,367 ounces of silver and 37,526,194 pounds of lead—nearly 79 % of the total lead production of the Province.

Placer Claims.

The usual output by Chinamen hydraulicing and sluicing on Wild Horse creek has been maintained.

One company has been working on Perry creek. It is said that the property has been purchased by the Illinois Steel Co.

The Company operating on Bull river has been working on their diversion and power ditch but have not yet completed it.

A mining lease was located on Moyie river, but no work has been done on it.

Coal Claims.

The only shipping collieries are those of the Crow's Nest Pass Coal Co., at Coal Creek and Michel. As no returns are made to this office, I must refer to the Provincial Mineralogist.

Development work has been carried on at the Carbonado collieries of the same company and shipments from that point will probably be resumed in 1908.

The Hosmer colliery, an enterprise in the interests of the Canadian Pacific Railway, has been developed on a large scale. Machinery is being installed, coke ovens are being built, and shipping on a large scale will soon be commenced.

On Elk river, between Morrissey and Fernie, the Western Coal and Oil Company hold eight claims, but no development is apparent.

The other coal propositions in the district are in situations not reached by railway, and the mines cannot be operated until such means of transport is provided.

The Corbin Group, on the south fork of Michel creek, in Block 4,593, consists of 17 claims held under lease and four under licence. Development work has been continuous and it is expected that a railway will be built in 1908.

On the other groups of coal and oil claims in Block 4,593 very little work has been done, pending litigation being given as an excuse, but applications have been made for 46 new licences, and 15 applications for renewals have been reported through this office.

The Imperial Coal and Coke Company hold 83 claims under lease and six under licences. Coal has been developed at many points, but railway transport has not yet been secured.

The Northern Coal and Coke Company hold 44 licences and leases along both banks of the upper 20 miles of Elk river. They have proved the existence of coal in large quantities and are awaiting railway construction.

A syndicate is holding 45 claims on the eastern bank of Elk river, between the Northern Company's land and Lot 4,588, and is also awaiting the advent of a railway.

A group of 24 claims has been applied for on the west bank of Elk river, opposite the last two groups.

OFFICE STATISTICS—FORT STEELE MINING DIVISION.

Mineral claims recorded	115
Placer claims recorded and re-recorded	4
Partnership placer claims	0
Certificates of work	160
Certificates of improvements issued	19
Conveyances or other documents of title	48
Partnership agreements	3
Gold Commissioner's permits	9
Documents filed	20
Affidavits filed	237
Records of water grants and permits	4
Mining leases issued	3
Mining leases in force	27
Free miners' certificates (ordinary)	365
" " (company)	4
" " (special)	0
Crown Grants issued	19
Records of abandonment	5

Revenue.

Free miners' certificates	$2,039 25
Mining receipts	2,912 50

FISSURE IN ROCKS ABOVE COAL CREEK MINES, FERNIE.

Victoria, 26th November, 1907.

The Honourable the Minister of Mines,
Victoria, B. C.

Re Reported Danger from Rock Slides at Coal Creek.

Sir,—In accordance with instructions received from you, I left Victoria on November 1st and proceeded to Fernie, to investigate the condition of the mountain above the workings of the coal seams of the Crow's Nest Pass Coal Company at Coal Creek, which had been reported to you as being in a condition, owing to the extraction of the underlying coal, to cause danger to life and property.

I arrived in Fernie on night of 3rd, and on the 4th I interviewed your informant, Mr. Biggs, the secretary of the local Union, and learned from him that the anticipated danger lay in the fact that the extraction of the coal in No. 1 and No. 9 mines, Coal Creek, had caused a subsidence of the hill above these seams, which subsidence was manifested by the opening of cracks in the higher rocky beds of which the mountain is formed, and it was feared by many of the inhabitants of Coal Creek that these fissures—some of which were in rocky cliffs—would cause large fragments of the cliff to become detached and that these would roll down upon the houses in the valley, causing a disaster similar to that which occurred some years back at Frank, Alberta.

As far as Mr. Biggs knew, or I could hear from others, there was no insinuation or expectation of danger in the mines mentioned, and the supposed danger was entirely from the surface material which it was thought might roll down upon the houses.

On the 5th inst., I went up to Coal Creek and examined the whole of the ground in question. As your information had been from the secretary of the local Union, I considered it advisable that the secretary and two other members should accompany me, which they did at my request. I was also accompanied by Mr. McEvoy, the geologist and engineer of the Crow's Nest Pass Coal Company, and by Mr. Morgan, the Inspector of Mines for the District.

I find that the mountain in question is on the north side of Coal Creek—its highest point being almost due north of the tipple—from which the hill rises with a very uniform slope of about 35° to a height of some 1,800 feet above the railway tracks, with two or three sandstone or conglomerate bluffs from 30 to 60 feet high, standing nearly vertical, making the average angle from the top to both of about 36° to 37°. There are two coal seams underlying this hill that have been worked, viz.: No. 1 mine and No. 9 mine.

No. 1 mine is the the overlying seam and has been extensively mined, but has recently been abandoned on account of the pavement rising up gradually and filling the levels, etc., causing heavy expense in timbering and in "brushing out" the levels and air-courses. While this argues a subsidence of the overlying strata, it also argues that the greater part of such subsidence has already taken place and that no sudden caving is to be expected.

No. 9 seam underlies No. 1 and is from six to eight feet thick of coal. These workings I inspected on the 6th inst. This mine has been operated exclusively on the "long-wall" system, whereby all the coal in the seam is extracted as the working face is advanced; the space left by the coal is partially filled with timber, refuse, rock, etc., and as the workings advance the roof gradually settles down, crushing and compressing the filling, until the roof and pavement are practically in contact and as secure from further settlement as before the coal was extracted.

The travelling and haulage roads and the airways through the worked-out portions of the mine, where the roof and pavement have come together, have been kept open by taking down the roof or taking up the pavement and are now practically rock tunnels. In this system of mining there are no old workings left in which any accumulation of gas can occur.

From these facts I argue that no further subsidence of any importance will occur in the surface overlaying the seams so far worked, and as the workings at present extend to a point under the brow of the hill—back of which the surface is more nearly level—any further cracks due to subsidence will be in the flatter country and free from all suspicion of danger.

As to any danger from the subsidence which has already taken place, I would say there is none, for the reason that the strata forming the mountain are hard, solid beds of sandstone, conglomerate and argillite, quite unaffected by water. These strata are merely horizontal—such dip as they have being *into* the hill—which eliminates any possibility of there being any general slide of the hillside into the valley of Coal Creek.

The fissure, which was the immediate cause of the investigation, occurs in a sandstone bluff some 75 feet high, which forms the brow of the hill, some 1,800 feet above the level of the railway tracks, and cuts across a point of this bluff in a direction parallel with the main creek. The fissure in the solid rock is about 18 inches wide, but where the rock is covered with earth, the earth has in places run down, giving the impression, to a casual observer, of a fissure of several feet in width.

This fissure evidently occurred in the early part of the past summer. In addition to this most recent fissure, I found several other parallel fissures occurring at intervals down the hillside, which fact indicates that the subsidence of the hill has been gradual and going on for some time. This number of small fissures is much less dangerous than if the effect was concentrated in one large break.

The most recent fissure had detached a section of the bluff some 75 feet high, which toppling over, had fallen down on the steepest part of the general hillside, and the fragments of this rock fall had rolled or been thrown down the hillside for some distance, the piece going farthest—a mass of some eighty tons—being not over 100 yards from the base of the bluff. This gives a practical illustration that the slope of the hill is not sufficiently steep to permit of boulders rolling any distance. From this bluff to the nearest buildings is a horizontal distance of about 2,500 feet.

As to the underground workings—I could not enter No. 1 mine, as it had been abandoned for some time and is now nearly choked up, but I know it from previous inspections.

I went through No. 9 mine with the overman, the Inspector and Mr. Biggs, and found everything in good order and as safe as coal mining can be made.

I include with this report a section of the hill in question, showing location of fissures, etc.

In conclusion, I beg to report that, in my opinion, these fissures do not offer or suggest any danger from slides or rolling rocks from the hillside, and that no further investigation is required.

I might say that I found some 150 men had been frightened from their work by stories of the extent of these fissures; consequently, I considered it advisable to give a statement of my findings to the local press at once and before making my report to you, of which action I informed you by telegraph.

I am, etc.,

WM. F. ROBERTSON,

Provincial Mineralogist.

LOCKE BAY, INNER END KLUNKWOI BAY, Q. C. I.

RECO M. C. SHAFT—HARRIET HARBOUR, MORESBY ISLAND.

NORTH-EAST KOOTENAY DISTRICT.

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GOLDEN MINING DIVISION.

Report of J. E. Griffiths, Gold Commissioner.

I have the honour to submit my annual mining report for the district of North-East Kootenay for the year 1907.

Conditions have improved a little, a larger number of men being kept steadily at work developing, and the prospects of shipments during the ensuing year are good.

Monarch Mine. This property, which is situated about three miles east of Field, has been leased by the Canadian Concentrating and Smelting Co., which has built commodious buildings for the employees and staff and is preparing to instal a wire cable tramway, but, in the meantime, a waggon road has been built to the C. P. R. track. Seven carloads of ore have been shipped to Toronto and two to Trail, but the returns are, however, not available.

Shining Beauty. Situated on Ice river, about 15 miles from Leanchoil. The Labourers Co-operative Co. is still working on this claim, both tunnels being in about 500 feet each, driven on a well-defined lead of quartz impregnated with galena. No ore has yet been shipped.

Giant Mine. On the property of the Golden Giant Mines, Limited, located on Spillimachene mountain, seven miles west from Spillimachene, on the Columbia river, 41 miles south of Golden, and consisting of three claims and a fraction, all about 600 feet above the river and at an altitude of 3,000 feet, a large amount of development work has been done, opening up a very large body of galena, said to assay about 25% lead and from 5 to 10 oz. of silver. Complete and substantial buildings have been erected on the property and a concentration plant of the Elmore vacuum process has been erected, with all the necessary equipment for a capacity of 40 tons a day. So far the tests have proved very satisfactory, and by the 1st of May the plant should be turning out its full capacity.

Office Statistics—Golden Division.

Free miners' certificates	109
Company certificates	3
Mineral claims recorded	95
Placer claims recorded	1
Mining leases recorded	6
Certificates of work	73
Notices to group	6
Powers of attorney	3
Conveyances	19
Certificates of improvement	1
Crown-granted mineral claims in the district	98

Revenue.

Free miners' certificates	725 00
Mining receipts	1,673 30
Royalty	18 60
Acreage tax	590 45
	$3,007 35

WINDERMERE MINING DIVISION.

REPORT OF E. J. SCOVIL, MINING RECORDER.

I have the honour to submit herewith a brief report on the Windermere Mining Division for 1907.

Little change has taken place since 1906. The following properties made shipments during the fall: *Tecumseh, Paymaster, Comstock, Charlemont* and *Black Diamond.*

Development work has been carried on more or less upon most of the leading properties (silver-lead); otherwise nothing more than the usual assessment work has been done.

During the season several promising copper properties were located, viz.: *Copper King* group, on Jumbo fork of Toby creek; *Copper* and *Copper No. 2,* on Skookum creek, a tributary of No. 3 creek, and the *Steelhead* group, on Salmon river (creek).

This Division has an immense stretch of really virgin prospecting ground, which with the advent of the Kootenay Central Railway will receive due attention from the prospector. As a matter of fact, serious mining is in abeyance until the completion of the Kootenay Central Railway, when the many promising properties—added to those which are now in a position to ship—will demonstrate what can be produced from this particular section of the Province.

OFFICE STATISTICS—WINDERMERE MINING DIVISION.

Free miners' certificates	86
Locations	36
Assessments	103
Conveyances, etc	21
Water records	62
Certificates of improvements	1
Revenue	$2,670 70

NORTH-WEST KOOTENAY DISTRICT.

:o:

Report by Robert Gordon, Gold Commissioner.

I have the honour to submit herewith my annual report on the progress of mining within the Revelstoke, Lardeau and Trout Lake Mining Divisions, for the year ending December 31st, 1907.

The year has shown no very marked development either in quartz or placer mining, owing principally to lack of capital with which to prosecute work and also to lack of transportation facilities throughout the different portions of the district. In the Revelstoke Division hydraulicing has continued on Smith, McCulloch and French creeks in the Big Bend, and the results, particularly on McCulloch creek, have been very encouraging. A considerable amount of money was spent on these claims during the past year, there being about 50 men employed during the summer months.

The quartz claims in the Big Bend District have been entirely at a standstill excepting for assessment work necessary.

In the Lardeau Division the *Eva* has been producing steadily and the stamp-mill kept going almost throughout the entire year.

The *Silver Dollar* mine has also done a good deal of development work, and although shut down just now, owing to financial stringency, is expected to re-commence operations in the early spring.

The owners of the *Lucky Jack* mineral claim (Lardeau Division) are installing a small stamp-mill on their property this winter, and will be in a position to test its value during the coming year.

In the Trout Lake District the *Silver Cup* and the *Broadview* have made very good showings, and with increased shipping facilities that locality will become a good revenue producer.

The outlook for the whole district is, on the whole, very encouraging and with the advent of capital, and good management, will undoubtedly come to the front in a very few years.

REVELSTOKE DIVISION.

Report of W. C. McLauchlin, Mining Recorder.

I have the honour to submit my annual report of mining operations in the Revelstoke Mining Division for the year ending December 31st, 1907.

During the past year but little development work has been done on the quartz mines in this Division, except the necessary annual assessment work. More work than usual was done on the placer claims of Smith creek, French creek and McCulloch creek; all are expected to make a good showing in the spring. I am indebted to J. D. Sibbald, manager of the Revelstoke and McCulloch Creek Hydraulic Mining Co., Ltd., for the following:—

"During the year 1907 the company has met some drawbacks from slides and old works of 1865 and 1866. In the spring the work started on what appeared to be an end of the old works, but after washing 15 feet up stream ran into a large amount of old workings, where

the old-timers had cleaned up the bedrock from a shaft by running both up and down the channel. Following on this an immense slide came down the creek, bringing many thousand cubic yards of mud and timber, filling in our flumes and shutting off our water supply at the pressure box and carrying one monitor down some distance. This involved two months' work to get in running order again. As the winter was coming on and water was low, we decided to run a drift up stream during the winter, which is now going on with good results, as the channel at present is producing sufficient gold, with a very hopeful future for the coming spring, should we not again run into the old workings of past years. Owing to the slides of over 40 years closing up all appearance of old workings, this is only known by driving into them. However, as we are now through the canyon, we believe we are through the old workings."

OFFICE STATISTICS.—REVELSTOKE MINING DIVISION.

Free miners' certificates issued	191
Companies' " "	7
Locations recorded	53
Certificates of work recorded	48
Certificates of improvement	5
Bills of sale recorded (mineral)	10
Money paid in lieu of work	2

TROUT LAKE MINING DIVISION.

REPORT OF F. C. CAMPBELL, MINING RECORDER.

I have the honour to submit herewith my report of the progress of the mining industry in the Trout Lake Division for the year 1906:—

There has been no marked change in mining conditions in this Division during the year. The season's operations, apart from the annual assessment work, have virtually been confined to the *Silver Cup* and the *Broadview* mines. The *Silver Cup*, which has been a steady producer, has increased its shipments about 200 tons over the amount shipped last year, as well as very materially increased its reserve of second grade ore, which will be available for milling at some future date. As the ore shipped from this property is of an exceptionally high grade, the increase in values produced is, therefore, quite considerable. This mine has also, during the year, opened up ore-bodies at a depth of 1,050 feet below the original outcrop, which, I am informed, are more extensive than in the workings above and carry good values.

Silver Cup.

The *Silver Cup*, situated on the south fork of Lardeau creek, has been worked continuously during the year, employing an average of 51 men. One thousand six hundred and eighty-four feet of development work has been done, consisting of 1,233 feet of drifts and cross-cuts and 451 feet of raises and winzes. Eight hundred and eighty-five tons of clean ore has been shipped, and the ore on the second grade dump, which will be available for milling purposes at some future date, has been considerably increased. A winze has been sunk to a depth of 143 feet below the level of the lower adit and 540 feet of drifts opened up on the 100-foot level from this winze. A 1,000 cubic foot capacity water power compressor has been installed at Nine Miles, on the south fork of Lardeau creek, which is connected with the mine by 9,000 feet of air-pipe. This will do away with the old steam compressor and materially reduce the cost of operation.

Broadview.

On the *Broadview*, situated on Great Northern mountain, development work has been proceeded with continuously during the year, an average of 16 men being employed. The 300-foot level has been extended on the course of the vein for a distance of 600 feet; 8 cross-cuts have been driven to the hanging-wall at inter-

vals of about 75 feet, and an exploratory cross-cut driven into the foot-wall for a distance of 55 feet from the drift; the total amount of cross-cutting on this level being 195 feet. An upraise of 154 feet has been made, connecting this level with the No. 2 level. The result of this development is said to be exceedingly satisfactory, having opened up large bodies of good milling ore, as well as considerable clean shipping ore. Four hundred and fifty feet north and 147 feet vertically below the mouth of No. 3 tunnel a new cross-cut has been started; this is being driven 6½ by 7½ feet in the clear and is intended as the main working tunnel of the property. It is expected to cut the lead at a depth of, approximately, 620 feet on the dip of the vein below its outcrop. This tunnel has been driven 160 feet and is calculated to cut the lead within the next 35 feet. I am informed by the manager, Mr. Newton W. Emmens, that arrangements are being made to instal an air-compressor, tramway and concentrating plant during the coming year.

The True Fissure Mining and Milling Co., Ltd., has aquired, during the year, the *St. Elmo, Blue Bell, True Fissure* and four other adjoining claims, situated on Great Northern mountain, and have erected suitable buildings on the property, with the view of starting mining operations in the early spring.

Considerable work of a prospecting nature was done on the *I. X. L.*, situated near the head of Brown creek.

Tunnels, drifts and cross-cuts, aggregating about 300 feet, were made on the *Calumet and Hecla*, a property situated on Rapid creek and carrying good gold values, with, I am informed, satisfactory results.

On the *Morning* group, also on Rapid creek, about 100 feet of tunnel was driven, which opened up a very fair ore-body.

During the latter part of the year work was resumed on the *Handy*, situated near Gerrard, a contract being let to sink a double-compartment shaft. This work is now being proceeded with.

Office Statistics—Trout Lake Mining Division.

Free miners' certificates issued to individuals	172
" " " companies	7
" " " individuals (special)	1
Mineral claims recorded	80
Certificates of work issued	297
Cash paid in lieu of assessment work	1
Certificates of improvement recorded	43
Bills of sale, agreements, etc., recorded	51
Abandonment of mineral claims recorded	2
Grouping notices filed	67

LARDEAU MINING DIVISION.

Report of B. E. Drew, Mining Recorder.

I have the honour to submit herewith a short report of the progress made by the Lardeau Mining Division during the year 1907:—

There has been little activity in mining in this division during the year, evidently due to the failure of two or three companies operating around Camborne to make expenses, and now inactive, due partly to mismanagement and lack of the necessary capital.

The Eva Gold Mines, Limited, has been enabled to run continuously since the stamp-mill started over four years ago.

The *Berniere* is lying idle and awaiting a purchaser. This property being above timber line, it has been easy to strip the lead, exposing a very well-defined, although small, body of quartz, in which free gold can be seen distinctly.

With the exception of the *Eva* and the *Oyster Criterion* properties, the companies operating the other mines are for the most part controlled by American capital, directed from the other side; it is, therefore, impossible to state whether or no the operations for the year have been successful. The necessary assessment work on the various claims has been kept up, but locations have fallen off as has also the number of free miners' certificates issued.

OFFICE STATISTICS.—LARDEAU MINING DIVISION.

Locations recorded	31
Certificates of work issued	132
Bills of sale recorded	11
Free miners' certificates	81
" " special	3
Certificates of improvement	5

SLOCAN DISTRICT.

AINSWORTH, SLOCAN AND SLOCAN CITY MINING DIVISIONS.

Report of E. E. Chipman, Gold Commissioner.

I have the honour to submit my report for the Slocan District for the year 1907.

The improvement in the mining industry in the Slocan District, hoped for in the beginning of 1907, has not been realised, in consequence of the decrease in values of metals and unsettled financial conditions. Progress has, however, been made, and a larger number of mines are working than at the close of 1906, and there has been a material increase in the tonnage of ore marketed. The great majority of the mines are being worked under the "leasing system," and, despite the unfavourable prices obtained for the ores, the operators have been fairly well remunerated for their labour, and undiminished confidence for the coming year prevails.

AINSWORTH MINING DIVISION.

In this division the greatest activity was in the Ainsworth camp. Many of the older mines, which had been unworked for a number of years, resumed operations, notably the *Let Her go Gallagher*, which, after a shutdown of 18 years, proved the surprise of the year by again entering the list of shippers with a rich oxide ore. At 60 feet in depth it is now in good ore, with every indication for profitable work.

The *New Jerusalem*, another of the oldest locations in British Columbia, under lease, made its first shipment of ore, about 60 tons, which fairly remunerated the holders, and demonstrated the value of several typical, low-grade galena claims in that vicinity, when metal values are at all stationary and at a fair price.

The *Krao*, which was purchased late in the year 1906 by Montana parties, was the centre of interest. Fifty thousand dollars was expended on the mine during the year in underground work and surface equipment. The underground work consisted of sinking a two-compartment shaft, 4 feet by 4 feet 6 inches, timbered by 8 by 8-inch timbers, 156 feet below old developed ground and in repairing the old shaft, making a total depth of 256 feet, with 500 feet of drifting, tunnelling and cross-cutting. Boarding and bunk-houses were built to accommodate a large force of men. There were also erected engine and ore-houses, a barn and blacksmith shop. The machinery consists of one 80 h.p. boiler, horizontal type; one 25 h.p. boiler, locomotive type; one double cylinder hoist, with cars, trucks and tools necessary for the economical and effective working of the plant. An average of 20 men was employed during the year. The unexpected tapping of water-courses in sinking made development in that direction very difficult and expensive and a consolidation with adjoining claims and an extensive tunnel is contemplated.

Development work was performed on a number of claims; notably the *Highlander* long tunnel was driven an additional 200 feet; and the *Tariff* company completed some 800 feet of underground work on the line of general development.

Among the claims which were profitably worked under lease can be mentioned the *Maestro*, which shipped 200 tons; the *No. 1*, 40 tons; the *Fergus*, 10 tons; the *Libby*, 15 tons; the *Spokane-Trinket*, 400 tons, and the *Black Diamond* and *Little Donald*, 25 tons.

Blue Bell Mine.

The Canadian Metal Company continued its development of the property up to the end of June, at which time this work was suspended on account of the large volume of ore opened, and lack of storage space for ore which would be broken down in further development. Construction work on the company's concentrating plant was begun about the 1st of March, and at the close of the year the plant was nearly completed. The lead mill is expected to have a capacity of 200 tons of ore per 24 hours, and a zinc separation department has been provided, which will be completed probably in March of 1908. The very considerable amount of pyrrhotite present in the zinc makes magnetic separation the only feasible means of producing a marketable zinc product, and for this purpose it is intended to experiment extensively with the International Separator, a magnetic separating machine of the high tension type. The plant is provided with a well-equipped machine shop, which has already greatly facilitated construction. All machinery is driven by water-power and the buildings are all heated by steam. The water-power is derived from a pipe-line about three miles in length, affording a static head at the plant of about 700 feet, and using, when in full operation, about 475 horse-power.

The absence of any suitable accommodation for men, made it necessary to prepare in rather an extensive way, and following out a plan, which is undoubtedly a very wise one, the company has gone to large expense in providing, probably, the best equipped quarters in the interior for its employees. Besides the general quarters, several cottages have been built, and are in great demand by the employees. In the spring probably more cottages will be provided.

Woodbury Creek.

Two men worked on the *Baltimore* part of the year in developing the mine, and shipped 10 tons of high grade silver ore.

The *Pontiac* is being worked under lease; four men are employed, but no further information has been obtained.

The *Jessie-Blue Bird* worked on an average four men during the year, drove 400 feet of tunnel, and shipped 65 tons of very high grade silver ore, netting the owner $17,335.

The King Solomon Mining Company worked seven men on assessment work for about two months.

Hamill Creek.

The Argenta Mines Company worked a force of 9 men for the first four months of the year in development. The mine closed down in May.

Duncan River.

The *Red Elephant* group, on Hall creek, drove 60 feet of tunnel on the lead; have a body of copper-gold ore 21 feet in width, assaying from $8 to $28 in gold and 2 % to 5 % in copper. Three car-loads of ore on the dump, but for lack of transportation facilities no ore was shipped.

Considerable development was done on the *Wagner* group, the *Old Gold* and the *Guinea Gold* properties. The figures for the work done have not been supplied, and for the reason as given above no ore has been shipped.

On Cooper creek, the *Copper Cliff* group, a force of five men were worked by James Cronin, of Rossland, in development work, for about five months and satisfactory results to the owner were obtained.

Kaslo Creek.

At Bear lake considerable work in development was done on the *Empress* and *Silver Glance*, and one car load of ore was shipped from the latter during the season.

GYPSUM DEPOSIT ACROSS THOMPSON RIVER FROM SPATSUM.

Whitewater.

Messrs. Retallack and S. S. Fowler continued operations as lessees of the *Whitewater* and *Whitewater Deep* mines, with satisfactory results. Operations, however, were more or less adversely affected by the necessity of curtailing shipments for a time, on account of the smelter situation in the earlier part of the year, and again during June and July. Early in the spring a large amount of work was done on the *Whitewater* mill, in order to prepare it for the making of a zinc concentrate, zinc hitherto having been discarded from this plant. Since May the mill has done good work in the saving of both lead and zinc.

In January of last year was begun the driving of No. 8 level, *Whitewater*, which, at the close of the year, was in on the vein about 800 feet. This development has opened a considerable reserve of ore, sufficient, probably, to last for about two years. Practically no development work was done in the old workings, but No. 7 has been extended through the *Whitewater Deep*, and is now again in *Whitewater* ground. The relation of the property lines to the direction of the vein makes it highly important for both owners that such operations as the lessees are able to conduct be continued. Without them, or without the amalgamation of the properties, there would be much difficulty in the operation of the lower portion of the vein.

During the year, the shipments of lead ore and concentrate from the two properties amounted to about 2,600 tons. Besides the above, approximately 3,000 tons of zinc concentrates were produced, which have been accumulated at Whitewater, because of unsatisfactory zinc market conditions, brought about by uncertainty as to U. S. tariff regulations. Arrangements have been made, however, by which this material will be moved in the spring.

The average number of men employed was about forty.

South Fork of Kaslo Creek.

The *Province* worked 12 men five months, principally on the surface, erecting a tramway, building ore-bunks, and making preparation for extended work for the ensuing year. Shipped 40 tons of concentrates. Arrangements have been made for the more convenient working of the mine by using the lower tunnel of the *Cork* and availing themselves of the advantage of the concentrator of the last-named mine in the treatment of the ores, which are largely of a concentrating character.

The *Cork* has been shut down during the year, but will be opened about the first of May next, with an increased force, in conjunction with the operation of the *Province*.

The *Montezuma* worked continuously during the year, with an average force of 26 men. Shipped 290 tons of concentrate, completed tramway and put the mill in condition for the separation of the zinc ore from the lead. The zinc product still remains at the mine, but will be shipped as soon as the settlement of the tariff on the ore to the United States is finally adjusted.

The *Revenue* worked three men five months in development. Drove 150 feet of tunnel and shipped 15 tons of silver-lead ore.

The *Flint* mine worked an average force of three men for the year, and accomplished 450 feet of work, cross-cutting and drifting on the ledge. The owners have expended on this mine, in the last two years, $14,000, and have opened up a rich body of silver-lead ore which will more than repay them for all their outlay. Forty-five tons of ore were shipped during the year.

The *Index* worked two men for nine months, in development; made a raise of 125 feet; built one-half mile of waggon road and erected blacksmith shop and ore-sheds and has a car-load of very rich silver-lead ore ready for shipment.

The owners of the *Nome* group worked two men continuously for six months in driving cross-cut tunnel, and were rewarded late in the season by cutting the ledge and uncovering a large body of high grade ore.

OFFICE STATISTICS.—AINSWORTH MINING DIVISION.

Free miners' certificates, personal	264
" " special	2
" " companies	4
New claims recorded	120
Transfers recorded	61
Certificates of work issued	484
Payments in lieu of work	3
Water records issued	46
Pre-emptions issued	18
Certificates of improvement—land 22; mines 54	76
Certificates of purchase	225

SLOCAN MINING DIVISION.

REPORT BY ANGUS MCINNES, MINING RECORDER.

I have the honour to submit herewith my annual mining report and office statistics for the Slocan Mining Division for the year ending December 31st, 1907:—

With reference to the mining conditions during the year, I may say that, for the first nine months, with silver averaging about 68 cents an ounce, and lead up as high as £20 a ton, everything appeared very satisfactory, but the drop in the price of silver, for the last three months to 53 cents, and also the drop in lead, has had a tendency to depress mining in this district again, for, under present conditions, it is a foregone conclusion that some of them will be compelled to close down till better prices obtain. In two instances mines had undertaken heavy development work to tap the leads at 750 and 800 feet vertical depth, and a number of properties which have been idle for some years have been taken under lease and bond and have opened up some fine ore-bodies, and, if prices come up to a reasonably fair place, there is no doubt that the Slocan will be very prosperous.

Batchelor. In the first part of the year this property was worked by H. Lowe and partners, who shipped considerable ore, but later they turned over the mine, or made arrangements with the owner, Mr. Petty, to do so, to an American company at a price, on a bond, stated to be $180,000; but, however, the property reverted back to Mr. Petty, who, since, July, has shipped some five cars of high grade ore from the mine, and it is still being steadily worked.

The *Canadian* group has been worked all summer by the Brandon Bros., of Silverton, who have also shipped some good grade galena ore, probably about between two and three cars.

Eureka-Richmond. Only one car of ore has been shipped from this well-known mine this year, but the company has been steadily developing its ore-body for the whole season, and, as the new tram was not completed, and by which there would be a big saving in sending down the ore, no large shipments were made. I am informed by the manager that he has opened up a splendid body of zinc ore as well, and has about completed a tram 5,000 feet long, and an ore pocket of 75 tons capacity. About 25 men have been employed about the mine since June.

Elkhorn. Under lease to George Gormley and partners, who have opened up a fine ore-body. They have shipped 43 tons of silver-lead ore and have opened up a body of zinc ore from three to four feet in a chute over 100 feet long. They have worked four men steadily.

Hewitt. This company has shipped some 31 cars of dry ore during the year, of the net value of approximately $43,781, working about 30 men. A new tram, some 5,000 feet long, with a capacity of 10 tons per hour, connecting with the Wakefield mill, has been built. Bin capacity at lower end, 775 tons; upper end, 500 tons. Two levels have been driven right through the hill. This company has also a long lease on the *Wakefield* mine and mill and proposes to do some extensive mining in the near future. There is a two years' supply of ore for the mill in sight in the *Hewitt* mine now.

McAllister. Worked by Bennett and Clark. These men undertook to drive a long tunnel to tap the vein at depth, but they were not able to complete the work this season. In view of this development they did not ship much ore, only some seven tons of high grade dry ore being sent out.

Molly Hughes. This mine was bonded by Mr. R. Black. He has been working an average of four miners steadily, and has shipped 48 tons of high grade dry ore since August. Development, 200 feet of tunnelling; ore in sight, three to four cars.

Majestic. Under the management of C. A. Bigney. The development work on this property for the season has been; tunnelling, 125 feet; raise, 200 feet; stoped 25 feet square; ore shipped, 28 tons of galena, netting $1,750. Two miners have been employed.

Maggie. This is a new property, situate near Cody, and has been bought outright by a Mr. Duck, of Milwaukee. He is now employing 15 men, and expects to have some 25 before long. He has erected fine bunk-houses cook-house, etc., and has his first car of clean galena ore ready for shipment, with several more in sight.

Payne. It is hardly a report without some few words about this mine During this summer this well-known mine went "under the hammer," for somewhere about $50,000, to Eastern parties, and it is expected that before long some new work will be commenced. I believe that some ore has been shipped, but have not yet been able to find out what amount.

The *Reco*, a well-known old mine, was opened up again this year by Mr. Harris, about July, and since that time it has shipped to date about 200 tons of rich galena ore, and has employed 20 men a month.

Slocan Sovereign. At present this mine is being worked by G. Ransome, late of the *Payne*. A very large body of milling ore has been opened up. There have been four men employed steadily, and 125 tons of galena ore have been shipped. Work consists of 300 feet of tunnelling and 200 feet of raise driven.

Standard. This property, under the management of Mr. G. Aylard, of New Denver, is making a good mine. He is employing steadily about 20 men, and development for the year consists of 1,000 feet of tunnelling, 500 feet of stoping, and 200 feet raising. He has expended over $50,000 this year and shipped ore to the value of over $60,000. He is driving a long tunnel to get under the ore, and should he catch it there, he will undoubtedly have one of the best mines in the district.

Surprise. Is being worked by Mr. A. Smith, of Kaslo. About 800 feet of tunnel has been run on this property, driving the *Last Chance* No. 3 tunnel through the *Noble 5* with a view to cutting 750 feet vertical depth under the old *Surprise* workings. Six men were continually employed doing this work. No ore was shipped.

Goodenough. Mr. J. A. Whittier has been in charge of operations at this mine, driving a long tunnel to tap the vein at 450 feet below the old workings. This tunnel will be about 1,500 feet long when completed. So far 450 feet of it has been driven and occasional pockets of galena found, whilst a large body of zinc ore has been encountered. It will be late next year before this long tunnel is finished. This same company has a lease and bond on the *Bluebird*, and is taking out some good galena ore.

Owing to the continued litigation, nothing much was done on the *Slocan Star* property; some development, but no ore shipped.

Vancouver. This mine is doing remarkably well at present and is turning out 10 tons of silver-lead concentrates, and 10 tons of zinc concentrates every 24 hours. Some 12,000 tons of ore have been milled, which has made 1,050 tons of zinc concentrates, 850 tons of silver-lead concentrates and 70 tons of hand-sorted galena. Development consists of 1,270 feet of drifting, cross-cutting, etc. An average force of 50 men has been employed, but at present the company has 70 men on the pay roll.

Nothing much is being done on the *Washington* mine, as the company is waiting for a more favourable market for zinc, having large bodies of that ore blocked out. Some 25 tons of galena has been shipped this year.

Dr. Gomm is still pounding away on the *Ya-Ya* and has driven about 350 feet of a drift and expects to get his ore-body at any time.

The *Wakefield*, *Buffalo*, *Mountain Con.*, *Ruth*, *Wonderful*, *American Boy*, *Sunset*, *California*, *Alamo-Idaho*, *Queen Bess*, *Corinth* and *Sunshine* have nearly all shipped some ore and done some development work, but I am unable to state just the amounts.

OFFICE STATISTICS FOR THE YEAR 1907.

Free Miners' Certificates issued	209
Claims located	77
Assessments recorded	188
Agreements and transfers	35
Traders' licences issued	37
Revenue tax receipts issued	208
Marriage licences	5
Certificates of Improvements	13

Ore output, over 3,000 tons, with 1,000 tons of zinc just being sacked for shipment.

Average number of mines working for the year, 14 per month.

Average number of men employed per month, 175.

SLOCAN CITY MINING DIVISION.

Report of H. R. Jorand, Mining Recorder.

I have the honour to submit my report for the Slocan City Mining Division for the year ending December 31st, 1907.

The ore shipments for this Division again show a slight decrease from those of the previous year, which is due to various causes.

Springer Creek.

Arlington. This mine has been a steady shipper during the year, shipping some 920 tons. During the fall of this year the management decided to instal a diamond drill at the property with a view to prospecting its ore bodies at depth. The drill is to be run by electricity generated by water power. The water power and the electric plant are already installed, and the drill will be at work before the end of January. Some 14 men are now employed at the mine and this force is to be gradually increased as new ore-bodies are discovered.

Ottawa. The *Ottawa* mine was closed during part of the year, which accounts for the small shipments of ore to its credit, only 170 tons having been sent to the smelters. Word has just been received from the owners instructing the local manager, Mr. Foley, to begin work again. Only a small force will be employed at the beginning.

The *Myrtle* and the *Tamarack* were both worked in a small way during part of the year, the former shipping 10 tons of ore and the latter 20 tons.

The *Graphic* is now being worked under lease.

Ten-Mile Creek.

Westmont Group. This property has been worked during the whole year with most encouraging results. Twenty tons of high-grade ore were shipped during September and another carload is now ready. The seven claims comprising the group have lately been acquired by the Westmont Silver Mining Company, Limited, a company incorporated in Ontario for the purpose. Active work will be continued during the coming year and the force at the mine increased.

Neepawa. In the beginning of December Messrs. Jacobson and Hendricson secured a lease of this property. After a raise of ten feet on the vein a body of high-grade ore, about two feet in thickness, was encountered; about ten tons of this is now sacked and ready to ship. Only four men are now employed, owing to the difficulty of getting in supplies at this time of the year.

Twelve-Mile Creek.

The only property worked on this creek during the last year is the *Midnight*, from which a shipment of ten tons of ore was made in the spring.

Lemon Creek.

No work has been done on this creek during the year other than of the usual assessments.

Office Statistics—Slocan City Mining Division.

Free miners' certificates issued, ordinary	121
" " company	7
Certificates of work recorded	205
New locations recorded	72
Conveyances recorded	26
Certificates of improvements recorded	15
Cash paid in lieu of work	$500

NELSON DISTRICT.

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NELSON MINING DIVISION.

REPORT OF HARRY WRIGHT, GOLD COMMISSIONER.

I have the honour to submit my annual report on the Nelson Mining Division for the year ending the 31st of December, 1907.

During the first part of the year there was great activity in all branches of mining throughout the district, but the financial stringency occuring during the latter half caused considerable curtailment of development. In the case of those mines the principal output of which consists of copper, the phenomenal fall in the price of that metal also caused a cessation of production. In nearly all cases, however, where these deterrent circumstances were inoperative, there has been good progress made, and the results of the year's development have been such as to inspire increased confidence in the mineral resources of the district, and to presage a considerable renewal of activity as soon as these unfavourable conditions, which may be regarded as of a purely temporary nature, have been improved.

SHEEP CREEK.

As in the previous year, the scene of the greatest activity in mining was the Sheep Creek district. The joint output from the *Queen*, *Kootenay Belle*, *Mother Lode*, *Nugget* and *Emerald* makes a very considerable total from the Sheep Creek belt, while in the immediate vicinity, the *Arlington*, *Second Relief* and *Keystone* mines have all been producers on a considerable scale.

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Yankee Girl and Yukon.

These properties, near Ymir, were bonded in February last to a syndicate of American capitalists, who operated the properties for six months and, during that time, drove over 1,000 feet, in development of the ore bodies, besides erecting an aerial tramway from the *Yukon* to a spot on the *Dundee* waggon road near Ymir. In August, however, the condition of the money market on the other side forced these American capitalists to relinquish their bond on the properties. The owners have since shipped a few carloads of ore, running from $20 to $25 a ton.

Ymir.

The Ymir Gold Mines, Ltd., the English company operating the *Ymir* mine, was reconstructed in the early part of the year, and the sum of $200,000 provided for additional development of the mine. A crew, averaging about 40 men, has been at work during nine months of the year, efforts being principally directed to locating the vein which is indicated by rich float as existing above the old *Ymir* vein. Some development was also done in the deep levels of the mine, without resulting, however, in the finding of any considerable body of pay ore. Small bodies were found and about 1,000 tons, averaging $5, was put through the mill.

Queen Victoria.

This group is still under bond to Mr. James Cronin and his associates. Development has been carried on throughout the year, with an average force of 25 men. Although some 250 feet of tunnelling and raising has been done in the course of development, the nature of the immense outcrop lends itself to economical mining by the "glory hole" system, and most of the mining has been done in this manner. Some 3,500 tons of ore have been shipped to the Trail smelter during the year, the average assay being 2.6 per cent. copper, 1 ounce silver, and a little gold to the ton. As the

principal values are in the copper contents, the output has been curtailed since the decline in the price of that metal. The development during the year has sufficed to show the existence of an immense body of low grade copper ore, while the natural facilities presented by the property for the economical mining and handling of the ore ensure a very low cost of operation. An ærial tramway has been constructed from the mine to connect with the railway spur at the bottom of the hill.

Eureka.

The decline in the price of copper also caused considerable impediment to development on the *Eureka* mine, the output of which consists almost entirely of that metal. Some development was done, however, and 620 tons of ore shipped, the average assay being 5.5 per cent. copper, 2.0 ounces gold, and 2.40 ounces silver per ton.

The *Poorman-Granite* properties have been worked conjointly, under a lease, by Mr. Thomas Gough, who has had a very successful year. During the year 6,000 tons of ore were treated in the ten-stamp mill on the *Granite*, producing a gross amount of approximately $50,000. At the *Referendum* mine, on 49 creek, development has been pushed to the 200-foot level and a small mill has been operated during the latter part of the year, the total crushed being 250 tons, producing $2,100.

Queen.

Mr. William Waldie, the owner of the *Queen*, has operated this mine continuously throughout the year, with very satisfactory results, both as to production and development. The ten-stamp mill has run almost continuously during the year, and has crushed 8,845 tons, producing by amalgamation over $70,000, and over $30,000 in concentrates. The average number of men employed was 28, and in addition to the work done in mining ore, new development work was done to the extent of 300 feet in drifting and cross-cutting, and 150 feet in sinking and raising. During the year Mr. Waldie also acquired the *Yellowstone* group adjoining the *Queen*, a property formerly owned by the Yellowstone Mines Co., Limited., and successfully operated by them for many years. Although no development was done on this newly acquired group during the past year, it is the intention of the present owner to re-open the mine this spring. In view of the large bodies of ore developed on the *Queen* and the anticipated production from the *Yellowstone*, Mr. Waldie has doubled the capacity of his stamp-mill and will shortly be operating 20 stamps instead of 10, as heretofore.

The output from the *Kootenay Belle* and *Mother Lode* mines, near the *Queen*, has been treated by a small customs mill erected on Sheep creek by A. H. Tuttle, of Ymir.

From the *Keystone* mine, now under lease to Frank Finney, 71 tons of high grade ore were shipped to the Trail smelter, and netted the lessee nearly $85 per ton.

The *Nugget* mine, in the same neighbourhood, shipped 21 tons, producing over $110 a ton, while the *Emerald* shipped 560 tons of lead ore, producing approximately $10,000. The *Second Relief* mine was in operation for a portion of the year only, and its ten-stamp mill crushed about 3,000 tons of ore, producing approximately, $25,000.

Arlington Mine. (Erie.)

This property continued, as in former years, to make considerable shipments of crude ore. The vein is a blanket vein varying in width from a few inches to four or five feet of heavily mineralised matter. In development it is necessary to mine a large quantity of waste matter, which is used in filling up the stopes, but the work is so well laid out, and the facilities for handling the ore so well arranged, that the cost of production is probably reduced to the lowest possible minimum. During the year, of the total mined, 1,250 tons were shipped, averaging about

$37 per ton in gold and silver, besides an average assay value of 2.95 per cent. lead and 5.7 per cent. zinc. In new development work, 1,421 feet were driven, and the average number of men employed was 30.

La Plata Mining Co.

A considerable production has been made during the year from the *Molly Gibson* mine, on Kokanee creek, owned by the La Plata Mining Co., Limited. The 100-ton concentrator was in operation during nearly the whole of the year, although its full capacity was not utilised. Altogether, a total of, approximately, 20,000 tons of ore, carrying silver and lead, was mined and passed through the concentrator, being brought to the mill from the mine by means of an aerial tramway. The product hauled from the mill and shipped to the smelter amounted to 3,600 tons of concentrates, and realised a gross value of, approximately, $120,000. The number of men employed during the year averaged 61.

Hall Mining & Smelting Co.

In September last the Hall Mines Smelter was closed down, in consequence of the necessity for a re-adjustment of the company's finances. During the early part of the year the smelter was in receipt of a considerable tonnage from the surrounding mines, but financial conditions during the last six months, by their effect on the mining companies, considerably reduced the operations of the smelter. The total receipts for the year from 49 mines are as follows:—

784	tons	from Emma Mine (in Boundary District);
908	"	" Silver King Mine;
1,576	"	" B. C. Standard Mine;
7,706	"	dry and lead ores.
Total..... 10,974	"	

The No. 1 furnace was in blast 14 days only, and has now been taken down. No. 2 was in operation a total of 200 days, and the total tonnage smelted was 14,117 tons, of which 833 tons was fluxing ore from the *Emma* mine, 3,493 tons lead and dry ores and *B. C. Standard* ore, and 9,791 roasted and converted product. The result of these smelting operations was the production of 3,953 tons of lead bullion, containing 593,068 ounces of silver and 4,502 ounces of gold, with an aggregate value of $717,808.02.

The *Silver King* mine was operated during the year by the company, the Davys lease having expired in the previous year. The total product was 2,279 tons, containing 28,330 ounces of silver and 159,613 lbs. of copper. The average assay per ton of ore shipped was 12.44 ounces of silver and 3.5 per cent. copper.

The *Hunter V.* mine, at Ymir, was operated during the greater part of the year by the Hall Mining and Smelting Co., on lease from the B. C. Standard Mining Co. The total shipments were 3,961 tons, which were distributed among the Northport, Trail and Nelson smelters. The high per centage of lime in the *Hunter V.* ores makes it a desirable flux, the average per cent. of lime in the year's output being 43, with 19 per cent. of silica. The contents of the ore shipped during the year total 23,350 ounces of silver and 68.36 ounces of gold. On the cessation of work by the Hall Mining and Smelting Co. in September, the lease held by that company was relinquished and the property has been shut down since that date.

OFFICE STATISTICS—NELSON MINING DIVISION.

Mineral claims located	244
Certificate of work recorded	408
Money in lieu of work	4
Transfers recorded	100
Certificates of improvement	20

Free miners' certificates,	individual	650
"	company	15
"	special	2
"	company special	1

Revenue.

Mining receipts	$3,152 30
Free miners' certificates	4,517 25

ARROW LAKE MINING DIVISION.

REPORT OF WALTER SCOTT, MINING RECORDER.

I have the honour to submit my annual report on the Arrow Lake Mining Division for the year ending December 31st, 1907.

On the *Millie Mack*, situated on Caribou creek, 16 miles east of Burton, Mr. H. E. Foster has kept a force of men working all year, and there are 200 tons of ore sacked up ready for shipment, as soon as the snow will permit, for rawhiding.

On the *Big Ledge*, situated at Pingston creek, comprising 25 claims, no development has been done this season, just the ordinary assessment work. This claim shows a large deposit of zinc ore, averaging 30 % zinc.

OFFICE STATISTICS—ARROW LAKE MINING DIVISION.

Free miners' certificates	26
Special free miners' certificates	1
Certificates of work	22
Conveyances, etc	10

ROSSLAND DISTRICT.

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TRAIL CREEK MINING DIVISION.

REPORT OF J. KIRKUP, GOLD COMMISSIONER.

I have the honour to submit my report of mining operations in the Trail Creek Mining Division during the year 1907:—

Mining in this division during the past year was confined principally to the three large companies which are successfully operating on Red Mountain, viz.:—the Consolidated Mining and Smelting Company of Canada, Limited; the Le Roi Mining Company, Limited, and the Le Roi No. 2, Limited; the Consolidated White Bear Mining Company, Limited, having closed down in the latter part of the month of October, and the Giant-California Mining Company not having commenced operations until the early part of the month of July.

In addition to the foregoing, some three or four small properties were worked under lease during the latter part of the year.

The shipments of ore are somewhat in excess of those of the previous year, the output being, approximately, 289,056 dry tons, of an approximate gross value of $3,040,937, the reduction in value being attributed, largely, to the fall in the price of copper.

The average number of men employed during the year was 780, which number will undoubtedly be largely increased during the coming year, the prospects for a much larger output being very favourable.

Centre Star, War Eagle, Idaho and Iron Mask.

These properties, which are adjoining, are owned and are being operated continuously by the Consolidated Mining and Smelting Company, of Canada, Limited, the shipments during the year consisting of 135,662 tons of ore, which was treated at the company's smelter at Trail. The main shaft, which is on the *Centre Star* mine, has attained a depth of 1,975 feet from the collar, and it is the intention of the management to shortly commence the sinking of this shaft to a further depth of 350 feet. Mining was carried on during the year in the 4th, 5th, 6th, 7th, 8th, 10th, 11th, 12th, 13th and 14th levels in the *Centre Star*, the 4th, 5th, 6th, 11th and 12th levels in the *War Eagle*, the 4th, 5th, 6th, 8th, 11th and 12th levels in the *Idaho*, which correspond with the same levels in the *Centre Star*; the 400-foot and 600-foot levels in the *Iron Mask*, the 400-foot level in this property connecting with the 6th level in the *War Eagle*, all of which levels are run from the main shaft. Development work during the year consisted of sinking a shaft on the *Idaho* to a depth of 300 feet, thereby connecting with the 4th level; sinking main shaft on the *Centre Star* 187 feet, making such shaft a total depth of 1,975 feet; tunnelling, 11,111 feet; raising, 693 feet; winzing, 141.5 feet, and diamond drilling, 8,616.7 feet; the total underground workings of these properties being approximately 17 miles. The average number of men employed during the year was 370, and the addition to the plant during the year is valued at $134,000.

Le Roi, Black Bear.

These properties are owned and operated by the Le Roi Mining Company, Limited, the shipments of ore during the year being 110,410 tons, taken from the different levels down to the 1,350 feet, about 20,000 tons of which was treated at the Trail smelter and the balance at the company's smelter at Northport, in the State of Washington. Development work during the year con-

sisted of sinking the main shaft a distance of 216.5 feet (such shaft now having attained a depth of 1,650 feet); driving, 2,567 feet; raising, 375.5 feet; cross-cutting, 1,636.5 feet, and diamond drilling, 3,740.5 feet.

In addition to the foregoing, the following work was done on properties under option by this Company:—*Spitzee* mineral claim, drifting, 610 feet; cross-cutting, 78.5 feet; diamond drilling, 1,864 feet; *Townsite* mineral claim, drifting 408.5 feet; cross-cutting, 28.5 feet; winzing, 19 feet, and diamond drilling, 113.5 feet; the average number of men employed during the year being 245.

Josie, Annie, Annie Fr., Poorman, No. 1.

These properties are adjoining, and are owned and operated by the LeRoi No. 2, Limited, and from them, during the year, 22,198 tons of ore were shipped, in addition to which 12,963 tons of ore were treated at the company's mill on the ground.

The main shaft, which is 900 feet deep, is situate on the *Josie* mine, and from it levels are run at the following depths: 100, 300, 500, 700, and 900 feet, the 400 and 600-foot levels being connected with the others through winzes; there are also three surface tunnels, two of which are on the *Josie* and one on the *Poorman*. Development work during the year consisted of driving, 3,010 feet; raising, 276 feet; diamond drilling, 5,608 feet; the average number of men employed during the year being 110.

White Bear.

This property is owned by the Consolidated White Bear Mining Company, Ltd., and was operated during the year until about the 20th October, when, on account of the low price of copper, it was considered advisable to close down. Shipments during that time consisted of 2,641 tons of ore and 310.67 tons of concentrates, representing, approximately, 5,000 tons of low grade ore; the average number of men employed being 25.

Giant-California.

These properties have recently been acquired by the Giant-California Mining Company, and operations were started on the properties early in July, 1907, since which date about 25 men have been steadily employed on development work. The tunnel in the *California* has been extended 1,000 feet, and a shaft in such tunnel has been sunk over 200 feet. On the *Giant* some 500 feet of work has been done, consisting of tunnelling and upraising. It is the intention of this company to sink the shaft in the *California* to a depth of about 550 feet and then drive in an easterly direction and connect with the 6th level of the Le Roi, No. 2, whose workings are now up to the east line of the *California*, where a good class of ore is being taken out, and which lead undoubtedly extends into the ground of this company.

Nest Egg.

This property, situate in what is known as the south belt, was worked for a short time in the latter part of the year, under lease, by some working miners, during which time 47 tons of ore were shipped, the value of which did not justify the carrying on of such work by hand; consequently, work was stopped.

Olla Podrida.

This property, also situated in the south belt, was worked under lease by some working miners during a short time in the fall of the year, 37 tons of ore being shipped, the value of which was exceptionally good, but, on account of the smallness of the vein and the necessary amount of development work required, it was found impossible to make wages, and they were therefore compelled to surrender their lease.

Evening Star.

This property, lying immediately north of the City of Rossland, is being worked under lease by some working miners, the shipment of ore to the end of the year consisting of 96 tons, the value of which was fairly good

Inland Empire. Saginaw Fr. Berlin.

These properties, owned by the Inland Empire Mining and Milling Company, Limited, are situated on Grenville mountain, in the extreme western portion of this district, about 4.5 miles from the Columbia and Western Railway and connected therewith by a good waggon road running within a short distance from the workings on the property. Development work during the year consisted of 40 feet of cross-cutting and straightening the shaft, which is now 170 feet in depth, situate on the *Inland Empire* claim; sinking a shaft 40 feet deep on the *Berlin* claim, with very satisfactory results, the ledge having widened from 5.5 feet on the surface to 9 feet at the bottom of the shaft, carrying good values, together with several open cuts on the surface.

In addition to the foregoing, the following improvements were made on the surface: Constructing a saw-mill, 24 feet by 50 feet, with a capacity of 10,000 feet per day, for the purpose of cutting lumber and timber for the development of the mine; three dwelling-houses and barn; shaft and engine-house, 35 by 85 feet, together with the installation of a 70 h.p. boiler and 30 h.p. hoisting engine, at a total cost of $15,000, thereby enabling the company to carry on development work on a fairly large scale.

In addition to the foregoing, very little work was done, other than the necessary assessment work, which is very small compared with that of a few years ago, although very much the same as last year, as shown by the accompanying office statistics.

OFFICE STATISTICS.—TRAIL CREEK MINING DIVISION.

Mineral claims recorded	32
Certificates of work	61
Certificates of improvement	2
Bills of sale, etc., recorded	10
Free miners' certificates, companies'	5
" " personal	157
" " special	2

BOUNDARY DISTRICT.

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GREENWOOD MINING DIVISION.

REPORT OF W. G. McMYNN, GOLD COMMISSIONER.

I have the honour to submit my annual report on mining operations in the Greenwood Mining Division during the year 1907.

The result of the year's output of ore for the district is not up to expectations, as operations were handicapped by the strikes of the coal miners, which curtailed the supply of coal and coke, the severity of the weather during last winter, which to some extent disorganised the railway service, and the labour conditions.

For purposes of comparison, the following table gives the production of ore, in tons, in the Boundary District for the last eight years:—

1900 (6 months only)	96,000 tons.
1901	390,800 "
1902	508,876 "
1903	690,419 "
1904	829,808 "
1905	933,548 "
1906	1,161,537 "
1907	1,148,237 "
Total	5,759,225 "

Ore shipment returns from the several producing mines of the Boundary District for 1907, as far as they can be ascertained and the figures secured, were as follows, in dry tons:—

Granby Con. M. S. & P. Co.'s mines, near Phœnix	613,537 tons.
Consolidated M. & S. Co. of Canada, "	135,001 "
B. C. Copper Co.'s mines, near Deadwood (Mother Lode)	208,321 "
" " Summit Camp (Emma)	18,274 "
" " " (Oro Denoro)	14,481 "
" " " (B. C. mine)	1,712 "
Dominion Copper Co.'s mines, near Phœnix (Brooklyn-Idaho)	55,548 "
" " " (Rawhide)	64,173 "
" " Deadwood (Sunset)	31,258 "
" " Summit (Mountain Rose)	3,999 "
Morrison, Deadwood Camp	649 "
Riverside, Rock Creek	90 "
Sally, Beaverdell, West Fork Kettle River	65 "
Duncan, " "	40 "
82E/SE-1 Providence, near Greenwood	700 "
Elkhorn, "	20 "
Strathmore, "	55 "
82E/SE-11 —Skylark, "	224 "
Bay, "	30 "
Golden Eagle, North Fork Kettle River	60 "
Total	1,148,237 "

At the Granby mines, owned by the Granby Consolidated Mining, Smelting and Power Company, Limited, Phœnix, the most important camp in the Greenwood Mining Division, the

company usually employs about 500 men in the vicinity. The ore is broken down in the immense stopes, run into chutes, thence in mine cars to the crushers and ore-bins, and thence by rail to the smelter at Grand Forks, about 30 miles distant—never being handled by hand or shovel from the time it is blasted until it comes out in the shape of marketable blister copper at the smelter, gravity being used as far as possible, in all operations for handling.

Nothing but stoping is going on at the No. 1 level of the Granby mines, where formerly two steam shovels were at work, it being more economical to break and drop the ore in chutes to the lower levels. The No. 2 tunnel or level is still used for a big output of ore, the 10-ton steel dumps being operated by a steam locomotive for feeding one of the giant rock breakers, which, in turn, drops the ore to the No. 3 level.

On the No. 3 level, electricity is the motive power, two 75 h.p. motors handling the long string of ore dumps. The terminal for this level is on the Great Northern railway tracks and is spendidly equipped for handling a large tonnage—3,000 tons per day, if necessary—including ore crusher, elevating machinery and ample ore bin capacity, with the usual economical rail—railway dump—car-loading facilities common to low grade mines.

During the past year what is known as the *Victoria* shaft outlet has been put in commission, costing upwards of $100,000, with its 250 h.p. electric hoist, three-compartment shaft, ore crusher, conveyor, ore bins, etc. A feature of this outlet is that the railway cars of both the C. P. R. and the Great Northern can be loaded from the ore bins, thus making it useful for both railways. This outlet can also handle 3,000 tons of ore daily, if desired, both railways having ample trackage facilities. The Great. Northern spur to the *Victoria* shaft headworks is estimated to have cost the railway company about $100,000. The *Victoria* shaft is finished and equipped to a depth of 400 feet; the skips, when loaded, weigh about seven tons each, running in counter balance. At the 400-foot level, electricity is being substituted for horse-power, a lot of specially constructed 7-ton steel ore dumps for use at that level having recently arrived at Phœnix from Pittsburg. The electric equipment is being installed and in a short time will be in running order. A 60-drill electrically driven air compressor furnishes the power needed for drilling, pumping, hoisting and many other uses at the properties, including diamond drilling and machine shop purposes.

Granby's ore shipments for the past year have been as follows (in dry tons):—

January	34,192 tons	July	80,216 tons
February	32,465 "	August	54,077 "
March	63,826 "	September	74,667 "
April	70,518 "	October	86,711 "
May	5,072 "	November	39,003 "
June	72,820 "	December (shut down)	.....

Total, 613,567 tons.

82E/SE-13 -14

Dominion Copper Co.

At the Dominion Copper Company's mines, owned by the company of that name, near Phœnix, and adjoining the Granby Company's properties, above mentioned, extensive development work has been carried on during the year, especially at the *Idaho* and *Rawhide*, while the *Brooklyn* mine of the company has been shipping steadily. The *Brooklyn-Idaho* group is in the heart of the City of Phœnix, while the *Rawhide* is about half a mile distant, adjoining the *Snowshoe* and *Gold Drop* mines, in the Grand Forks Mining Division. Altogether, the *Brooklyn* mine has sent out close on to 300,000 tons of ore since shipments started first. The ore is all hoisted through a 350-foot shaft from this mine and sent out over the C. P. R. The *Stemwinder*, adjoining the *Brooklyn*, is also well equipped with machinery, but has not been operated much this year, the energies having been concentrated on the company's other properties.

The *Idaho* mine has been extensively opened up by tunnels and "glory hole" work, making the blasting down of ore an easy and economical matter. This mine is served by a spur from the Great Northern Ry., which connects with the C. P. R. about eight miles distant, at Summit Camp.

A 30-drill compressor supplies all the power required for the several mines. The *Idaho* mine has also a shaft and a good electric equipment for use at the lower levels, when needed, this mine being connected with the *Brooklyn* mine by a drift at the 250-foot level, under the City of Phœnix. When operating at normal capacity, the Dominion Copper Company employs in Phœnix camp alone from 200 to 300 men, and ships from 750 to 1,000 tons daily by rail to its own smelter at Boundary Falls, about 20 miles distant.

Deadwood Camp.

B. C. Copper Co.

The second most important camp in the Greenwood Mining Division is Deadwood, located about three miles west of Greenwood, and the leading property is the *Mother Lode* mine, owned and extensively operated by the British Columbia Copper Company, Ltd. This mine is the chief producer of the company, supplying the bulk of the tonnage for their smelting works at Greenwood, which are excellently equipped with the most modern machinery. Recently, electricity was substituted for steam, and the 35-drill air compressor is being augmented by another of the same size, which is now *en route* to the mine. Another ore crusher, with jaws opening 42″ x 36″, of 64 tons capacity, being the same size as the large crushers used at the Granby Co.'s mines, is also being installed at the *Mother Lode*, and a 35-drill Rand compressor and 600-h.p. motor and rope drive for the same. A new compressor house addition, seven cottages for married employees and a superintendent's house, were also erected. A 500-h.p. motor and rope drive, a 100-h.p. motor for the crusher, a 100-h.p. hoist, and a 15-h.p. motor for the machine shop installed earlier in the year. During 1907 the *Mother Lode* shipped 208,321 tons of ore, double the amount that was sent out in the year 1906. The mine is served by the C. P. R., and the haul being short, the transportation is cheap and expeditious. Normally about 200 men are employed at the *Mother Lode*, the company having an excellent boarding-house, bunk-house and a number of commodious cottages.

For a number of years the *Mother Lode* was worked to a large extent on the "glory-hole" system, but in the last year or two the development and shipping has been nearly all from the underground levels. In this connection 746 feet of sinking and upraising and 2,058 feet of cross-cutting and drifting has been done, besides 1,925 feet of diamond-drill boring. The four-compartment shaft was deepened and the 400-foot level extensively opened up, shewing a large additional tonnage of copper ore in sight.

Sunset.

In this camp is also located the *Sunset* group of mines, owned by the Dominion Copper Co. The ore of the *Sunset* has a large percentage of iron, which is useful in fluxing at the smelter of the company. Lately the copper values contained in the ore have increased, thereby adding greatly to the value of the property. Last year the mine shipped 31,258 tons of ore to the company's own smelter at Boundary Falls.

The *Sudbury* property, acquired last year by Spokane capitalists, is another promising claim in this camp. A machinery plant has been installed and a 200-foot shaft sunk, in which good copper ore has been exposed.

Several hundred feet of work were done on the *Golconda* group in the southern quarter of this camp, a group owned largely by Quebec men, and which promises to be a mine of importance when sufficient development work has been accomplished.

The *Moreen* is another Deadwood Camp mine, with electric equipment, and owned by Minneapolis capital, that has had considerable work done thereon last year, and that has the earmarks of turning out well when more fully developed.

On the *Greyhound*, in the same camp, a good deal of work was done under bond, with encouraging results, so far as known.

SUMMIT CAMP.

In Summit Camp the most important mines are now owned and operated by the British Columbia Copper Company. Chief among these is the *Emma* and the *Oro Denoro*. The *Emma* has been worked steadily, the Hall Mining and Smelting Company owning a quarter interest. The ore has always been chiefly valuable for its iron contents, and is gladly received by the smelters on this account. When the smelters owning the property do not need the ore, a ready market is found for it at the other reduction works.

In the last two or three years better copper values have been found in the ores of the *Emma*, greatly increasing the mine's value. Extensive development through an inclined shaft has proven the ore-bodies to be much larger and more valuable than at first thought. One hundred and fifty feet of sinking and upraising, 125 feet of cross-cutting, and 634 feet of diamond drill work was done. A 200 h.p. motor, driving a 12-drill Rand compressor and five Sullivan drills, were installed; a bunk-house for the accommodation of 35 men, with bath-room, office and store-room, powder-house and boiler-house erected. Eighteen thousand two hundred and seventy-four tons of ore were shipped, the bulk of this going to the Granby Co.'s smelter at Grand Forks.

Adjoining the *Emma* is the *Oro Denoro*, which is essentially a quarrying proposition, the ore being easily handled and shipped by either the Great Northern or the C.P.R. The *Emma* vein is supposed to extend into the *Oro Denoro*. The 700-foot tunnel was enlarged, 130 feet of sinking was done, 800 feet of surface trenching excavated, and 1,432 feet of diamond drill prospecting accomplished. A Hodfields steel crusher, two big steel dump cars, a 100 h. p. motor, a belt conveyor and rope drive were installed, and a building over the crusher plant, an ore bin of 1,200 tons capacity, a building for tranformers and one-third of a mile of railway spurs built. Fourteen thousand four hundred and eighty-one tons of ore were shipped to the British Columbia Copper Company's smelter.

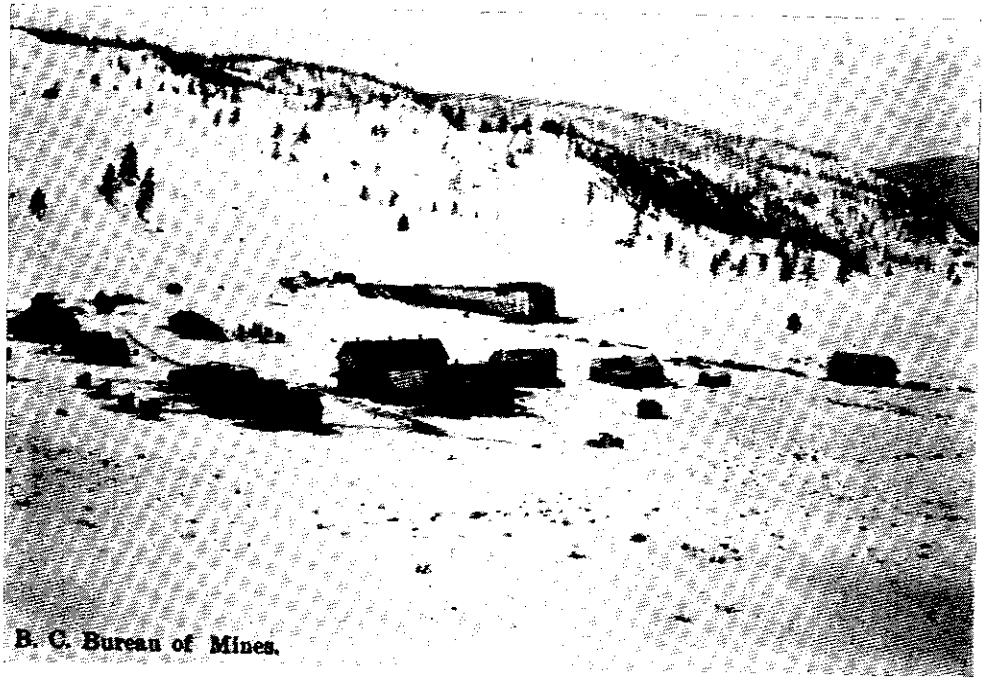
From the *B.C.* mine, belonging to the same company, but situated in the Grand Forks Division, 1,712 tons of ore were shipped to their smelter.

The following is a summary of the tonnage treated at the three district plants in the Boundary District for 1907, the figures being official:—

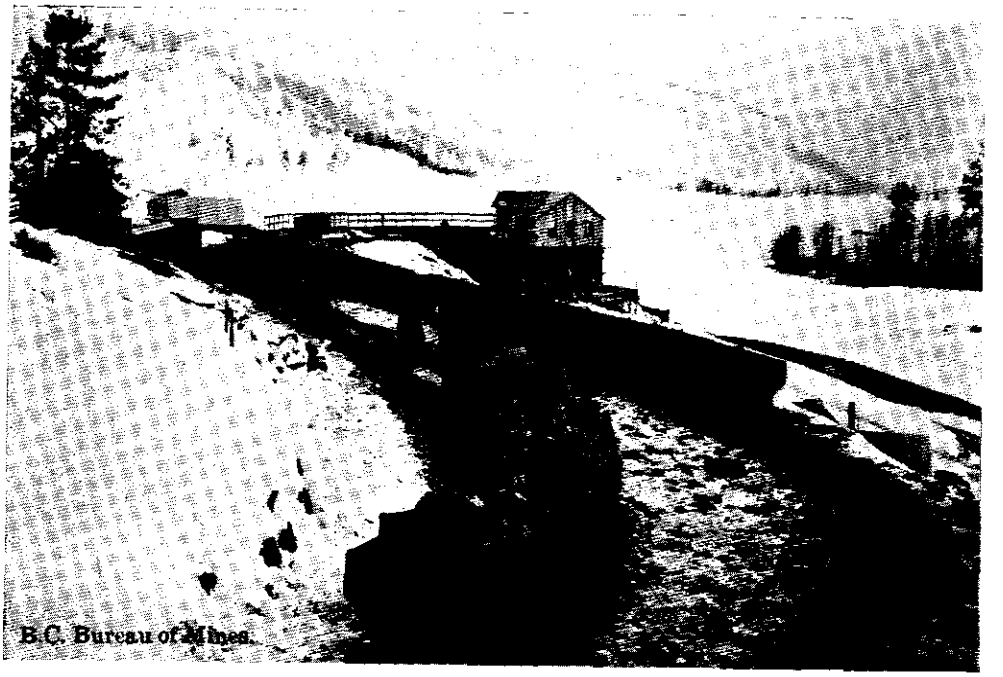
Granby Smelter, Grand Forks	637,626 tons.
British Columbia Copper Co.'s smelter, Greenwood	341,952 "
Dominion Copper Company's smelter, Boundary Falls	153,439 "
Total	1,133,017 "

GRANBY SMELTER.

At the Granby smelter little was done during May, November and December, the results being confined to about nine months of operations. Therefore, the smelter had but a short time in which to get its recently enlarged battery of eight furnaces in fullest operation. During the year many improvements were made about this plant, including new steel furnace buildings, steel flue dust chamber, greatly enlarged ore and coke bunkers, etc. The plant is now in condition to maintain a steady tonnage of 3,000 tons of ore per diem, or more, even when allowing for minor delays for repairs. Following was the tonnage treated in 1907, by months:—



CAMP AND No. 1 TIPPLE-NICOLA VALLEY COAL AND COKE CO,



No. 2 TIPPLE, MIDDLESBORO COLLIERY NICOLA VALLEY C. & C. CO.

January	31,118 tons.	July	80,261 tons.
February	34,864 "	August	55,295 "
March	67,525 "	September	79,167 "
April	72,170 "	October	91,690 "
May	5,343 "	November	41,320 "
June	75,934 "		
		Total	634,687 "

Of the above amount, only 21,118 tons consisted of custom ores, the balance, or 613,569 tons, being ore received from the Company's Phœnix mines during the year.

GREENWOOD SMELTER.

At the smelter of the British Columbia Copper Co. the year showed a gain of more than 100 per cent. over 1906, in point of tonnage treated. A new crushing plant, with additional ore bins and conveyor, has been installed during the year, with electric drive, and the water system has been duplicated. Additional slag hauling equipment has also been installed, and additions made to the machine shop. The following is the tonnage treatment by months for the past year :—

January	21,133 tons.	July	47,768 tons.
February	15,427 "	August	38,161 "
March	23,678 "	September	35,567 "
April	34,127 "	October	31,334 "
May	29,969 "	November	21,442 "
June	44,316 "	December	.....
		Total	342,922 "

The above tonnage consisted approximately of the following :—

Ore from Mother Lode mine	213,304 tons.
" Emma	3,113 "
" Oro Denoro	16,499 "
" Snowshoe	84,337 "
" Lone Star & Washington	1,584 "
" B. C. Mine	1,712 "
Other material from British Columbia	5,370 "
" " United States	15,536 "

At the Boundary Falls Smelter of the Dominion Copper Company, no custom ore was treated, the monthly totals being as follows :—

January	11,933 tons.	July	23,052 tons.
February	7,216 "	August	28,577 "
March	20,315 "	September	22,197 "
April	13,961 "	October	7,669 "
May	1,207 "	November	....
June	17,309 "	December	....
		Total tons	153,436

Average prices of electrolytic copper at New York, 1906 and 1907.

Month.	1906.	1907.	Month.	1906.	1907.
January	18.31	24.40	July	18.19	21.13
February	17 86	24.87	August	18.38	18.35
March	18.36	25.07	September	19.03	15.56
April	18.37	24.22	October	21.20	13.17
May	18.47	24.05	November	21.83	13.39
June	18.44	22.66	December	22.88	13.16
			Yearly average	19.28	20.00

OFFICE STATISTICS, GREENWOOD MINING DIVISION.

Free miners' certificates issued	468
Locations recorded (mineral)	194
" (placer)	3
Certificates of work recorded	413
Conveyances recorded	139

GRAND FORKS MINING DIVISION.

REPORT OF S. R. ALMOND, GOLD COMMISSIONER.

I have the honour to submit the following report of the conditions of mining in the Grand Forks Mining Division for the year 1907:—

Owing to the trouble in the coal mines, from whence the smelters in the Boundary country draw their coal and coke supplies, in the early part of the year, and to the closing down of both mines and smelters in the latter part of the season, the output for the year has been greatly curtailed.

THE GRANBY SMELTER.

Operations in this smelter did not cover much more than about two-thirds of the year, and yet the tonnage treated for that period was some 634,687 tons of ore, as against a tonnage of 840,000 for the twelve months preceding the time above mentioned. The month of October seems to have been the month in which the work proceeded to best advantage, as, in that month, the smelter ran through 91,690 tons of ore. Many improvements were made to the plant during the year, such as a new steel furnace building, a steel dust chamber, and the capacity of the ore and coke bunkers greatly increased, and, under fair conditions, the plant should be capable of putting through at least 3,000 tons of ore per day. Mr. J. P. Graves is reported as having said "that by the middle of next summer the company would be justified in increasing its capacity by at least 1,000 tons a day." If this is done, the capacity of the smelter would be increased so that the treatment of ore would be carred over the million tons a year mark.

THE GRANBY MINES.

The mines are partly in the Greenwood and partly in the Grand Forks Mining Divisions, with headquarters near the *Old Ironsides* mine at Phœnix. The company employed about 500 men in and around its mines. The machinery is all of the best and up-to-date, and the motive power is electricity, furnished by the South Kootenay Power and Light Company.

The *Gold Drop-Curlew* group, of the Granby Mines, lies within the Grand Forks Mining Division. Development work has been pushed during the last year, ore bodies of great size and importance have been opened up, and machinery, in the shape of crushers and conveyors, is being put in, and ore-bins built.

The C. P. Ry. has built a spur to these mines, at a heavy outlay, but as this will be an important point of outlet for ore—for in the future it is proposed to connect these workings with those in the older mines, as the ore-bodies, at depth, are supposed to be one and the same—the spur should prove a good investment.

THE DOMINION COPPER COMPANY'S MINES.

These mines, like those of the Granby Company's, are partly in both Mining Divisions, but the *Rawhide* mine, in the Grand Forks Mining Division, is the largest producer of this company's Boundary mines. It has been opened up by the driving of six tunnels, and is

capable of an output of over 1,000 tons of ore per day. The company's mines are supplied with electricity, for power, by the same company as supplies the Granby Company, and as producers they come only second to that company. The company's smelter is situated at Boundary Falls, on Boundary creek, some 20 odd miles from the field of mining

This company also works the *Mountain Rose*, in Summit camp, as the ore, on account of the quantity of iron contained in it, is valuable to them as a flux.

The Consolidated Mining & Smelting Company of Canada.

This Company's chief source of supply, from the Boundary country, is the *Snowshoe* mine, in Wellington Camp, Grand Forks Mining Division, and on which mine the company has, during the year, spent thousands of dollars in development. Although the mine only shipped ore for about nine months of the year, it managed to pile up the figures to 135,000 tons.

During the year this company purchased the *War Eagle* group of claims. This property is also located in the Grand Forks Mining Division, and was always considered property of merit, but as to this last, the company ought to be in a position to satisfy themselves, as they have had the diamond drill at work on it most of the time during the season. 82E/SE-19

The smelter owned by this company is situated at Trail, over 100 miles from these mines.

The British Columbia Copper Company.

This company's properties in Summit Camp in the Grand Forks Mining Division of Yale District, are the *Emma, Oro Denoro,* and *B. C.* mines. The first of these, the *Emma,* was at the start chiefly worked for the amount of iron contained in its ores, but for some time past the ore has been found to be improving in value in copper. Through an incline shaft this property has been well developed.

Next to and adjoining the above claim lies the *Oro Denoro,* which is worked on the quarrying system, and is supposed to be on the same vein as the *Emma.* As the Great Northern and C. P. R. tracks both run alongside this mine, it has the advantage of being able to ship by either railway.

The *B. C.* mine, the oldest shipping mine in the Boundary, lies about one mile from the *Emma.* This mine had shipped over 100,000 tons of ore before coming into possession of this company. It is served by a spur from the C. P. Railway.

During the summer some Vancouver parties did a little work on the *Golden Eagle,* in Brown's Camp, and shipped three car-loads of ore to the Granby smelter, but closed down again in the beginning of November.

The various camps in this Mining Division have been very quiet during the last summer; only in one or two cases was anything more than assessment work done, and that little extra work was principally done in Franklin Camp, on the north fork of Kettle river.

The following tables may possibly be of some interest:—

Ore produced in the Boundary for the last eight years.

1900	103,426 tons.	1904	801,925 tons.
1901	396,210 "	1905	965,628 "
1902	521,402 "	1906	1,182,517 "
1903	697,284 "	1907	

Ore shipped from mines in the Grand Forks Mining Division during 1907.

Snowshoe	135,000 tons.	Rawhide	64,173 tons.
Emma	18,274 "	Mountain Rose	3,999 "
Oro Denoro	14,481 "	Golden Eagle	60 "
B. C.	1,712 "		

Shipment of ore from Granby Mines to Granby Smelter during year 1907.

January	34,192 tons.	July	80,216 tons.
February	32,465 "	August	54,077 "
March	63,826 "	September	74,667 "
April	70,518 "	October	86,711 "
May	5,072 "	November	39,005 "
June	72,820 "	December (shut down)	
		Total	613,569 tons.

Tonnage treated at Granby Smelter during year 1907.

January	31,118 tons.	July	80,261 tons.
February	34,864 "	August	55,295 "
March	67,525 "	September	79,167 "
April	72,170 "	October	91,690 "
May	5,343 "	November	41,320 "
June	75,934 "	December	
Of this, 21,118 tons was custom ore.		Total	634,687 tons.

The cost of production, per pound of copper, was 10.14 cents, as against 8.35 cents for the preceding year.

OFFICE STATISTICS—GRAND FORKS MINING DIVISION.

Locations	164
Certificates of work	412
Transfers	70
Agreements	5
Certificates of improvement	26
Water records	2
Filing notices to do work	63
Free miners' certificates	267
Special free miners' certificates	1

OSOYOOS MINING DIVISION.

REPORT OF JAS. R. BROWN, GOLD COMMISSIONER, FAIRVIEW, B. C.

I have the honour to submit herewith my annual report of the mining operations in the Osoyoos Mining Division for the year 1907.

Operations during the year in Fairview were principally confined to the *Stemwinder* mine, the workings on the lower and upper Keremeos valley, Camp Hedley, and the adjoining country; and on Kruger mountain. I give below a short account of the different work done, kindly sent in by Mr. H. Lee, of Fairview; Mr. R. W. Northey, of Olalla, and Mr. D. A. Carmichael, of Fairview.

82E/SW-7

Stemwinder.

This mine is the property of The Stemwinder Gold and Coal Company. During this year the work progressed steadily, and the result of development has justified the anticipations of the management. It may be remembered that the company operating this mine ran out of funds after re-locating the ore-body on the 200-foot level under a fault that completely cut off all ore on the 200-foot and 300-foot levels, then the lowest in the mine. The management considered that the appearance of the ore below the fault warranted further expenditure, and a reorganisation scheme was very successful in providing ample funds for additional exploration, which has consisted of

sinking a perpendicular shaft, 4½ feet by 9 feet in the clear, from the surface close to the 46-stamp mill to the 500-foot level. The new shaft connects with the old workings on the 200-foot level by a cross-cut and on the 300-foot level intersects with the former inclined shaft. There are three ledges on the property, known as the North, Main and South ledges, two of which only (the North and Main ledges) have been worked heretofore. On the 200-foot level a cross-cut from the Main ledge was run 70 feet north and opened up the North ledge there, which is about 4 feet 6 inches wide. On the 300-foot level the Main ledge was cut, showing 12 feet of clean, high-grade ore. In the new shaft, at 350 feet the Main ledge was cut, showing 12 feet of clean, high-grade ore. On the 400-foot level a cross-cut was run 25 feet and opened up the Main ledge there, 12 feet wide and of good average value; this cross-cut is now being extended to open up the North ledge. On the 500-foot level, at the station, the new shaft ran into the south ledge, a fine body of ore on which sufficient work has not yet been done to afford very definite information. It is over 6 feet wide and carries good values on the part opened. A cross-cut has been commenced on this level to the Main ledge, 80 feet from the station, and the North ledge about 66 feet farther. All the ore opened up is below the fault, is in solid ground and carries good values.

A 150 h.p. Jenckes hoist and two new boilers, which will increase the boiler capacity at present available to about 300 h.p., are ordered. The mill and cyanide plant are being put in shape for steady work in the spring and the capacity of the latter increased, the new head-works and ore-bins are also in course of preparation.

The company operating this mine has recently concluded an agreement with the Strathyre Company, of Montreal, formerly working claims in the camp, for the purchase of its property and effects. This arrangement is of great importance locally, as it enlarges the sphere of *Stemwinder* operations (two of the five claims purchased adjoining the *Stemwinder* group) and will mean work on property otherwise idle.

Upper and Lower Keremeos Valley.

Throughout this section very little work outside of assessments has been done this year, although two properties at Camp Beaconsfield have pushed development, and the *Dolphin* at Olalla. As the new railway is now completed to Keremeos, it is the general belief that 1908 will see a great improvement in mining conditions in the Similkameen and Keremeos valleys. The following are the operations in the various camps during the past year:—

Riordan Mountain.

Billy Goat. The famous *Billy Goat* claim is now Crown-granted and no work was done on it this year, but all the other claims on the mountain received attention. On the west of the *Billy Goat*, James Riordan did considerable work on the ledge of chalcopyrite he discovered the year before on the *Resort* claim. On the west it is in contact with a granular limestone and on the east the formation is schist. The strike is N. E. and S. W., with nearly vertical dip. It seems to parallel the ledge on the *Billy Goat*. The capping is close to the surface, being covered by only three feet of soil, and all the assays made so far have given pay values in gold, silver and copper.

Homestake. The *Homestake*, adjoins the *Billy Goat* on the south, and is owned by Northey and Hayes, of Olalla. A lead of good grade ore about 8 feet wide, chiefly garnetite carrying yellow copper with magnetic iron and iron pyrites, was drifted on and the breast of the tunnel still shows the continuance of the ore-body, but of a higher grade than was taken out in the first 10 feet, the last assay giving high values in gold, in addition to a fairly large percentage of copper and 46 ounces of silver.

CAMP BEACONSFIELD.

The tunnel on the *Standard* was continued 40 feet farther and the ledge, which outcrops on the ridge, was intersected at a depth of 75 feet. The ore was of the same value as at the surface, showing no improvement. On the *Gibraltar* a new blacksmith shop was erected about 100 feet from the shaft. For the first 24 feet the shaft is perpendicular and then dips to the east at an angle of 60 degrees. This was the first time the shaft had been unwatered since 1904, and the fumes of the dynamite clung to the wet walls so persistently that the men were sick nearly all the time. It was intended to sink another 25 feet and then cross-cut, but rather than waste time waiting for a gas-dispersing appliance, work was started in the *Guinevieve* No. 1 tunnel, where the breast is in good-looking ore, but not of very high grade as yet. The work done on this group during the year was 110 feet of tunnelling, 10 feet of shaft and several open cuts.

In the *Gem* group an immense outcrop of pyrrhotite and arsenical iron, 200 feet wide, is traced right on to the *Gibraltar* claim on the top of the mountain. In the long tunnel on the *Gem* some good grade ore was met with, garnetite carrying yellow copper, and the work this year was all done in this tunnel, which is now in nearly 300 feet. The owners are James McNulty and Thomas Roderick, of Phœnix.

GREEN MOUNTAIN.

Very little work was done in this camp, many of the claims being Crown-granted. On the *Green Mountain* claim, owned by James Black *et al.*, a large hole has been sunk on the ledge and good copper values met with at a depth of 12 feet. The actual size of the ore-body has not been ascertained, but it is evidently large at that particular point.

INDEPENDENCE MOUNTAIN.

The *Horseshoe* group of three claims, owned by Matthison and McDonald, situated on one of the eastern spurs of Independence mountain, was located in the summer of 1906 and the first assessment done in 1907. The ledge has been uncovered for some distance, showing it to be at least 20 feet in width. The ore is pyrrhotite and arsenical iron, carrying values in gold and a little copper. The work done during the year includes a series of open cuts, the main one being 22 feet long, 12 feet wide and 10 feet face.

The owners of the *Anasis*, Messrs. Matthison, McNulty and Roderick, did considerable work during the year and opened the big ledge for nearly the whole length of the claim. Some white arsenical iron that was taken out assayed high in gold.

The *Dominion* and *Pine Apple* are two claims situated on the south-western slope of Independence mountain, owned by Alex. Ford. A big ledge of pyrrhotite (magnetic iron pyrites), including considerable garnetite carrying yellow copper on the footwall side, the outcrop being 35 feet wide. The ore is of good grade for a large part of this width. The chief work done this year was sinking the shaft to 16 feet and timbering same from surface.

Assessments were done on the *Cornell* group, the *Lone Star*, *King Arthur*, *Gordon* group and some other claims in this camp.

DIVIDEND MOUNTAIN.

Most of the claims in this camp are Crown-granted and no work was done on them. The *Scotia* group consists of five claims on the northern slope, owned by McDonald and Wheadon, of Olalla. Two parallel ledges, about 500 feet apart, traverse this group from N. E. to S. W., the ore in both being magnetic iron pyrites with garnetite carrying yellow copper of pay grade.

Both ledges have been cut into in several places, showing the average width to be between 10 and 12 feet. The work done in 1907 consisted of open cuts along the leads to prove their continuance.

The *Mountain Rose* is owned by L. A. Clark *et al.* The ore is pyrrhotite and arsenical iron, carrying values in gold, copper and silver, and occurs between granite and quartzite. The work done in 1907 was a 10-foot shaft sunk in the lead, which at that point is four feet wide.

The *Nellie*, owned by James Black, shows a very large outcrop of the usual pyrrhotite and arsenical iron, opened on in several places by surface cuts. Assays show fairly good values in gold and copper. Work done this year was open cuts.

Olalla Camp.

On the *Mount Zion* there are two parallel ledges about 1,000 feet apart, both running N. E. and S. W. and about the same width, 8 feet. The ore at surface may be termed high-grade, carrying good values in gold, silver and copper, but there is also some pyrrhotite that is of lower grade. The work done this year was stripping the lower ledge and open-cutting the upper one.

82E/SW-12 Dolphin.

The *Dolphin* is situated one mile south of Olalla and three miles north of Keremeos railway station, and is most favourably placed for economical working. Ever since the start in November, 1906, work has been steadily prosecuted during the past twelve months, with the exception of a few weeks' shut-down this fall. The working force has varied from six to twelve men, and something like 100 tons of ore has been stored for shipment. The workings consist of 1,200 feet of tunnelling and 50 feet of upraise, with numerous open cuts all over the slope of the hill. There are eight tunnels in all, the longest being in 275 feet. An aerial tramway was completed in November and is now working satisfactorily. The cable, which is 1,050 feet in length, carrying two buckets of approximately 400 lbs. capacity, stretches from the portal of No. 1 tunnel to the 100-ton ore bin at the foot of the hill, dumping automatically. A platform has been erected at Keremeos station calculated to hold between 30 and 40 tons, and already about 20 tons have been hauled from the mine to the station. This shipment, which is to be sent to the Northport smelter, is for the purpose of testing the actual value of the ore by authentic smelter returns. The ore assays high in copper, and profitable results are anticipated.

A large number of the claims in this camp are Crown-granted and only assessments were done on those that are not Crown-granted. It is not necessary to enumerate them here.

Camp Hedley.

While there were many drawbacks to lessen both production and development in mining in Camp Hedley in 1907, the year was nevertheless marked by much good work and important results.

Nickel Plate.

On the *Nickel Plate* group, owned by the Yale Mining Co., the total neglect of development work which marked the year 1906 and the confining of all work to extraction, has, during the past year, given place to a saner and more progressive policy. The present manager, Mr. F. A. Ross, who entered upon his duties about the last month of 1906, had a difficult task to perform in re-organising the entire concern, for it was not alone in the complete cessation of development work that the enterprise had suffered under his predecessor, but in the feverish anxiety to extract from the richer portions of the mine and make a record production, the plant had been driven beyond its capacity and was on the verge of going to pieces for lack of care and repairs. Unfortunately for Mr. Ross, but in a sense providential, the unprecedented rigour of the winter of 1907 froze

up the flume, cutting off the water supply in the second week in January, compelling a shut-down of mining and milling operations for three months. This period of stoppage was taken advantage of for a complete overhauling of the mill and flume, and the middle of April saw everything again in full swing. A systematic course of development and exploration was laid out for the season and rigidly executed, new ore-bodies being found on the *Nickel Plate* and *Sunnysides* and on the *Woodland* fraction convenient to the electric tram-line and worked by "glory hole." Two new "glory holes" and three new inclines were opened and new ore-bodies were located and opened in stopes which the previous management had abandoned. In the exploratory work, diamond drilling was most effectively employed, complete sampling and record of the cores being made, and 7,800 feet bored during the season. The tonnage of ore mined and milled during the year, notwithstanding the loss of three months' time, was 31,756 tons, principally from the *Nickel Plate* and *Sunnysides* claims. The ore carries values in gold of about $14 to the ton.

There was no further extension of the plant, although many changes and additions were made that were necessary to meet the wants of a more complete system of operating. By them the duty per stamp has been increased from 2.9 tons to 3.35 tons every twenty-four hours. Among the changes was the addition of another 30-foot conical-bottomed slime tank to the cyanide plant, and extension of the assay laboratory by addition of a room for preparing the samples so as to secure greater accuracy. New head-gear was also put in at the central station on the gravity tramway, which has materially increased the capacity of the tramway. The completion of the Great Northern Railway to Keremeos shortened haulage of the concentrates from 52 miles to 20 miles, and, as construction of the grade to Hedley is in progress at Hedley itself, it is fully expected that before half of 1908 has gone the Daly Reduction Co. will be able to load concentrates directly from the mill into the Great Northern cars on either a side track or a short spur.

Kingston.

On the *Kingston* group, owned by the Kingston Gold and Copper Mining Co., development work has been prosecuted steadily during the year. About $6,000 was expended, with great improvement to the property. Most of the work was done on the *War Horse* mineral claim and resulted in showing up a considerable extent of ore in which copper showed up in greater quantities than before. Much of this work was in surface cuts and in tunnels, which makes it difficult to convey any relative idea of the extent of work done. The completion of the railway to Hedley this year will enable shipments to be made. As the development has reached a stage where power is necessary, the company will have to deal with this matter before much more is done.

The *Oregon* group of four claims on Sixteen-Mile creek was given considerable work during the year, there being about 150 feet of tunnel driven. The *Oregon* carries copper with encouraging gold values. The principal owners are I. L. Deardorff and F. H. French.

The *Golden Zone* group of four claims is owned by J. J. Marks, Paul Broadhagen and James Murphy, and during the year T. H. Marks obtained an interest. Steps were taken to place this property on the producing list. A five-stamp mill has been procured and a road has been made to draw it in to the mine, together with building material and supplies, and buildings have been put up to accommodate the men.

The *Florence* group of three claims witnesses considerable development each year and 1907 has been no exception. Mr. George M. Gilbert has obtained an interest with Thomas Bradshaw in the property.

A number of other mineral claims have had the usual assessment done by individual holders, and on various Crown-granted claims the owners have done some work.

An important feature of the year was the work done by Charles Camsell, of the Canadian Geological Survey. The work occupied the entire summer and is not yet completed. It consisted of obtaining data for a topographic map of the camp, covering three miles east and west and four miles north and south. The scale of the map is to be 1,000 feet to the inch, with contour intervals of 100 feet. Geological studies were carried on in conjunction with the topographic work, special attention being paid to the occurrence of ore deposits, their origin and history. Mr. Camsell was assisted by J. J. Allen and A. O. Hayes, and in the topographic work had also the assistance of W. H. Boyd. In this connection it may also be mentioned that special attention was paid by the manager of the Daly Reduction Co., to working out structural geology on the *Nickle Plate* group, in connection with the diamond drilling done during the season. By this means much accurate data has been obtained.

Kruger Mountain.

Under the auspices of the Dominion Fairview Copper Company, Ltd., of London, Eng., the following work was done. The company's properties consist of the *Waneta*, *Favourite*, and *Waterdown* Fraction. These properties were operated by the company during the summer and fall of 1907, and although the showing was not very encouraging, still quite a bit of work was done. A shaft was extended on the *Waneta* from former working, to a depth of 50 feet, with fair results; a shaft on the *Waterdown* Fraction was sunk to about 55 feet and a tunnel was run 18 feet. Work has been closed down for the winter and a member of the company's Board of Directors is expected to arrive early in spring to examine and report as to the continuance of the work. On the *Favourite* a shaft was sunk 18 feet, late in the fall, also another shaft about 15 feet. The total force employed was an average of six men. There will no doubt be a resumption of the work, as the results show a copper ore fit for smelting.

Office Statistics—Osoyoos Mining Division.

Free miners' certificates	247
Records of locations	167
Certificates of work	296
Transfers and agreements	46
Certificates of improvements	30

CAMP HEDLEY, OSOYOOS MINING DIVISION, B. C.

By Charles Camsell.

(From Summary Report of Geological Survey of Canada, 1907.)

The important mining camp of Hedley is situated on the north side of the Similkameen river, at the mouth of Twenty-mile creek, in the Osoyoos Mining Division of British Columbia. It comprises about 100 surveyed and Crown-granted mineral claims, and many others on which the annual assessment work is still being done, all covering a sheet of about 12 square miles. It was discovered in the year 1896, when nine claims were staked on the ground overlooking Twenty-mile creek. Each succeeding year found more and more prospectors impressed with the possibilities of the camp, and more claims were taken up, until in 1900 virtually all the ground now included in Camp Hedley was staked out. The largest property owners in the camp, the Yale Mining Company, were early on the ground and commenced the work of prospecting their most important claims early in 1899. The preliminary work undoubtedly proved satisfactory, for they shortly after showed their faith in their prospects by beginning the building of a tram-line, flume and stamp and cyanide mill, a work entailing the outlay of hundreds of thousands of dollars. Though it is a little more than three years from the time

the first ton was milled, and the ore is extracted from only two claims, the camp has since justified their faith in it by becoming the largest producer of gold alone of any camp in British Columbia. It is very probable, as development goes on and transportation difficulties are overcome, new ore-bodies will be discovered and other known ore-bodies of lower grade will be worked, for the history of mining is only now beginning in this portion of the Similkameen district.

As the only previous work done in this neighbourhood was the reconnaissance of Dr. Dawson in 1877, when there was not the slightest suspicion of such valuable ore occurring, it will be readily seen how urgent was the need of the work of a Geological Survey party.

The field work of the season was in part devoted to the acquiring of data for a topographic map of the camp, which will cover, when completed, three miles from the east to west, and four miles from north to south. The scale on which this is being prepared is 1,000 feet to the inch, with a contour interval of 100 feet. Geological studies were carried on at the same time in conjunction with the topographic work, and special attention was paid to the occurrence of the ore deposits, their origin and history; but the attempt to do both simultaneously and with the same party was responsible for neither being finished at the close of the season. Much credit is due for their zeal and co-operation to my two assistants, Messrs. J. A. Allan and A. O. Hayes, who, besides assisting in the geological work, are to be credited with a great deal of the topography.

The method employed in mapping the district was that suggested by Mr. W. H. Boyd as likely to give the greatest accuracy for the time and means at hand. Triangulation on signals from an accurately measured base gave a number of fixed points on the sheet. Traverses were run with transit and stadia of all the waggon roads in the district, as well as most of the trails, the tram-lines and flume; and the detail was filled in with the plane table and stadia-readings. Elevations were obtained from a Canadian Pacific Railway bench-mark corrected to sea level. This gave the town of Hedley as 1,620 feet, and the highest point in the sheet as 6,660 feet above sea level. The unfinished portion, which covers the north-west quarter of the sheet, is much too rough and steep to be done in this way, and will have to be done by photographic surveying.

The work was also considerably facilitated by the interest taken in it by many of the people of the district. The Daly Reduction Company, through their manager, Mr. Ross, placed every convenience in our way, and the use of the gravity tram saved much time and hard labour. And of those to whom I am particularly indebted for information I may mention Messrs. F. M. Wells, C. E. Oliver, J. Gladden, A. Megraw; as well as the officials of the Yale Mining Company and the Daly Reduction Company.

TOPOGRAPHIC FEATURES.

Camp Hedley lies on the western side of the Okanagan range of mountains, whose highest points here reach an elevation of a little more than 7,000 feet above sea level. The neighbouring country is characterised by comparatively rounded outline and moderate relief to the east and south, but the north-western portion lies in the deep and narrow canyon of Twenty-mile creek, where extremely rugged and precipitous conditions prevail. The part of the valley of this creek which lies in our map is V-shaped, and about 4,000 feet in depth. The slopes on either side are very steep, and frequently impossible to climb. Broken rock talus slopes topped by precipitous bluffs are everywhere very common, while the narrow box-canyons cut by the torrential streams in the mountain side are nothing more than mere gashes almost imperceptible from the opposite side of the valley. These canyons are frequently the only possible means of ascending or descending the mountain side, while the ridges between them are quite impossible to explore.

The action of erosion in this canyon is very strong, and is equal, if not in advance of, the decomposition of the rocks by oxidation, and the finding of secondary surface deposits of oxidised ores is not to be expected where such conditions prevail. Every shower of rain throughout the summer washes down the canyon sides masses of rock that only a little undermining was sufficient to dislodge, so that the Daly Reduction Company, whose flume runs for three miles through the canyon, has to keep men on the watch night and day to guard against or repair accidents from falling rocks. Drift does not cover the rocks in this section, so that in its accessible parts the geological relations are easily studied.

On the slope of Eighteen-mile creek and overlooking the Similkameen river the physical features are not so bold, and the conditions are not unlike those which hold over the rest of the Interior Plateau. This part is not heavily wooded and the southern faces are usually devoid of all timber. The slopes are not so steep that drift will not rest, and unless exposed by the pick and shovel of the prospector outcrops of rock are rare. The prospector who owns claims on this side of the hill is likely to incur a great deal more expense in prospecting, and he is also more likely when he does locate an ore body to find it very much more oxidized and enriched on the surface than in the Twenty-mile canyon.

For the diversity of physical conditions on the two sides of the hill, one must look to glacial causes. Looking at the valley of the Similkameen river from the top of the gravity tram-line, and particularly to the southward, one is at once struck by its glacial outlines. The steep sides and broad drift-filled bottom make a well-defined U-shape that is characteristic of all valleys modified by the scouring action of a glacier. Typical also are the many hanging valleys that may be noted on the south side. Henry creek, Susanne creek and John creek all steepen suddenly in grade on approaching the main valley, and have not yet had time since the disappearance of the glacier to carve out a valley of uniform grade. The deep canyon of Twenty-mile creek may also be attributable to the same cause. The retreating glacier which filled the Similkameen valley eventually left the Twenty-mile creek occupying a hanging valley and emptying into the main valley by a short steep fall at its mouth. While the smaller streams were unable in the time since the disappearance of the glacier to cut down their valleys, Twenty-mile creek, with its larger volume and greater erosive power, was able to deepen its own bed in the rock and to form its present V-shaped valley. In this work it may have been materially assisted by taking advantage of the numerous faults and fractures that are found in these rocks, and which are the results of many and long-continued periods of vulcanism. The only other way to account for this Twenty-mile canyon is by a recent uplift of this portion of the earth's crust, of which there is not any corroborative evidence to be found in the surrounding country.

The whole Camp Hedley area was covered by ice during the glacial period. Though glacial striae were never noted, boulders transported by glacial action are found scattered over the summits of its highest hills.

General Geology.

The geological history of the area is somewhat complicated, and while the general sequence of events has been roughly worked out, there are yet many details which will require more study both in the field and in the office.

From the time its first sediments were laid down in the sea, the region has been the scene of much volcanic activity. Igneous rocks of different kinds have been instrumental in altering the older rocks, so that now it is often impossible to state definitely whether some of these older rocks were originally igneous or sedimentary.

The oldest rocks are the sedimentaries that cover the greater proportion of the surface. They all belong to one series, and have been referred to the Cache Creek group of Dawson's

classification. No determinable fossils have yet been found in them, but the lithological characters of the strata are very similar to the original Cache Creek rocks first described farther to the north.

These sediments are of great thickness, and as their prevailing dip is towards the west, a section from east to west across the sheet would give the succession in ascending order. This east and west section shows the following:—(1) red, grey and some black argillaceous and silicious beds interstratified in thin bands; (2) blue and white limestone, much altered and crystalline, with some silicious beds and breccia; (3) argillaceous and silicious beds on the west side of Twenty-mile creek and extending some distance beyond the limits of the sheet. Interbedded with these are a great number of sheets of andesite highly mineralised with arsenopyrite and weathering to a reddish colour that gives to the sides of the mountain the beautifully banded appearance which evoked the name of Striped mountain from Dr. Dawson.

All of these beds have been more or less altered by igneous intrusions, but those which have suffered most are the calcareous ones of the middle division. This division has also proved the most congenial for the formation of ore deposits, for in it lie the two producing claims on the hill, the *Nickel Plate* and the *Sunnyside*. The beds in which the ore bodies of these two claims occur have probably been originally limestone beds which become more or less impure towards the top, and near the contact of the igneous rocks have been altered by the addition of more silica to a rock made up largely of epidote and garnet with quartz and calcite. In other parts the alteration has been to pyroxene, or again to actinolite, but always with more or less garnet, epidote and calcite, depending upon the purity of the original beds. Irregular bodies of chorty rock are also frequently found in the contact metamorphic zone. About the centre of the sheet, in the P. S. draw, the alteration of the sediments has been to a rock made up almost entirely of garnets, and which is called garnetite. In portions of the *Nickel Plate* mine the metamorphosed rock has a distinctly banded appearance, due to the alternations of epidote and garnet in thin layers. Arsenopyrite is always a constituent of the contact metamorphic zone except where the igneous rock is granite. The monzonite and all its offshoots contain this mineral, and from them is migrated to the sediments.

The sediments on the eastern edge of the sheet are nearly horizontal. At the *Nickel Plate* mine they dip about 20 degrees to the west, but gradually steepen on the west side of the hill to 35 and 40 degrees. Across Twenty-mile creek and westward the angle of dip increases until it reaches 90 degrees, and the strata becomes closely folded and compressed.

Some volcanic activity probably took place while the rocks were yet beneath the sea, which would account for the interstratified beds of breccia and of possible tuffs. Numbers of andesite sheets were injected before the sediments were folded as they now are, while other dikes of the same material could only have been injected after the folding took place.

The rock next in age to the sediments is a mass of monzonite forming a core nearly in the centre of the camp, and extending to the west side of Twenty-mile creek. The normal phase of this rock is rather basic in composition, and is made up of orthoclase and plagioclase in about equal proportions, much hornblende and some augite, biotite and quartz. A more acid rock, containing none or few of the dark coloured constituents, lies to the east of this and forms the very prominent Climax bluff. Each of these rocks sends off innumerable dikes and sheets of so-called andesite into the surrounding sedimentary rocks. The relation of these two rocks to each other is puzzling. Well marked contacts between the two are sometimes found, and these invariably show the acid rock to be the more recent. Apophyses of the more acid rock are also found in the basic. On the other hand, gradual transitions from the one to the other are frequently seen, and wide areas occur which appear to be intermediate in composition between the two extremes. Altogether it is probable that the two varieties were derived from the same magma, though their formation of crystallization may not have been contemporaneous. If not

contemporaneous then the acid variety is later in age than the basic. The coarseness and evenness of the texture show their plutonic origin and that their crystallization took place far below the surface.

The dikes and sheets derived from this monzonitic core are also of two varieties, and show much the same composition as the mass, but with the development of a porphyritic structure. The acid variety appears to be more often connected with ore deposits than the basic.

Later than the monzonite is a large batholithic mass of granite, which forms the base of the hill overlooking the Similkameen river, and extends eastward across Eighteen-mile creek. This granite is similar to the large area of granite through which the river cuts for fifteen miles between Hedley and Princeton, and is probably part of the same intrusion, though separate for a short distance from it. It holds both orthoclase and plagioclase, with quartz, hornblende and biotite. A dike-like mass as an offshoot from this, 100 to 400 feet wide, is connected with the main mass on Eighteen-mile creek and runs diagonally across the hill to a point on Twenty-mile creek one mile above the town. The composition of this dike is slightly different, in that the hornblende is almost entirely replaced by biotite. Overlooking the Similkameen river the granite is in contact with the older sedimentary rocks, and this contact shows the granite truncating at an angle of about 30 degrees the edges of the sedimentary strata as well as the andesite sheets that are interbedded with them. The granite-monzonite contact on the Kingston draw shows many inclusions of monzonite in the granite, as well as apophyses of the granite in the monzonite.

Quartz porphyry and aplite dikes that cut both the granite and the sediments in several places are probably to be referred to the final stages of the granite intrusion.

A number of dikes of different composition follow the granite intrusion. Of these the most important are black and fine-grained, and are found in the northern and eastern parts of the sheet. They appear to radiate from a common centre near the foot of Bradshaw canyon. The texture of these dikes is felsitic, and in colour dark and reddish. For convenience it is called a felsite. It is rather silicious and like the monzonite contains much arsenopyrite. Segregated masses of this rock are met with in the monzonite apparently as a product of differentiation of the magma, showing that the two rocks are genetically connected, and under certain conditions the one might pass into the other.

The latest rocks in the camp are dike rocks, lamprophyres, rhyolites and soft green dikes. These, like the granite, appear to be barren of any arsenopyrite, and are not associated with the ore bodies except perhaps accidentally.

Economic Geology.

Camp Hedley up to date is entirely a gold producer, though it gives promise of some copper production later on.

The ore deposits belong to the class known as contact metamorphic deposits, that is to say, deposits that occur as the result of metamorphism of sedimentary rocks by igneous intrusions. The principal ore mineral is arsenopyrite, and the deposits are unique in the respect that arsenopyrite has never hitherto been found in such proportion to the other sulphides in contact deposits of this kind.

The ore bodies lie in the sedimentary rocks and particularly in the second division of the section already mentioned. The large eruptive mass of monzonite lying nearly in the centre of the camp has itself been the cause of intense contact metamorphism in the sediments that it cuts. Moreover the large number of dikes and sheets of andesite which had their source in the monzonite are also responsible for a great deal of local metamorphism. It is along the contact of these igneous rocks and in the zone of contact metamorphism that ore bodies have been found. Primarily these igneous rocks may have been responsible for the introduction of the

values, but other causes have been instrumental in concentrating these values to render them economically important.

The granite is not important in this connection, while all the dikes have not been sufficiently studied to justify an opinion as to what influence they have exerted in the formation of ore bodies.

The more acid variety of monzonite, and the sheets which it gives off, have caused, as a rule, the most intense contact metamorphism in the intruded rocks, and apparently the payable deposits are more generally associated with this variety.

The sphere of influence of the monzonite core with its dikes and sheets covers the whole camp, but the action becomes feebler at a distance. Where the sediments have felt the direct influence of the mass the alteration has been extreme, and whole areas of what were originally calcareous rocks have been altered to garnetite.

The zone of metamorphism in the sediments varies largely with their composition and the angle at which they are cut. The calcareous rocks lend themselves more readily to metamorphism than the silicious or argillaceous rocks. They are also more congenial for the formation of ores. Both in the *Nickel Plate* and *Sunnyside* mines the ore bodies lie in what were originally limestones, the *Nickel Plate* stratum having been more impure than the *Sunnyside*.

The contact metamorphic minerals developed in the sediments are garnet, epidote, calcite, pyroxene and actinolite, and with these are associated as ore minerals arsenopyrite, pyrrhotite, chalcopyrite, pyrite and specularite. The association of the oxides with the sulphides shows that they must have crystallised out under considerable pressure. Irregular bodies of hard cherty rock also occur near the contact, and probably owe their origin to an introduction of silica from the igneous rock.

Though the gold is always associated with the arsenopyrite, a great deal of arsenopyrite occurs scattered through the metamorphosed rock in which very little gold is found. It is almost impossible to tell, except by assay, what the value of the ore will be, for it all looks very much alike.

As a rule pyrrhotite is not associated with high gold values. Specularite, however, is a good indication. Chalcopyrite is common, though rarely in such quantities as to become important as an ore of copper. On the *Warhorse* mineral claim chalcopyrite occurs associated with pyrrhotite in sufficiently large bodies to make this claim a promising one, particularly as the ore also carries some values in gold and silver. Pyrrhotite is found massive on the *Toronto* and *Galena* workings and probably as a product of magmatic differentiation. On the *Red Mountain* it occurs in such quantities as to make the compass absolutely useless for surveying.

The Yale Mining Company own some 25 claims in the camp, of which only two, the *Nickel Plate* and the *Sunnyside*, are being worked at present. The ores from these claims are treated by the Daly Reduction Company in a 40-stamp mill and cyanide plant in the valley below. The capacity of this mill is about 3,500 tons per month. The mine and mill are run by water-power obtained from a flume three miles long. The company owns an electric tram line about a mile and a half long to carry the ore from the mine to the tipple, and a gravity tram line of 9,500 feet in length and 3,500 feet vertical height, which carries the ore in five-ton skips to the mill.

The *Nickel Plate* and the *Sunnyside* are the most important claims in the camp, and up to the close of 1906, or in less than three years, have turned out over 77,000 tons of ore. The *Nickel Plate* ore body lies in altered sedimentary rocks, which dip about 16 degrees to the west. Interbedded with these or cutting them at an angle are intrusive sheets of ande-

site. A vertical quartz porphyry and a black dike cut all these strata. The ore body now being worked lies on the upper side of a large andesite intrusion, which dips 40 degrees to the west and cuts the sediments at a sharp angle. The andesite acts as the footwall, and the ore body lies in the sedimentary rock in the zone of contact metamorphism due to the andesite intrusion. The metamorphosed rock consists of garnet, epidote and calcite carrying much arsenopyrite. The richest ore lies on the footwall and gradually fades out on the upper side into low grade rock. The greatest width of the pay ore is about 80 feet. The ore body is bounded on two sides by dikes and on the third side by a zone of fracturing running across the hill. Both arsenopyrite and pyrrhotite occur, but the gold is always associated with the former mineral and the greater the mineralisation by arsenopyrite the higher the values in gold.

The *Sunnyside* claim adjoins the *Nickel Plate* on the south and the ore body lies in a lower stratum. In all four workings the ore body always lies in altered limestone at or near the contact of an andesite sheet or dike. Epidote and garnet are not so abundant as in the *Nickel Plate*, but there is more calcite, quartz and pyroxene, all of which are more highly developed. The rock is very porous and has been much fissured, the fissures being now filled with calcite. Specularite is found in most of the *Sunnyside* workings, particularly on the footwalls.

In each of these claims the andesite sheets play an important part, and with other cross-cutting dikes have been the cause of confining the high values to certain restricted areas. Whether these igneous rocks are responsible for the introduction of the gold in the first place is uncertain, but the later concentration required the peculiar physical conditions that are now found in each of these claims. And in the search for other ore bodies in this camp, the apparently accidental conjunction of dikes and of dipping strata such as are here found should be borne in mind.

The *Kingston* group of mineral claims consists of the *Warhorse, Kingston, Metropolitan* and the *Kingston Fraction*, all lying on the Twenty-mile slope of the hill. The *Warhorse* ore body lies on a contact of massive blue limestone with an andesite sheet, and not far from the central core of monzonite. The limestone dips 30 degrees to the west, and carries irregular masses of cherty rock. It is cut by irregular dikes of andesite, which alter the limestone to an epidote-garnet-calcite rock. This constitutes the gangue of the ores, and the ore minerals are pyrrhotite, chalcopyrite, arsenopyrite and galena. These are scattered through the gangue in varying proportions, pyrrhotite forming with chalcopyrite the largest percentage. The chief values are in copper, but this is supplemented by some gold and silver.

On the *Kingston* claim farther down the hill the workings are in the sediments within a few feet of the edge of the monzonite core. Injections from the monzonite have penetrated the bedding planes of the sediments, altering and mineralising them as in the case of the *Nickel Plate* mine. The chief values are in gold, which is associated with arsenopyrite. Some later dikes cut both the sediments and igneous rocks, forming favourable localities for the concentration of the gold by circulating waters. The *Kingston* group of claims is very favourably situated for the occurrence of ore bodies, and more extensive development may prove their existence.

It was possible to examine only a few of the many claims in the camp, and only those on which some development work had been done. A group in the northern part of the sheet, owned by T. Bradshaw and others, gives promise of containing some valuable bodies of ore. Besides this there are many other claims, which with cheaper transportation and better facilities will be worked to advantage.

VERNON DISTRICT.

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VERNON MINING DIVISION.

REPORT OF L. NORRIS, GOLD COMMISSIONER.

I beg to submit the following report on the mining industry in this Division during the year 1907:—

Considerable work has been done on what is known locally as Zion mountain, situated between the north and south forks of Short creek, which empties into Okanagan lake on the west, about 12 miles south of Okanagan landing. There are four mineral claims owned by Mr. E. H. Love, an old prospector, the *No. 1*, *No. 2*, *No. 3 and No. 4*. The *No. 1* was staked as the *Homestake* by Mr. Love in 1903. These claims lie about seven miles up the creek. At this point the distance between the two forks is about three miles, and the hill (Mount Zion) rises to a height of between 1,200 and 1,500 feet above the bed of the north fork. The tunnel starts on the *No. 1*, about 10 feet above the creek-bed, and runs south for 90 feet; it then turns and runs due east for 75 feet, exposing on the face a 15-inch ledge at 80 feet below the surface. The ledge is free milling quartz but does not run very high, from $2 to $5 per ton. Although nothing worth while has yet been struck, the indications of the rock through which Mr. Love has driven his 165-foot tunnel has inspired him with unbounded faith in the ground he is prospecting. A good pack-trail in from the lake shore is the only means of transportation.

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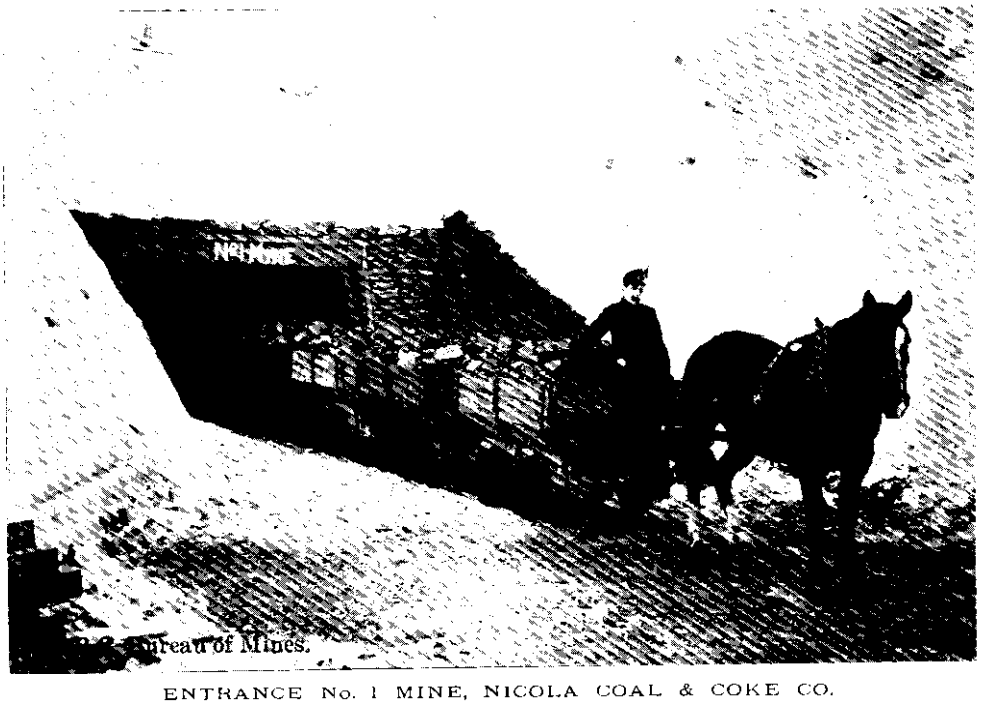
At the mouth of the tunnel Mr. Love has also staked a placer claim in the gravels of the creek bed. Here a 1,300 foot tunnel is needed to drain bedrock. The sinking of a 40-foot shaft, when he was driven out by water, and the construction of 150 feet of the above-mentioned tunnel, constitutes the development work accomplished by Mr. Love to date.

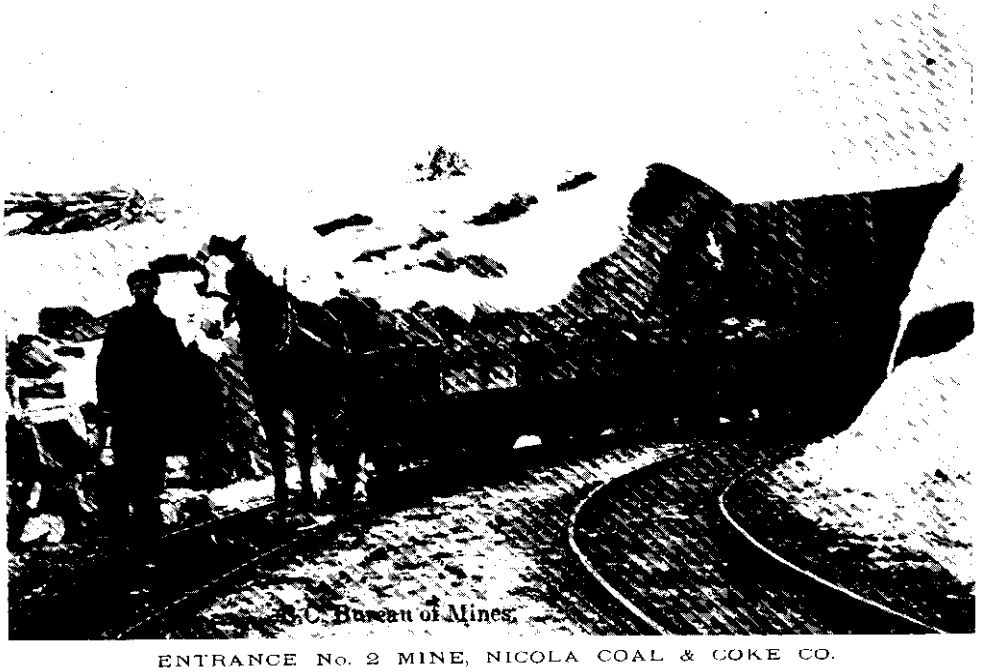
Three claims, viz., the *Rossland*, *Mascot* and *Evening Star* (which with the *Morgan* constituted the *McPhail* group), on Monashee mountain, were sold by the owners, Messrs. A. A. McPhail and S. J. McCorkell, last fall, to the Fire Valley Gold Mining Co., a company incorporated expressly for the purpose of developing these claims. The transfer was not made until November, and owing to the lateness of the season work was deferred, but the company intend to commence operations in the early spring.

A group of three claims, the *Fifty Cents*, *Prince Albert* and *Dipper*, has been attracting some attention among mining men during the past six months. These claims lie on the west bank of the north fork of Mission creek, about five miles up from its junction with the main stream and about 20 miles east from Kelowna. The north fork at this point runs about S. W. and the claims lie on the face of a steep, rocky terraced hillside, covered with loose rocks and bunch-grass and but little timber. The ore-body is large, but irregular and with ill-defined walls. The *Fifty Cents* claim was recorded by Mr. H. B. Mills in May, 1902, and he and Mr. A. E. Bishop, of Vernon, now own the group. There is a good waggon road for eight miles out of Kelowna and the balance of the way a very good pack-trail.

The aggregate amount spent in development work every year, even in this district, where mining operations are not carried on very extensively, is very great, and, while it might be difficult of accomplishment, much good would result if some means were devised whereby the average prospector might be advised or instructed as to the best method of developing his property. Too often the work done as assessment work is practically thrown away. A shaft is sunk sometimes when the same expenditure, if made in clearing off the underbrush and



ENTRANCE No. 1 MINE, NICOLA COAL & COKE CO.



ENTRANCE No. 2 MINE, NICOLA COAL & COKE CO.

stripping the surface, would show up the claim to much better advantage. The farmer, thanks to the Farmers' Institutes and the Department of Agriculture, has expert advice ready to hand on every conceivable subject connected with his business, while the prospector, confronted with infinitely more difficult problems, has no such assistance. It is true that a very close comparison cannot be drawn between the two industries. But were a mining engineer, a practical man and a man of some standing in the Province (and there are a number of them), to visit the different camps as a totally disinterested person, acting under the direction of the Department of Mines, and to advise the prospectors in a friendly way as to the best way to set to work to develop their claims, he would be very welcome to the prospectors, listened to with respect and attention and, I believe, his advice in the majority of cases would be followed. The result would be that less money would be spent under conditions which preclude any reasonable chance of success, and the annual assessment work on the different claims would enhance their value to a much greater degree than is now the case.

Mr. W. E. Winkler, of Penticton, and associates hold four coal prospecting licences on Powers creek, which empties into Okanagan lake on the west side, at Gellatley. These licences cover a tract two miles square, the eastern boundary of which comes within half a mile of the lake shore. On the 20th December last they commenced boring with a steam-driven diamond-drill and reached a depth of 451 feet on the 16th January last, under the superintendence of Mr. A. E. Thomas. The hole was started near the creek bed, at an elevation of about 500 feet above the lake and about two miles from the shore. The core taken out shows the drill to have gone through successively (as nearly as could be ascertained), from the surface in descending series—

25	feet	fine sandstone;
5	"	clay, with streaks of coal;
19	"	conglomerate, with streaks of coal;
6	"	gray sandstone;
7	"	lava;
7	"	sandstone;
31	"	gray sandstone;
100	"	sandstone and conglomerate, with traces of coal;
5	"	clay;
25	"	conglomerate;
5	"	clay, with small seam coal;
2	"	coal;
205	"	sandstone and conglomerate;
8	"	shale;
1	"	conglomerate still in bottom.
451	"	

At 253 feet artesian water was struck which smells strongly of petroleum. In the bank near the scene of the drilling operations two seams of coal, of about one foot thickness each, are exposed. These two seams are divided by a parallel seam of two feet of clay. Samples taken from these seams (on the surface) gave, on analyses, fixed carbon 55.39 and ash 9.10, yielding a fairly good though somewhat friable coke. The company has funds on hand and intends to have its property examined by a competent man, and, if the report is favourable, resume operations in the spring.

OFFICE STATISTICS, VERNON MINING DIVISION.

Free miners' certificates issued	109
Claims recorded	24
Certificates of work recorded	16
Transfers recorded	5
Crown-granted claims on tax roll	28

YALE DISTRICT.

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REPORT OF G. C. TUNSTALL, GOLD COMMISSIONER.

I have the honour to enclose the mining reports for the Kamloops, Ashcroft, Yale, Nicola and Similkameen Mining Divisions, embracing operations during the past year in those Divisions. In the Kamloops Division there have been few changes worth mentioning since the date of my last report. Not much prospecting has been done in consequence of the slump in copper. A few of the claims on Coal Hill are being worked by the owners, whilst in the majority of instances the labour has not exceeded the limit of assessment work. There is every reason to believe that a smelter, of considerable capacity, will be erected in the near future, in the vicinity of the line of railway. With that object in view, mine owners have been consulted in regard to the quantity of ore that would be available for treatment from their respective claims, and the information obtained has been deemed satisfactory.

The coal-boring operations, six miles west of the town, attained a depth of over 300 feet when a stratum of soft shale was struck, which made progress so slow that work was temporarily suspended, to allow of prospecting being performed with the drill at the shaft near the old Guerin property. I have since heard the operations in that vicinity have not proved successful in finding a seam of sufficient thickness as to prove of commercial value, and it is probable the drill will be removed to its former position.

Placer mining in the Yale Division is an event of the past. I regret to state that the operations of the Yale Dredging Syndicate, below Yale, have been a failure, and the proprietors are making arrangements for the disposal of their dredge, which was of the New Zealand type, and operated by men of experience in that country. It is, however, generally conceded that the completion of the V. V. & E. railway will bring into mining activity valuable mineral properties on the southern slope of the Hope mountain.

The Highland Valley mines in the Ashcroft Division are fulfilling the most favourable expectations of the parties interested in them. A large outlay has been expended in development work that has been amply justified by the results.

The coal companies in the Nicola Division are energetically prosecuting the development of their respective properties for a larger output, for which there will be an unlimited demand for the various purposes for which it is used. The recent discovery of a seam seven to eight feet thick on the Hamilton Hill, adjacent to Nicola, has produced much excitement, and a company has been formed, provided with the necessary capital to develop the property, and work will be shortly begun with a suitable force of men.

In the Similkameen mining is still handicapped by the lack of railway transportation, which is indispensable for the development of its resources. It is expected that the V. V. & E. railway will reach Princeton this fall, and stimulate activity in the mining locations of the district.

A seam of coal, from eight to nine feet thick, was discovered last year in the left bank of Granite creek, abont four miles from the old town. The coke obtained from this seam is pronounced to be of good quality. On the right bank of the Tulameen river, a short distance from the Tulameen townsite, there has been lately uncovered a deposit of coal, over seven feet thick. The foreman in charge of the work has received orders to employ sixteen men and proceed to run a tunnel.

KAMLOOPS MINING DIVISION.

Development work has been prosecuted on the undermentioned claims during the past year:—

Orphan Boy.

The *Orphan Boy* group embraces four full-sized claims, viz.: the *Orphan Boy*, *Last Chance*, *Black Hawk* and *Copper Cliff*. Most of the work has been performed on the *Orphan Boy*, consisting of a shaft 40 feet deep and a cross-cut at the bottom exposing a body of ore situated between well-defined walls, assaying well in copper, gold and silver. This ledge has been traced on the surface by open cuts for a distance of 2,000 feet. The trend of the vein is north-east and south-west. There is a considerable quantity of 5 per cent. ore on the dump.

Lorne.

The *Lorne* group is in the Jocko lake section of Coal hill, about six miles south of Kamloops. A large extent of surface work has been accomplished on the vein. A shaft has been sunk to the 50-foot level, showing up a quantity of copper ore. The ledge is heavily iron-capped, and the work has demonstrated that the iron has been substituted by the copper ore. There are about 100 tons of high-grade ore on the dump, including solid sulphides of copper. The ore body, 100 feet in width, is clearly exposed on the surface a distance of 1,500 feet.

Wheal Tamar.

The *Wheal Tamar* group, also in the Jocko lake district, has been worked the past season by a small force of men under the charge of O. S. Batchelor, who is one of the owners. A well-timbered shaft has been sunk in the old glory-hole. At the bottom a cross-cut exposed 50 feet of ore that would prove profitable with suitable reduction works. A drainage tunnel was lately started that will intersect the vein at a depth of 160 feet from the surface. A drift run 40 feet each way from the bottom of an old shaft, 120 feet north of present works, also exhibited a large extent of good ore. These works will be connected with the new tunnel, when a large quantity of ore will be mined.

Cotton Belt Mines.

The Cotton Belt mines are located on Grace mountain at an altitude of 6,350 feet above sea level, about 10 miles north-east of Seymour Landing and 40 miles by water from Sicamous. Three distinct veins, running parallel to each other, are found in the mineral belt which is being prospected. The first one discovered is a galena ledge from 4 to 20 feet wide, yielding assays as high as $70 per ton, principally in silver. The second vein was discovered by a Mr. Sinclair. The vein matter contains gold-copper ore, which has returned assays of 5 per cent. copper and $12 in gold to the ton. A shaft 20 feet deep has been sunk and the ledge ascertained to be 50 feet wide. The third vein lies about 2,000 feet to the east of the one previously mentioned, and is 10 feet wide, 3 feet of which carries galena, grey copper and chalcopyrite. Being a late discovery, it has not been tested as to value. The mineral deposits exist in a schist formation, and can generally be classed of a shipping character. A suitable road is very much needed for the transportation of supplies, and a bridge across the Seymour river is considered indispensable, as it cannot be forded except at a favourable stage of water. It is reported extensive water-power is available for utilization.

Cotton Belt Group.

One hundred feet of stripping has been done on the *Victoria* and *Harrison* claims, showing up a ledge 7 feet 6 inches in width. On the *Cotton Belt* two men have been engaged surveying a tunnel, of which 55 feet have been completed, with 6 feet of ore in the face, which improved in extent and value as the work progressed. A number of excavations have been made on these properties, which, whilst affording evidence of the extent of ore bodies, has not proved conducive to development. It is the intention to concentrate the work hereafter in one locality and determine more fully the favourable character of existing conditions.

OFFICE STATISTICS—KAMLOOPS MINING DIVISION.

Claims recorded	120
Certificates of work	150
Bills of sale	27
Free miners' certificates	204

NOTE BY PROVINCIAL MINERALOGIST.

A certain amount of prospecting has been done to the north of Seymour arm of Shuswap lake, with indications of success. The following description of a couple of groups of claims on headwaters of Seymour River and adjacent to old Big Bend trail, together with a sketch map, have been kindly contributed by Mr. William Thomlinson, of New Denver, B. C., who visited the district last fall:—

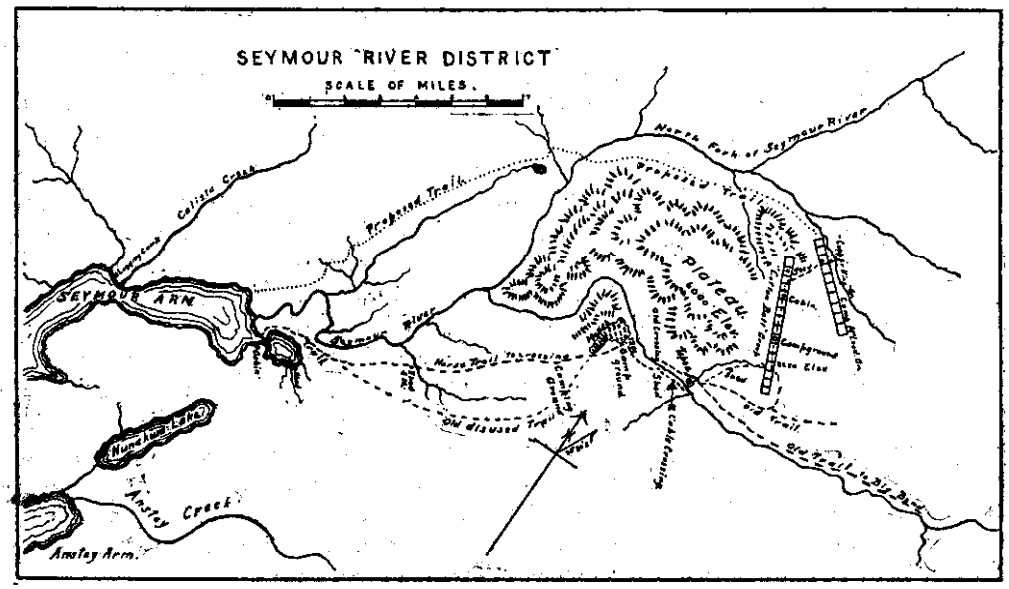
"From Sicamous, on C. P. R. main line, to head of Seymour arm of Shuswap lake, 36 miles by water. Small steamboats running from Kamloops and Sicamous to mouth of Celesta creek, five miles from Seymour. Row-boats can be hired at Sicamous.

"McConnell and Bass, trappers, live in cabin at Seymour landing. Address Albert Bass, P. O., Sicamous, B. C., if a good guide required; or address, Hugh Sinclair, Ducks, B. C.

"Note sketch regarding positions of cabins, lean-to shed, etc., available along route.

"From McConnell's cabin, at Seymour, to the old crossing of the Big Bend trail, about 13 miles up the Seymour river, the trail is in fair condition for pack animals, but from this point onward the trails are bad and obstructed by fallen timber and rocks. The trail from Tepee up Cotton creek is not completed to the open plateau; therefore, if horses are taken, use the old trail, reaching the plateau in a north-easterly direction (*see* sketch.) Horses will have to swim or wade the Seymour river somewhere near the old crossing of the Big Bend trail.

"Parties from Vernon interested in the *Cotton Belt* group of claims have erected a cable and cage crossing about a mile higher up the river. Some distance above the cable crossing there is a log jam, where persons can cross the river near mouth of Cotton creek. There is a small lean-to shed near the log jam, north side, but the 'tepee' shown on the sketch is about one-half mile up Cotton creek.



"If horses can be got across the river and the plateau reached by the old trail, saddle animals can be used to the west end of the *Cotton Belt* group, but not beyond, as there is practically no trail to the *Copper King* or *Camp McLeod* groups, which are situate along a very steep and broken slope.

"The *Cotton Belt* group consists of about 16 claims, located along an almost continuous vein outcrop, about 80 feet from and parallel to a large 'dyke' of crystalline limestone or coarse marble. The vein is on the north-east side, footwall side, of the lime dyke, in a schistose eruptive rock, and dips, same as the dyke, to the south-west. Minerals noted on or near outcrop of vein, surface workings and dumps: galena, zincblende, iron pyrites, oxides of iron, garnet rock vein quartz, etc. Values said to be low; ore much mixed.

"Some distance from and on the upper side of the lime dyke above referred to there is a belt of what appears to be a hard lime agglomerate of a brown colour; this and the parallel lime dyke were the only rocks, not distinctly of eruptive origin, seen for miles; therefore, it is an interesting geological problem to solve their true nature and occurrence where found enclosed for miles in igneous or eruptive rocks.

"The *Copper King* group of claims is located along the outcrop of vein of the shear zone fissure type, both walls being alike gneissic and schistose igneous rock, probably an altered hornblende granite. The vein filling, where exposed on the *Copper King* claim, is quartz showing copper-bearing minerals, mainly chalcopyrite. Samples taken by myself gave from 2.2 to 21.8 % of copper, and the paystreak, 2 to 6 feet wide where now exposed, will average, I think, 5 % Cu. and 50c. Au. per ton (2,000 lbs.) of ore.

"The claims of the *Camp McLeod* group are located on a vein parallel to the vein showing on the *Copper King* group, but do not show any copper-bearing minerals to speak of. This vein on the *Camp McLeod* claim has an outcrop over 8 feet wide, and the minerals noted were galena, zinc blende, magnetite, sulphide of iron, quartz, calcite, etc., intimately mixed together, No mineral of value found yet, but values may improve with depth, or the ore may become more defined and less mixed below the outcrop.

"The natural route to the *Copper King* and *Camp McLeod* groups of claims is *via* the north fork of Seymour river, as shown on the attached sketch map, and I think that the *Cotton Belt* group is also more accessible by the same route, as the grade cannot be more than about 4 % from Seymour landing and does not cross any high divides or plateaus.

"I cannot at present say that any of the mineral properties referred to will make mines, but I do deem some of them worthy of substantial development, especially the *Copper King* group; therefore think that a good trail ought to be built up the north fork of Seymour river, as such a trail would enable the owners of the said mineral claims to develop or bond their properties, and besides open up a section of country rich in timber and agricultural lands."

ASHCROFT MINING DIVISION.

Report of H. P. Christie, Mining Recorder.

I have the honour to submit my annual mining report for the Ashcroft Mining Division for the year 1907.

The situation generally remains unchanged since last year, the office statistics, as you will see, being practically the same as 1906. The owners of claims continue to have complete confidence and do the necessary amount of assessment work to keep them existing, but there has been no actual mining to speak of.

OFFICE STATISTICS—ASHCROFT MINING DIVISION.

Free miners' certificates issued	114
Certificates of work recorded	46
Locations recorded	48
Conveyances "	11

ASHCROFT MINING DIVISION.

NOTES BY THE PROVINCIAL MINERALOGIST.

Maggie.

The *Maggie* mineral claim is situated on the west side of the main Cariboo waggon road, about 14 miles from Ashcroft, and is owned by Messrs. Hocking, Smith and Bryson. During the summer of 1907 the property was held under bond by Messrs. Rombauer and Adams, who did considerable development work under-ground, employing 10 men for the greater part of the season. The formation is a light coloured magnesium rock in which the lead being developed is a crushed zone following a fault plane, having a general east and west strike and a dip of about 70° to the south. The mineralisation consists of copper pyrites in lenses of quartz occurring at irregular intervals in the crushed zone.

During the course of development the lessees shipped some 45 to 50 tons of higher grade selected ore to the Ladysmith smelter, which yielded about eight per cent. copper and two ounces of silver to the ton, with no return for gold. The freight from the mine to Ashcroft was three dollars a ton, while a freight (from Ashcroft) and treatment rate of five dollars a ton was charged by the smelter. These charges rendered it necessary to ship only the higher grade ores, so that from the shipping ore there had been sorted out from 100 to 125 tons of second class ore, which was estimated to run about half the value of the first class; this second class ore will not stand the treatment charges necessary at present.

The underground workings consist of a shaft, started on the top of a small knoll about 100 feet higher than the waggon road and than the Bonaparte river, and sunk about 265 feet. At the level of the waggon road an adit tunnel has been driven in for about 600 feet, from which, at 150 feet in, a cross-cut 35 feet long has been driven to the north to meet the shaft, while farther in, another cross-cut has been made to the north for 60 feet, meeting the lead at that distance. At a depth of 185 feet in the shaft, or 85 feet below the adit level, is the No. 2 level, connected with the shaft by a cross-cut, and with the No. 1, or adit level, by a winze. On this level a drift has been run to the east for 75 feet, with cross-cuts at the end amounting to 55 feet; and to the west a drift has been extended for about 120 feet, and a stope, 70 feet long, had been raised some 30 feet above the level, from which ore was being taken.

No. 3 level is at a depth of 165 feet below the No. 1 or adit level, and is also connected with the shaft by a cross-cut tunnel. On this level some 175 feet of drifting and cross-cutting is said to have been done by previous lessees, but as it was insufficiently timbered, the workings had caved and were, in July, 1907, being cleared out and re-timbered, about 100 feet of the level having been so recovered.

Gypsum at Spatsum.

On the hills forming the north bank of the Thompson river, some few miles west of Ashcroft and opposite the railway station of Spatsum, four mineral claims have been staked by Messrs. Sinclair and Spencer, covering a deposit of gypsum. These claims, located as the *Hart*, *Flora*, *Marie* and *Belle*, were surveyed during the spring of 1907 and are in the "Railway Belt." The claims are located about one-third of a mile from the Thompson river, and are about 600 feet higher than the river

bed. Very little work has as yet been done on the properties, and as much disintegration of the soft rock formation has taken place, it was impossible to determine, with any degree of accuracy, the extent of the deposit; but, so far as could be determined, there is a bed of fairly pure gypsum about 40 feet thick, having an apparent strike of N. 30° E. and a dip of 30° to the N. W. The under and overlaying beds are shale, so disintegrated on the surface that their juncture with the gypsum beds is very indistinct. It appears that some ten years ago the property had been staked by a prospector named Munroe, who drove a tunnel into the deposit about 25 feet, at the end of which a small winze was sunk. These workings, although small, are in very solid and pure gypsum, and from here samples were taken for analysis, upon which the Provincial Assayer reports as follows:—Gypsum ($CaSO_4 + 2Aq$) = 99.8 %; silica = trace; alumina = trace; iron = *nil*; magnesia = trace.

The deposit may be said to have a length of at least 2,000 feet, with, as already stated, a thickness of over 40 feet. The layers comprising the bed are of varying hardness and purity, but, there appears to be no doubt that, the deposit is capable of providing a large tonnage of very pure mineral. The property is so situated that the mineral could be delivered by aerial tramway directly to the C. P. Ry. tracks at Spatsum, on the opposite side of the river.

HIGHLAND VALLEY.

Highland valley is the name, locally given, to a section of country which lies about 27 miles to the south-east of Ashcroft, on the waggon road from that place to the Nicola valley. The so-called valley is in reality the height of land between Pukaist creek flowing west into the Thompson river, Three-Mile creek flowing north into Kamloops lake, and Guichon creek, which flows south into the Nicola river. The camp here formed is, consequently, partly in the Ashcroft and partly in the Kamloops Mining Divisions, but as the camp is more easily reached from Ashcroft, and most of the parties interested reside there, it has become associated with the former Division.

Transvaal.

The best known group in Highland valley camp is the *Transvaal* group, since that property, while under bond to the Trail smelter, was quite extensively developed. The group consists of six claims, the *Transvaal*, *Imperial*, *Chamberlain*, *Ladysmith*, *Pretoria* and *Mafeking* mineral claims., and is owned by William Knight, J. Hoskings and George Novak. The shaft, in July, 1907, was found to be filled with water to within 25 feet of the collar, so that none of the underground workings could be inspected, but they are evidently extensive, to judge from the size of the dump. The shaft has two compartments, and is reported to have been sunk 200 feet, with, at the 100-foot level, a drift to the west of 160 feet in length, and another to the east, of 180 feet, and from the latter a 40-foot cross-cut was driven. At the 200-foot level a drift was made to the east for about 75 feet. The shaft is surmounted by a shaft-house, in which a hoisting engine had been installed, which has since been removed. A few feet to the north-east from the shaft are some large open pits, in which were to be seen a certain amount of blue carbonate of copper, occurring as irregular patches in a black amygdaloidal trap dyke. The mineral, as shown in these cuts is not present in sufficient quantity to constitute an ore, although appearing greater than it really is, owing to the contrast of the blue carbonate against the black enclosing rock. The underground workings mentioned had been undertaken to prove this surface-showing at a depth, and, judging from the character of the dump and the fact that no ore had been shipped, no ore-body of importance was encountered in the workings.

Some 1,500 feet from the shaft to the north-east there is a tunnel about 200 feet long, evidently driven to prove up a surface-showing of copper in a similar trap-rock, but, as far as could be seen, no sufficient amount of ore was met with in the tunnel.

The *Ajax* mineral claim adjoins the *Transvaal* on the east and is owned by Knight and Hosking. There is a showing of similar black trap-rock showing sulphides of copper. Two tunnels, 20 and 25 feet respectively, have been started to develop the property at a depth, but had not, as yet, been driven into the solid formation.

Highland.

The *Highland* group, consisting of seven claims, viz.: the *Highlander, Standard, Glenora, Glenora Fraction, Nickel Plate* and *Virginia* mineral claims, is owned by George Novak and J. S. C. Fraser, of Rossland. This group adjoins the *Transvaal* group on the south and at a slightly lower elevation. Near the centre of the group there is a tunnel which has been driven in 115 feet, from which two cross-cuts have been driven to the left for a distance of 15 feet. At this point the showing consists of a black trap-rock, similar to that noted in the *Transvaal*, with small quantities of copper pyrites scattered through it. Some distance away a timbered shaft was found which had been sunk about 25 feet deep, but, as it was filled with water, it could not be examined. There was no particular showing visible on the surface, but, to judge from the dump, mineral had been encountered in the shaft, as a considerable quantity of black trap-rock had been taken out, appreciably impregnated with copper pyrites. A sample, taken from the dump, of what might be considered the ore, gave, upon assay, 4 % copper.

Keystone.

The *Keystone* group lies to the east of the *Transvaal*, on Forge mountain, at the headwaters of Guichon creek, the workings thereon being about a mile from those of the *Transvaal*. The group consists of six claims—the *Keystone Fraction, Douglas Pine, Snowden, St. Boniface, Waverley* and *Mafeking Fraction*—and is owned by George Novak, Al. Johnson. J. S. C. Fraser and John Cowans. Very little work has been done on these claims, only a small tunnel some 15 feet long having been driven, chiefly through slide rock, but reaching the solid formation. No amount of ore was visible in the rock-in-place in the tunnel, but in the slide rock, removed in making the tunnel, a considerable amount of fine copper carbonate—azurite—had been found.

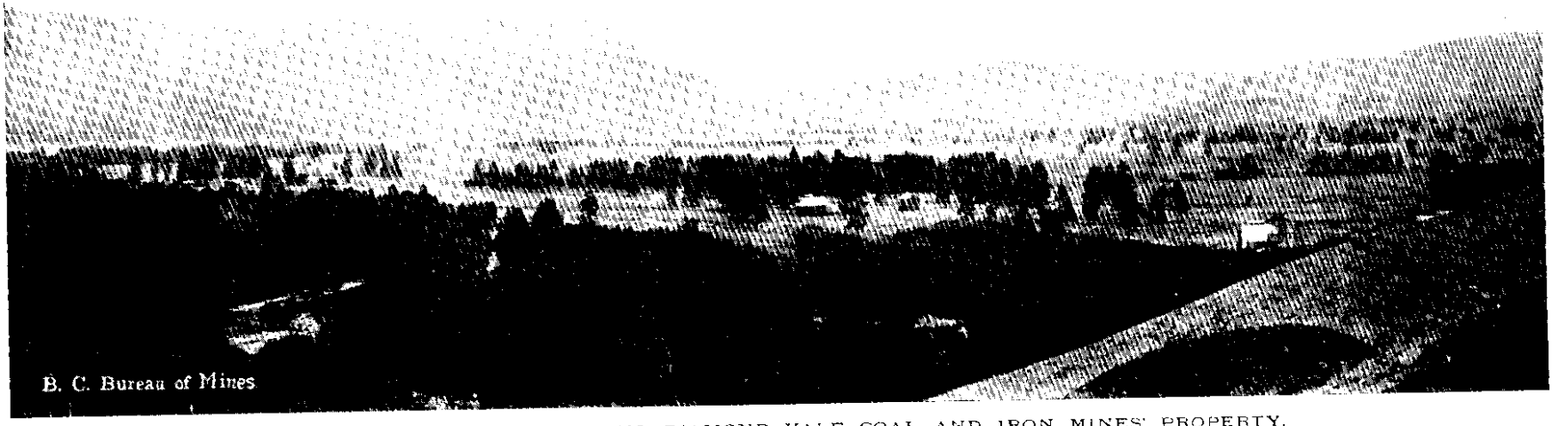
The country rock is here overlain by heavy beds of basalt, lava and tuff, which seem to cap the higher hills, and, along the line of juncture of these and the underlying rocks, the copper carbonates are found. As yet, no particular amount of ore has been uncovered, but the amount of copper visible in the slide rock gives encouragement for further prospecting.

Albatross.

The *Albatross* group of three claims lies some distance to the south-east of the *Transvaal*, at an elevation of 5,500 feet, and is owned by Messrs. Hosking, Knight, *et al.* No one was present on the property when visited and the various showings had to be found by following foot-trails from the camping ground, a method anything but satisfactory. The No. 1 stake of the *Albatross* was found, the country rock in the vicinity being a dark basalt, but no showing of mineral was seen. The *Albatross* tunnel was found to be barricaded and locked, and judging from the size of the dump, would be about 30 feet long, in a volcanic breccia, with fragments of granite, carrying some copper pyrites and specular iron.

Tamarack.

The *Tamarack* group, consisting of the *Tamarack, Shamrock, King, Duke, Billy, Muir Fraction, May L.* and *Star* mineral claims, is situated at an altitude of 5,200 feet, about one and a half miles to the north-west of the waggon road at Fish lakes, and is owned by Dr. Sanson and others, of Ashcroft, who have built a branch road up to the property and erected a very good cabin. The development consists of three or four shafts, each sunk about 25 feet deep, and a number of open cuts. These workings show that there are on the property a considerable number of parallel quartz veins, having a general north-east strike, most of which carry more or less copper pyrites or



NICOLA VALLEY—OVERLOOKING DIAMOND VALE COAL AND IRON MINES' PROPERTY.

bornite. These quartz veins vary considerably in width, but the work done does not prove their continuity. The vein at the No. 2 shaft is 4 to 4½ feet wide at the shaft, but no drifts or other workings have been made along its strike. The mineral occurs in bunches of varying size in the quartz vein matter, and the selected ore assayed high in copper.

Storm.

The *Storm* group, consisting of the *Rainstorm, Snowstorm, Hailstorm,* &c., mineral claims, is situated at an elevation of 5,100 feet on the top of the ridge, and about a mile to the south of the Ashcroft-Nicola waggon road, opposite the 29-mile post from Ashcroft. The properties are owned by Stuart Henderson and Gilbert Couverette, of Ashcroft. In July, 1907, development had not progressed very far; such work as had been done was for the purpose of prospecting the properties generally. The country formation is a dark, porphyritic, volcanic rock, through which are darker hornblendic seams, usually ironstained on the surface; along the line of these seams a movement seems to have taken place and a considerable amount of gouge matter formed, a soft kaolin material, in which is found a considerable percentage of copper sulphides and carbonates.

The No. 1 cut is about 50 feet long and 8 feet deep at the face, and has been run alongside one of these seams. A gouge material some nine inches thick, exposed for a portion of the length of the cut, was sampled and gave, copper, 21 %; silver, 5.4 oz. to the ton, and a trace of gold.

About 200 feet from the No. 1 cut is another cut, 45 feet long and 6 feet deep at the face, which cross-cuts a similar seam 6 inches wide, which was also sampled and gave practically a similar assay.

There are a number of other small openings and exposures showing copper ore, existing under similar conditions, which give encouragement for further prospecting and development.

Ball.

The *Ball* group adjoins the *Storm* group and is held by the same owners. The group consists of the *Handball, Football, Baseball, Cricketball, Smallball*, etc., mineral claims, and is as yet in the "prospect stage" of development. On the *Handball* a shaft had been sunk for 6 feet, showing a seam of about 15 inches, which assayed in copper. An open cut 20 feet long was seen, but it had not cut solid formation. No. 1 shaft, which was sunk in 1905, was down 12 feet and exposed two seams, each 12 inches thick, separated by a portion of barren and very much broken and decomposed ledge matter. These seams assayed 5 % copper, with traces of gold and silver only. About 250 feet to the south from the No. 1 shaft is the remains of an old shaft, said to have been sunk in 1897, to a depth of 80 feet; nothing could be seen of the shaft, but the dump contained numerous samples of copper pyrites. This old shaft is on the *Football*, which claim was formerly staked and worked under the name of the *Last Chance* mineral claim, and no new work has been done since the last staking.

On the *Baseball*, three open cuts were seen near the trail, which showed seams running north and south carrying specular iron. The *Cricketball* adjoins the *Baseball* on the south and on it a number of small open cuts have been made, which did not develop any mineral of importance.

On the *Smallball* an open cut, 7 feet long and 5 feet deep at the face, showed copper-stained gouge matter along a seam.

NICOLA MINING DIVISION.

NOTE BY THE PROVINCIAL MINERALOGIST.

From Highland valley the waggon road was followed down to the Nicola valley at Coutlee, about five miles west of the town of Nicola.

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Peacock.

The *Peacock* group, consisting of three Crown-granted claims, the *Boulder Cap*, *Peacock* and *Banner*, and owned by Thomas Hunter, of Nicola, is situated on Clapperton creek, about six miles up from Nicola. The showings upon which the properties were staked occur in the creek bed, having been exposed by the washing of the waters of the creek. The country rock, a volcanic rock, granitic in character, has been faulted, and a crushed zone follows this fault-plane, along which the creek has worked its way. There is a rather indistinct quartz vein following the course of the creek—connecting several large "blows-out" of quartz which occur in the granite and have been laid bare by the creek. The vein along its edges carries more or less copper sulphides and carbonates, but the mineralisation did not appear to enter the larger quartz bodies; one of these quartz bodies exposed is 100 feet long by 36 feet wide. The hills rise abruptly on either side of the creek, and such development as has been done is confined to the narrow gorge of the creek. On the *Peacock* a shaft had been sunk about 50 feet and a drift set-off for 20 feet to the north, with the intention of cutting, at a depth, a large body of quartz exposed in the bed of the creek. These workings appear to have cut several small stringers of quartz, but not to have reached the main body, although it is reported that the face of the drift was showing an increasing amount of mineralisation.

On the opposite side of the creek from this main shaft, and 100 feet farther up stream, there is a smaller shaft sunk about 10 feet on a fissure in the country rock, in which were to be seen a number of narrow quartz veins, mineralised with copper pyrites.

Still a little farther up the creek bed is the pump shaft, 4 feet by 6 feet, sunk some 20 feet on a showing of quartz carrying copper sulphides. A sample taken of selected ore gave, upon assay, 4.1 % copper, with small quantities of gold and silver.

NICOLA COAL FIELD.

During the year 1907 a new producing coal field was opened up in the Nicola valley, where the Nicola Valley Coal & Coke Co. began shipments of coal from the "Middlesboro Colliery," situated a few miles south of the town of Coutlee and on the bank of the Coldwater river, while another company, the Diamond Vale Coal & Iron Mines, had, by the end of the year, so far progressed towards the producing stage as to be deserving of notice. The whole field has been the subject of a report by Dr. R. W. Ells, of the Geological Survey of Canada, from which report very extended extracts were copied into the Report of this Bureau for 1905. The collieries above mentioned are both in the area designated by Dr. Ells as the "Coal Gully" area.

Nicola Valley Coal & Coke Company.

The Coal Gully coal seam, now included in the area held by the Nicola Valley Coal & Coke Company, has for many years been mined in a small way to provide local wants. The opening from which this coal was taken had been run-in on an outcrop of coal so far up the gully as to be inaccessible by a railway, consequently, the company drove in a new tunnel at a convenient height above the general level of the valley, and succeeded in striking the coal at that level, after driving 20 feet through surface wash. This adit level is now known as the No. 1 mine, and had been, in July, only driven into the coal about 50 feet, but, since that time, the tunnel has been driven to intersect the old slope from Coal gully at a depth of about 800 feet on the slope, and various rooms have been set off. The tunnel was driven 8 feet by 8 feet in the clear, inside of timbers, which were 10 by 12 inches in caps and sills and 10 by

10 inches in the posts. This coal seam varies somewhat in thickness and character, but, where measured, was as follows :—Conglomerate roof, coal, 8½ feet thick; 2½ feet rock and shale parting; coal, 5 feet thick, with a shale pavement.

The No. 2 mine is also opened out by an adit tunnel started a sufficient height above the valley to give working height for tipples and bins. This tunnel was started on the knoll forming the bank of the Coldwater river, about half a mile to the south from the No. 1 mine, and is supposed to be driven on the second to lowest of the known seams, which seam is here about 5 feet 6 inches thick with a 4-inch stone parting. About 200 feet higher up the hill a slope has been started-away from the outcrop, and was to follow the dip until it intersected the adit level at a point about 500 feet from its mouth. It was the intention to use this slope as the return airway when the mine was opened up. The roof and pavement of the seam are good and sound, consisting of a fine-grained conglomerate or sandstone, the wash of a disintegrated granite.

When the properties were visited in July they were only being developed, and neither of the tipples nor the railway had been constructed; since then, however, the Nos. 1 and 2 mines have been fully equipped, as can be seen in the photographs, taken later in the year, which accompany this report. Actual underground development had only been attempted on the two seams mentioned, but, from prospecting the outcrops, the company believes that it has, at least, four workable seams on its properties, viz.:—The *Jewel* seam, which is the lowest stratigraphically, reported to be 18½ feet thick; next to this, in ascending order, is 136 feet of rock; then the *Ells* seam, 8 feet 9 inches thick, followed by 136 feet of rock; then the *Major* seam, 17½ feet thick, above which is 89 feet of rock, and then the *Gem* seam, which is 3 feet thick.

The company shipped during the short portion of 1907 in which it was in operation, some 10,868 tons of coal. A spur leaving the C. P. Ry. branch line from Spences Bridge to Nicola, at Merritt, between Coutlee and Nicola, has been built to connect with both tipples.

As indicating the quality of the coal, the following analyses are given, taken from Dr. R. W. Ells' report:—

(*a.*) From tunnel on lower seam of Coal gully:

Water	3.04 %
Volatile combustible matter	37.18 "
Fixed carbon	52.05 "
Ash (reddish-white)	7.73 "
	100.00 "

Coke per cent., 59.78. Yields a compact, firm, coherent coke.

(*b.*) From Lot 1,267. One creek running into Quilchena creek:

Water	6.95 %
Volatile combustible matter	37.21 "
Fixed carbon	47.95 "
Ash (pale reddish-brown)	7.89 "
	100.00 "

Coke per cent., 55.84. Yields a firm, coherent coke.

(*c.*) From southerly outcrop of seam on Coldwater river:

Water	3.17 %
Volatile combustible matter	35.73 "
Fixed carbon	55.25 "
Ash (light reddish-brown)	5.85 "
	100.00 "

Coke per cent., 61.10. Yields a firm, coherent coke.

(*d.*) From the Coldwater river, near its junction with the Nicola near Coutlee Lower tunnel. C. H. Keefer, Esq.:

Water	1.37 %
Volatile combustible matter	38.24 "
Fixed carbon	54.25 "
Ash (light reddish-brown)	6.14 "
	100 00 "

Coke per cent., 60.39. Yields a compact, firm, coherent coke.
Analyses by fast coking understood.

Diamond Vale.

The Diamond Vale Coal and Iron Mines, Limited, holds the areas immediately adjoining, and across the river from, the Middlesboro Colliery.

The Diamond Vale Company's areas cover a large portion of the level valley between the Coldwater and the Nicola rivers, under which there is reason to believe that at least some of the coal seams being developed by the Middlesboro Collieries extend. This point has been proved to the satisfaction of the holding company by a series of bore-holes, sunk from the flat land which borders the river. The solid, or coal-bearing, formation underlying the valley is overlain by a heavy covering of gravel wash, carrying a large amount of water, through which the company has experienced some difficulty in sinking a shaft, owing to trouble from water.

No. 1 shaft was started about 475 feet from the bank of the Coldwater, and at this point the solid formation was expected to be struck, at a depth of 96 feet. This shaft was started 8 feet 4 inches by 12 feet 10 inches in the clear, and well timbered, and was sunk about 45 feet, when it had to be temporarily abandoned, owing to the influx of water, which the machinery at command could not handle. The shaft has been equipped with a suitable hoisting plant and head gear, pumps, etc., and a sawmill had been erected and equipped.

After the stoppage of work at the No. 1 shaft, there was an attempt being made in July to sink No. 2 shaft, at a point about 10 feet from the edge of the Clearwater river, which point was "to the rise of the coal" from the No. 1 shaft. Here the solid formation, which outcrops boldly immediately across the river, was expected to be covered by only 19 feet of gravel wash.

In July this shaft had been sunk for 16 feet and, although the inflow of water was considerable, it was expected that no difficulty would be experienced in reaching the solid formation and eventually making the shaft water-tight.

From exploratory work it was indicated that, at the No. 2 shaft, a 40-inch seam of coal would be found at a depth of 70 feet from the surface; this is about 50 feet deep in the solid formation, while 150 feet below this it is expected that the "Rat Hole" seam developed by the Middlesboro Colliery will be struck. These seams dip at an angle of about 25° towards the No. 1 shaft and would, consequently, at that shaft be correspondingly deeper.

While considerable delay has been experienced in reaching the coal seams, owing to the overlying water-bearing strata, it is not felt that the conditions offer any insurmountable difficulties, and that, with proper mining equipment, the task can be accomplished. The developments in the vicinity would give every indication that important coal seams underlie the property and will soon be made productive.

B. C. Amalgamated Coal Co.

The only other company doing any development in the Valley was the British Columbia Amalgamated Coal Company. This company was organised in Portland, Oregon, with head office at 506, McKay Building, Portland, Oregon, A. B. Crossman, Secy.-Treasurer, and is registered in British Columbia as an "Extra-Provincial Company," under date of March 7th, 1907. The

company is limited, and its capital stock is $10,000,000, divided into $1 shares. The company is reported to hold a large acreage of land up the Coldwater river and some options on Ten-Mile creek, but, so far as could be learned, no successful prospecting had taken place on these areas, and no work was going on there on August 1st, 1907, when the district was visited. The company had, however, secured options on some land adjoining the Indian reservations at Lower Nicola. This land, it is understood, consisted of 300 acres owned by Mrs. Woodward and 200 acres owned by Mr. Smith, while application had been made for "licence to prospect" on 640 acres lying adjoining, to the north.

On August 1st the company was employing one shift of five men in sinking a diamond drill hole, using a Sullivan "H" drill, giving a 1⅛-inch core; the casing pipe at the surface being three inches in diameter. The bore-hole was being sunk on the edge of the Indian reserve, and on August 1st was down some 145 feet and was then still in gravel wash, the solid formation not having been reached. The log of the drill-hole shows it to have passed through clay and boulders, clay, sand, coarse gravel, clay, clay and boulders, clay, clay and boulders, and at 143 feet down to have struck what the driller classed as hard-pan. This is the first hole the company has sunk, and as yet coal has not been developed on the property.

NICOLA MINING DIVISION.

Report of George Murray, Mining Recorder.

I have the honour to submit the annual report on mining operations in the Nicola Mining Division for the year 1907:—

Progress during the past year has not equalled expectations, yet there has been some advance. Prospects were growing brighter until the severe and rapid decline in copper took place. Mining engineers who had been exploiting the field were favourably impressed and intended to begin development on working bonds; but the drop in copper values has resulted in at least a temporary check. Ore values in this district are chiefly copper. Notwithstanding disappointment, the confidence of claim owners is still unshaken. With most of them it has been a continual expenditure for eight years or more, without one dollar's return; yet assessment work has been carefully performed and Crown grants have been obtained for a number of claims.

The group of claims owned by Max Ekars and associates gives promise of a large body of high-grade ore. Those parties have done a large amount of development work, and were preparing to ship several car-loads of ore for smelter treatment when the price of copper fell. Tests already made would have justified the venture with a more favourable price ruling for the metal.

Prospecting work on a gold-copper group of claims, situated on Clapperton or Mill creek, owned by T. Hunter, has been prosecuted steadily, with favourable results. A cross-cut which was run from a shaft 60 feet deep exposed 20 feet of mineralised matter carrying copper, with commercial values in gold and silver, and the stronger portion of the lead has not been reached.

Coal Mining.

In coal mining operations development has been steady, rapid and satisfactory. Extensive coal seams of excellent quality have been opened up and a valuable industry inaugurated.

The Nicola Valley Coal and Coke Co. has been singularly successful. Commencing on a well-known coal exposure, most of their underground work has been in coal and has demon-

strated the presence of several large and valuable seams. The work already done demonstrates a large body of coal to be now available, and this at a depth which can be regarded as little more than surface. The mine is being thoroughly equipped with every modern appliance for effective work. The daily output at the present stage can easily be 300 tons, a capacity which can be speedily enlarged when the demand warrants.

In the same vicinity the Diamond Vale Coal and Iron Company is operating and has persisted in prosecuting work, amid unexpected difficulties and expenditure. After considerable drill prospecting, a site for a shaft was chosen and extensive preparation made to push the work and have a shaft in first class order. Unfortunately, after a heavy outlay in sinking, the work had to be abandoned, owing to seepage from the Coldwater river, close by. Another shaft site was selected and success crowned the effort, conditions being favourable. Bed-rock was reached at a depth of 50 feet, and at a depth of 65 feet a 5-foot seam of coal of excellent quality was disclosed, from which there is now an output. Work is being rapidly pushed, so that the production may be increased. Beneath the seam now reached the drill has proved two other veins within a depth of 300 feet. The three seams give a combined thickness of 15 feet, with greater possibilities, as the large Coal gully seam may be discovered. The percentage of carbon in the coal mined is 51.25, and the coking value is 59 per cent.

The surface work, buildings erected and plant installed, are planned on a scale which has in view extensive mining operations.

The B. C. Amalgamated Coal Co. has been operating with the drill on Ten-mile Creek, Lower Nicola, since the middle of May. The site chosen proved difficult, owing to great depth of wash and numerous boulders. This company has recently secured coal limits adjoining the Diamond Vale, on the west and north of the Nicola Valley Coal & Coke Co., and on the line of the C. P. R. The drill will operate on the newly acquired land and can hardly fail to find coal.

About 2½ miles east of the Diamond Vale shaft the Nicola Coal Company, Ltd., composed chiefly of Vancouver men, has a large coal exposure of good quality, on which work on an extended scale will be undertaken.

Slow progress in metalliferous mining is more than compensated by activity in the production and search after coal. There is now in evidence sufficient to justify the belief that the coal resources of Nicola will draw and sustain a large and prosperous community. For years the presence of coal was known, but it was difficult to induce capital to take hold.

OFFICE STATISTICS—NICOLA MINING DIVISION.

Certificates of work	139
Claims recorded	76
Bills of sale	7
Free miners' certificates issued	91

YALE MINING DIVISION.

REPORT OF WILLIAM DODD, MINING RECORDER.

I have the honour to submit herewith my annual report and office statistics for the year ending 31st December, 1907:—

The Yale Dredging Company operated in the bed of the Fraser river at Hill's bar and Sawmill riffle in April, September and October, the returns for the half-year ending 31st October being $2,000.

The Mt. Baker and Yale Mining Company has been operating a ten-stamp mill on Siwash Creek for the past month.

Other claims on the same creek—the owners continue to perform their annual assessment work.

In the vicinity of Coquihalla, Hope, Skagit, and Ladner creeks numerous locations have been made during the past season, on which owners have done sufficient work to hold their claims.

The placer mining in this Division for the period is scarcely worthy of mention.

OFFICE STATISTICS—YALE MINING DIVISION.

Free miners' certificates issued	57
" " companies	4
Mineral and placer claims recorded	25
Placer leases issued	1
Certificates of work	45
Affidavits and notices filed	34
Conveyances and assignments	9
Agreements	2
Powers of attorney	2
Rentals, mining leases	5

Revenue.

Free miners' certificates	$440 50
Mining receipts	555 25
Miscellaneous receipts	562 50
	$1,558 25

SIMILKAMEEN MINING DIVISION.

REPORT OF HUGH HUNTER, MINING RECORDER.

I have the honour to forward the annual mining report on the Similkameen Mining Division for the year 1907.—

On Granite creek three placer mining leases are being developed by Messrs. Lambert and Stewart, who did considerable work blasting boulders on the surface of their claims, to enable them to ground-sluice in the spring. They also have all the material on the ground to start operations as soon as high water is over.

On the Tulameen river, between Slate and Eagle creeks, seven placer mining leases have been taken up, but too late in the season to do any prospecting.

There has not been much development done on mineral claims, the owners merely satisfying themselves with doing sufficient work to hold them.

On the divide between Slate and Champion creeks a number of claims have been bonded to the Colorado Assaying and Refining Company, which is prospecting the ground for platinum. As the start was made too late in the season, and owing to the usually heavy snowfall in this section, operations were postponed till late in the spring. The results of the work have so far not been made public.

On Bear creek the Similkameen Mining and Smelting Company is developing its property and is driving a tunnel to cross-cut the lead.

On the *Independence* group, consisting of seven claims and bonded to the Granby Co. in 1906, continuous work has been carried on, prospecting the ground.

On Copper mountain the *Reco* group, consisting of four claims, has been bonded to Spokane capitalists. On the *Reco* a tunnel is being driven to tap the ledge, which shows on the surface high-grade gold and copper values. First payment has been made on this bond.

OFFICE STATISTICS—SIMILKAMEEN MINING DIVISION.

Free miners' certificates	200
" " special	3
Location records	233
Certificates of work	366
Conveyances	42
Certificates of improvement	5
Placer leases	8

Revenue.

Free miners' certificates	$1,277 50
Mining receipts, general	3,338 67
Acreage tax, mineral claims	1,350 25
	$5,966 42

HOLLOW CONCRETION, NICOLA VALLEY C. & C. Co.'s PROPERTY.
Large enough to contain a man.

NICOLA VALLEY C. & C. Co.'s PROPERTY.
First opening on Coal Gully.

LILLOOET DISTRICT.

———:o:———

LILLOOET MINING DIVISION.

Report of C. Phair, Gold Commissioner.

I have the honour to submit my annual report on the progress of mining in Lillooet Mining Division during the year 1907 :—

The accompanying statistics show a decrease in several items from former years.

The only development work done on mineral claims, outside the annual assessment work, was upon the following two groups :—

Wayside. The *Wayside* group comprises three claims—*Wayside*, *Helium* and *Radium*—situate at Bridge river and owned by Mr. Osmond Fergusson. No. 2 tunnel, on the *Wayside*, was extended 14 feet and a shaft sunk 22 feet, striking a rich body of ore which the owner believes to be permanent. A saw-mill and houses were also erected.

Summit. The *Summit* group is comprised of three claims and owned by Messrs. Babb, Jones and Kinney. It is situate also at Bridge river. The vein can be traced about 1,000 feet on the surface, and the ore is galena carrying gold and silver values. Assays from the croppings run from $30 to $60 a ton. A tunnel has been driven 70 feet, but the main ledge has not yet been struck. It may be of interest to know this class of ore has been found in the "free gold belt."

The Lorne Company crushed with an arrastra 309 tons of ore, yielding $3,726.

Placer Mining.

Messrs. H. M. Babb and Company worked an average of 12 men. The greater part of the season was spent in completing the plant and flume. In the autumn they commenced piping and the gravel yielded 25 cents per cubic yard.

No other leases, except Mr. Jesperson's on Cayoosh creek to a small extent, have been worked during the year.

Capitalists from Boston have purchased the dredge at Lillooet, which belonged to the Iowa-Lillooet Gold Mining Company, and I am informed it is their intention to operate it the coming season and also to build another dredge. Their mining engineer, Mr. Percy Williams, of Los Angeles, examined the gravels of the Fraser river, where they intend to operate, before the sale was made.

Office Statistics—Lillooet Mining Division.

Mineral claims recorded	34
Placer claims recorded	3
Certificates of work recorded	76
Conveyances recorded	13
Mining leases in force	21
Dredging leases in force	2
Free miners' certificates issued	81

CLINTON MINING DIVISION.

REPORT OF F. SOUES, GOLD COMMISSIONER.

I have the honour to submit my annual report on mining in the Clinton Division of Lillooet District for the year ending December 31st, 1907.

There has been no improvement in mining during the year. Placer mining is solely done now by a very few Chinese and also a few Indians on the exposed portions of the bed of the Fraser river at extreme low water. Their earnings are so diverted that I cannot arrive at any certain amount, but the total does not amount to over $1,000.

Mineral claims have been recorded on the Lower Bonaparte, and on one or two development work has been done.

Claims recorded on Mahood lake last year have had no development work done on them.

A Keystone drill has been placed on one of the dredging claims at Big Bar and one or two bores put down to a depth of 40 or 50 feet. Intense cold setting in early in December, the work had to be shut down, as the motive power is steam; boiler and all pipes emptied at night and re-filled next day. Work on this enterprise will be taken up in the spring as soon as weather conditions will permit.

OFFICE STATISTICS—CLINTON MINING DIVISION.

Mineral claims recorded	9
Placer claims re-recorded	1
Certificates of work	9
Mining leases in force	10
Dredging leases in force	12
Conveyances recorded	6

Revenue Collected.

Free miners' certificates	$ 84 50
Mining receipts, general	5,270 50
	$5,355 00

VANCOUVER ISLAND AND COAST.

ALBERNI DISTRICT.

ALBERNI MINING DIVISION.

H. C. Rayson, Acting Gold Commissioner.

Sir,—I have the honour to submit my annual report of mining in the Alberni Mining Division during the year ending December 31st, 1907. There has been practically no work done beyond that absolutely necessary for assessment purposes.

Office Statistics—Alberni Mining Division.

Free miners' certificates	56
Mineral claims recorded	34
Certificates of work recorded	50
Transfers recorded	8
Certificates of improvements issued	7
Placer leases issued	8
Powers of attorney recorded	10
Consents to cancel	3
Options on mines	1
Crown-granted mineral claims on roll	143

Revenue.

Mining receipts	$678 15
Free miners' certificates	353 25
Acreage tax on Crown-granted claims	1,125 10
	$2,156 50

Note by Provincial Mineralogist.

This is all the report that has been sent in by the Gold Commissioner of the Alberni Mining Division, a fact much to be regretted, but it must be explained that he is a recently appointed official and has probably not as yet become conversant with the mining development going on in his Division and the necessity of gathering data relative to the same.

The Provincial Assayer was engaged in the immediate vicinity of Alberni during the past summer, on work to be used in the preparation of a bulletin for the Bureau of Information, and he transmits the following notes on the *Star* group of mineral claims:—

Notes by Provincial Assayer.

Silver Star. This group of claims is situated two and a half miles up Taylor river, which flows into Sproat lake, in Alberni Mining Division. At the point where the claims are located the creek is only a few feet above the lake level. At 200 feet above the creek a tunnel has been driven into the hillside a distance of 103 feet. At about half this distance a stringer of quartz was struck and the tunnel turns slightly to the left and is in 6 feet; this has cut through a clearly defined quartz vein 6 ft. wide, which is separated from the 18-inch stringer referred to by a gouge parting. There is also at this point a cross slip showing a movement of 6 inches. The strike of the main vein is N. 40° E., running directly into the hillside and dipping nearly perpendicular; it shows a

slightly banded structure of white and blue quartz mineralised with speckled and banded pyrite, chalcopyrite, blende, bornite and a little mispickel, fairly well mineralised and evenly distributed.

About 96 feet above the lower tunnel an open cut has been run in 12 feet. This shows a quartz vein 5 feet wide with a strong gouge parting on the foot-wall, the dip being nearly perpendicular but slightly to the east. The vein is mineralized similarly to that seen in the lower tunnel, and as it has the same strike there is no reason to suppose that it is not the same vein.

A series of shots have been put in higher up the hill, tracing the vein for 700 feet and showing it to be about the same character as noted below.

About 200 feet to the east of this open cut a few shots have been put in, showing a 14-inch quartz vein mineralized with marcasite and mispickel, and between the vein and the open cut another 10-inch stringer was noted. It is quite possible that these different veins and stringers may unite in one good strong vein. The country rock is diabase.

The vein on the *Silver Star* group is supposed to be the same seen on the *Jingo Bird* claim, at the top of the hill, and reported on in 1899.

The assays being low, this property will probably be worked as a concentrating proposition, and there should be no difficulty in shipping the concentrates.

An average sample gave the following assay:—Gold, .08 oz.; silver, .60 oz.; copper, .08 %.

CLAYOQUOT MINING DIVISION.

REPORT OF W. T. DAWLEY, MINING RECORDER.

I have the honour to submit my annual report of the mining operations in the Clayoquot Mining Division for the year ending December 31st, 1907:—

Very little activity has taken place during the year on the various mineral claims, outside of the *Indian Chief* group at Sidney inlet. On this particular group a large force has been employed throughout the year, building an aerial tramway, wharves and bunkers, as well as doing considerable mining. In the latter part of the year two shipments of ore were made The claims are held under bond by the Vancouver Island Copper Co., Cross & Co., of Victoria, agents. In December the *Hetty Green* group at Deer creek, owned by J. Thomson, of Alberni, and the *Kallapa* group at Disappointment inlet, were bonded to New York capitalists, and work is being carried on on both groups with a small force of men. With the exception of the annual assessment work, which has been done on most of the claims in the district, the claims mentioned are the only ones on which any extended work has been performed. In November application was made for leases on eight claims (placer) at Wreck bay, the same ground having been worked some years ago.

OFFICE STATISTICS—CLAYOQUOT MINING DIVISION.

Free miners' certificates issued	30
Mineral claims recorded	27
Certificates of work recorded	45
Bills of sale, bonds, etc., recorded	16
Certificates of improvements recorded	13

Revenue.

Free miners' certificates	$136 25
Mining receipts	679 25
Total	$815 50

QUATSINO MINING DIVISION.

Notes by the Provincial Mineralogist.

Leaving Victoria on August 7th, the Provincial Mineralogist proceeded by C. P. R. Co.'s steamer "Tees" to Quatsino sound, from which place shipments of bog iron had been made by the Moore Investment Company, of Seattle, to the Irondale iron furnace.

92L-87

Quatsino Iron Ore.

On arriving at the claims it was found that this company had acquired certain claims on the north side of the West Arm, in Section 26 of the Quatsino land district, as nearly as could be determined. The claims extend to the edge of the Arm, and, at a point about a quarter of a mile from the water, a deposit of bog iron ore of excellent quality had been discovered, covering the surface over a considerable area. To extract this ore, the Moore Investment Company had, earlier in the year, sent up a large force of men on an ore barge, and had built a temporary wharf, from which a tramway was built to the iron ore deposit. In August, the property was found to have been abandoned, the track torn up and the rails shipped away. From the workings visible it would appear that the iron deposit, over an area 300 feet long by 200 wide, had been removed from the surface down to solid bedrock, and this area had yielded 1,500 tons of ore, which had been shipped. The work done showed the deposit of bog ore to be on a side-hill, which sloped at an angle of about 20° towards the sea, lying on a smooth, water-worn bedrock to a depth of, in some places, four feet, and in others, of as many inches; the average thickness of the deposit was not over 24 inches. Large trees and brush had been growing on top of the deposit, the roots being all through the ore, greatly increasing the cost of extraction, which, under the circumstances, must have been excessive. The superficial area over which the deposit shows is considerable, but no prospecting that has been done proves it to be of a greater average depth than at the point where its extraction was attempted.

92L-88

Prince's Iron Claims.

A few miles to the west, along the shore of the Arm, a trail leads inland to the north for a couple of miles, to what is known as *Prince's Upper Claims*, a group of claims the number or names of which could not be ascertained. About two miles in on the trail two large cabins were found, and evidences that considerable work had been done, but no one was on the property when visited. The work had consisted of pits and open cuts along the course of the valley of a small stream flowing into the Arm. For the most part the pits were full of water and the materials taken out from them so mixed upon the dump as to be meaningless. The open cuts were seen, however, and of these the one in which the most promising showing occurred started from the creek-bed and ran up the face of its gently sloping bank, showing in nearly horizontal layers, first, four feet of bog iron ore; next, one foot of gravel with a layer of fine kaolin clay on top; next, nine inches of iron ore, then two feet of ochre and clay, above which was the black surface mould. A similar showing was seen in another cut about 150 feet farther up the creek, and these may be taken as typical of the more successful strippings made. There is, undoubtedly, a very considerable area covered with iron ore, but, so far as could be seen, its depth had not been demonstrated further than described. Samples were taken from the lower four-foot deposit of ore, and upon assay gave 48.12 %—48.31 % and 50.19 % of iron—with much organic matter. The ochre and clay stratum assayed 36.6 % of iron.

About three miles to the north-west from Prince's Camp, claims, to the number of about 100, had been staked during the summer by other parties. This wholesale staking had been done to blanket the district until the claims could be roughly prospected, when those not

wanted could be dropped—the land being held for one year at an outlay in fees of five cents an acre. This procedure, although contrary to the spirit of the Mineral Act, was brought about by a tendency of certain local prospectors to stake "extensions" to any claims that might be found by outside prospectors. No work, other than staking, had been done on any of these claims, and as they were from six to seven miles back from the lake, through wet brush, they were not visited.

Coal Areas.

The fact that coal measures, and probably workable coal seams, exist on the west arm of Quatsino sound has been known for many years, as the coal seams at Coal harbour were at least partially prospected some years ago by a California company, which acquired the land and did a little work, but not enough to prove or disprove whether the seams were sufficiently extensive to permit of their being worked.

About midway in the length of the West Arm, on the north side, the coal-bearing formation shows up on the beach, these measures extending to the west for pretty nearly the length of the Arm. For some years the Quatsino Coal Syndicate, under the management of Thos. P. Pearson, has been prospecting for coal in this area, and, in 1905, put down three bore-holes at what is known as Pearson's "Lower Camp." The first hole was put down near the beach to a depth of 156 feet; the second hole was sunk about one-third of a mile inland and was drilled to a depth of 218 feet, while the third hole was about three-quarters of a mile inland and was put down to a depth of 40 feet. In none of these holes was any coal encountered of workable thickness, some three or four-inch seams were encountered in the second hole and also some gas, but the workings were eventually abandoned.

Mr. Pearson then moved westward along the Arm to within three or four miles of its western extremity, where he established his "Upper Camp," and in the vicinity took up ten prespecting areas. On one of these areas he was able to locate a very fair seam of coal, somewhat impure at the outcrop but containing great possibilities. The point at which the coal outcrops is about one mile from the Arm on the steep bank of Pearson creek, 100 feet above the bed of that creek and 175 feet above sea level. The seam dips S. 30° W., at a moderate angle, into the bank and towards the Arm.

The work so far done is not claimed to be more than prospecting work, but consists of an upper tunnel, a rock cross-cut adit tunnel, which at 80 feet in cuts a coal seam, the outcrop of which is visible higher up the hillside. At a somewhat lower level, the second tunnel, also a rock cross-cut adit tunnel, has been driven, reaching the coal at 110 feet in. A slope in the coal connects the two levels and has been sunk about 30 feet below the lower level, while from the tunnel, a drive about 150 feet long has been made in the coal and along its strike.

To prove the coal further to the dip, a bore-hole was being put down, which was then down 110 feet, and if the dip held true, should strike the seam at a depth of 120 feet.

The seam, as exposed, lay under a clay shale and over a sandstone, giving the following section in descending order:—

1′ 8″—coal,
9″—clay,
2′ 7″—coal,
1′ 0″—clay,
4′ 3″—coal,
3′ 0″—black shale and coal,

13′ 3″—total thickness of seam.

The various layers of coal seemed to be about the same quality and a sample was taken representing an average of the upper portion of the seam, which gave, at the Government laboratory, the following analysis:—

Moisture	= 1.80 %
Vol. comb. matter	= 30.67 %
Fixed carbon	= 19.63 %
Ash	= 47.90 %
	100.0

It is premature, as yet, to predict what the future of the discovery may prove to be; it is a strong, well-defined coal seam, somewhat dirty where struck, but that trouble may disappear in a short distance. The area of the seam remains to be determined, which will require time, but, as a prospect, it is decidedly promising. The location of the prospect is such that a railway to the Arm and good shipping facilities could be easily and cheaply obtained. The management is going ahead slowly but surely, and within a year should have some interesting data to present.

QUATSINO MINING DIVISION.

REPORT OF O. A. SHERBERG, MINING RECORDER.

I have the honour to submit my annual report of the mining operations in the Quatsino Mining Division for the year ending December 31st, 1907:—

Very little mining work has been done during the year, beyond what was necessary for assessment work.

On the *June* group, under the management of Mr. Michael Craig, development work has been carried on with a small number of men during the summer. About 50 tons of ore was taken out from the old workings on the *June* claim, an average sample of which assayed 5.95 % copper; $2.50 gold, and $1.60 silver, to the ton.

In July work was started on building a narrow gauge railway from the south-east arm of Quatsino sound up to this property, a distance of 6 miles. Two miles of the road has been cleared and the timber cut out just wide enough for the road bed, and one mile has been partially graded. Work was closed down in November, and, when leaving, Mr. Craig told me that he expected to start up again in about two months.

The iron property situated on the north side of the West Arm, owned by the Moore Investment Co., Seattle, Wash., was worked part of the summer and 1,500 tons of bog iron ore was taken out and shipped to Irondale, Wash. This property has also been surveyed this year.

Some very rich free-milling gold ore was discovered and located between Lawn point and Klaskino inlet this summer; but being late in the season no work has been done to ascertain the value of the property.

OFFICE STATISTICS.—QUATSINO MINING DIVISION.

Free miners' certificates	50
Mineral claims recorded	212
Certificates of work recorded	80
Bills of sale, etc., recorded	27

Revenue.

Free miners' certificates	$ 217 00
Mining receipts, general	1,011 25
Total	$1,228 25

NANAIMO DISTRICT.

—:o:—

NANAIMO MINING DIVISION.

REPORT OF MARSHAL BRAY, GOLD COMMISSIONER.

SIR,—I have the honour to submit herewith my annual report on the mining operations in the Nanaimo Mining Division for the year ending the 31st of December, 1907.

Not as much development work has been done during the past year as in former years, but what has been done has shown very satisfactory results and many important discoveries have been made during the past year. There were 645 mineral claims in good standing on the 31st day of December, 1907, and more mineral claims were recorded than in the year 1906.

The *Tyee* Smelter at Ladysmith smelted about 55,000 tons of ore, and the *Britannia* Company's smelter at Crofton treated about 73,000 tons of ore, and the approximate value of metal produced by both smelters amounted to about $1,750,000, and this was all, or nearly all, from the British Columbia coast mines.

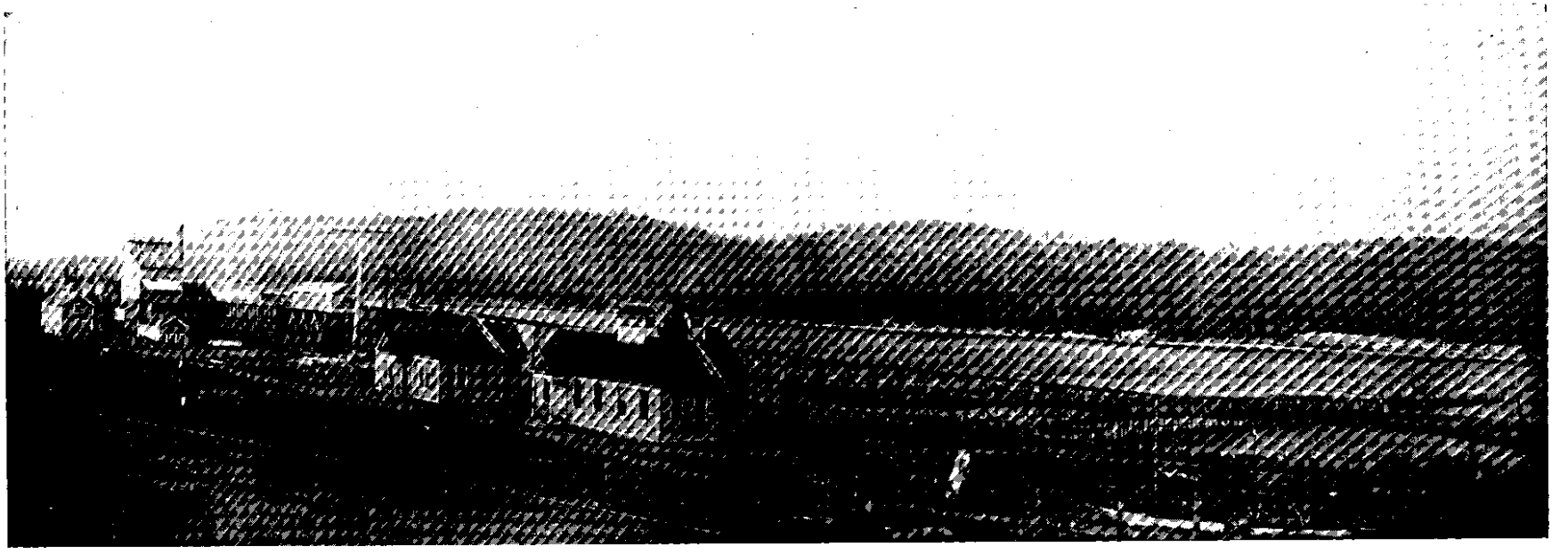
TEXADA ISLAND.

The *Marble Bay* group of claims belonging to the Tacoma Steel Co., under the management of A. Grant, mined and shipped 6,237 tons, dry weight, of ore during the year 1907. The development work done on the property consists in sinking the shaft 100 feet deeper, 100 feet of winze and 325 feet of drifting. The shaft is now 860 feet below the surface and 828 feet below the sea level; no new plant was installed during the year. The average number of men employed in and about the mine was 48 white men, with also 12 Chinese ore-sorters. This mine was closed down from the 24th of March to the 8th of June, 1907, owing to a strike ordered by the Western Federation of Miners, whose headquarters are at Denver, U.S.A. Shipments have been small since the drop in copper. On the No. 10 level (860 feet below the surface) a body of good bornite ore, of unknown extent and value, was struck, and the copper and gold values are more than maintained with depth. This company is also quarrying and burning limestone, and has now four new limekilns, able to turn out 300 barrels of lime per day.

On the *Cornell* mine but very little work was done during the past year.

The *Commodore* group of mines, under the management of W. Thos. Newman, for the first half of the year employed 12 men and performed 600 feet of development work on the 200-foot level, but the work was practically suspended during the latter half of the year. Some fine ore, assaying well in copper, with fair gold and silver values, was struck, but owing to the low price of copper, it is not intended to ship anything, other than trial lots, for some time to come, as the work is as yet on purely development lines.

The Puget Sound Iron Co. leased its mines to Messrs. Cox & Moore, of Seattle, who have not been doing much work on the properties during the year, but are preparing to ship both copper and iron ore during the year 1908, as a tramway 1¼ miles long has been built, and also a wharf 400 feet long, with two large bunkers, at a cove about one mile south of the old Government wharf. This has all been done since June, 1907, at a cost of about $15,000, and 150 tons of copper ore was shipped to the Tacoma smelter and the bunkers are full of iron ore.



TYEE COPPER CO.'S SMELTER, LADYSMITH, B. C.

The shaft on the *Loyal Lease* mine has been deepened 100 feet and 500 feet of drifting has been done during the year. Two duplex pumps were installed, but, owing to the large volume of water, the property had to be closed down on the 1st of September last and did not ship any ore.

The Texada Consolidated Co. leased the *Cornell* mine and is preparing to work the mine at an early date next year.

Little development work has been done on the claims on Texada Island during the past year, and what has been done was only to keep them in good standing.

Valdes Island.

The Copper Cliff Mining Co., under the management of Wm. Simison, has done considerable work during the year in developing its properties, but owing to the low price of copper for last half of year has not been shipping.

The Island Copper Co., owning the *True Blue* group of mines, has not been shipping any ore, but has had a small force of men doing development work on the claims for the past year.

Considerable work has been done during the past year on properties on Phillips and Frederick arms, Thurlow, Cracroft and other islands, and the showings have been very favourable.

Dunsmuir District.

The Jubilee Mining Co. has not done much work on its two groups of claims during the past year. These are very promising properties, and if a waggon road of about 20 miles, which was "cruised out" last fall, was built to the claims, these claims and this section of the district would progress, as there is a quantity of low grade ore in this portion of the district.

Office Statistics for 1907.—Nanaimo Mining Division.

Free miners' certificates issued (individual)	219
" " (companies)	7
Mineral claims recorded	261
Certificates of work recorded	173
Paid in lieu of work recorded	9
Certificates of improvement recorded	8
Crown grants applied for and issued	8
Bills of sale recorded	46
Permission to re-locate	1
Rental mining lease	1

The revenue collected from the above free miners' certificates and mining receipts generally, for the year ending 31st December, 1907, was $4,370.70, being about $900.00 more than the previous year.

VICTORIA DISTRICT.

VICTORIA MINING DIVISION.

NOTES BY THE PROVINCIAL MINERALOGIST.

SOOKE.

There has been some slight activity on the copper properties in the vicinity of Sooke; the *Bluebird* and *Willow Grouse* group has been surveyed and had sufficient work recorded for Crown-granting, which will be done this coming summer.

The Young property has been under bond to a Seattle syndicate, represented by Mr. Thomas, who has had a number of men at work developing the property and made a trial shipment of ore to the Ladysmith smelter.

PORT RENFREW.

A little prospecting work has been carried on at the magnetic iron properties in the vicinity of Port Renfrew, but no serious attempt at development has been made.

MT. SICKER CAMP.

The *Copper Canyon* group, on the river at the foot of Mt. Sicker, has been developed somewhat this past year and the shaft re-started, but has not, as yet, begun to mine ore.

92B-1 The *Lenora* mine was under bond to an English company, the Vancouver Copper Company, under the local management of Mr. Edward Stables, who employed, on an average, about 10 men prospecting the old mine and getting out some ore, shipments to the amount of 1,700 tons being made during the year. During the latter part of the year, however, the mine was idle.

92B-2 Tyee. The *Tyee* mine, which for some years has been the largest shipper of copper ore on the Coast, has now been permanently closed down, as hope of finding other ore-bodies has been abandoned, no ore body of any size having been encountered below the 300-foot level, although development work was systematically carried on to a depth of over 1,200 feet. During the year, some 1,200 tons of ore was cleaned up about the mine and shipped to the company's smelter at Ladysmith, while 2,000 feet of drifts and cross-cuts were run and two diamond drills employed in prospecting work.

The *X. L.* mine was also operated by the Tyee Copper Co. up to the end of August last. Nearly 1,000 feet of sinking and drifting was done during the year, also a considerable amount of diamond drilling. The diamond drill was also used in prospecting other claims owned by the company.

The company's smelter at Ladysmith, under the management of Mr. W. J. Watson, has been run almost continuously during the year on custom ores from various parts of the Coast District, supplemented by ores from Mexico. The company formerly received all its ores, etc., at the Wellington Colliery Company's dock at Ladysmith, from which point they were taken by railway cars to the smelter ore-bins; recently, however, the smelter has built a dock of its own on the sand-spit opposite its property, the dock being connected with the smelter bins by an elevated inclined trestle, an arrangement which will very much facilitate the handling of

supplies. A photograph of this new dock and unloading arrangements accompanies this report. The smelter has arranged to double the furnace capacity of the plant this coming summer, which also necessitates a doubling of the engine, boiler and blower plant.

928-3

Richard III.

The *Richard III.* mine was worked, until the drop in the price of copper, with a force of 30 men employed in development and extracting ore from an ore-body which had been discovered in a lower level adjoining the *Tyee* ground. The company shipped to the Tyee smelter during the year about 4,000 tons of ore, which was taken from the mine to the E. & N. Railway over the Tyee aerial tramway. The mine is at present shut down, presumably owing to the low market price of copper.

Koksilah.

The *Bluebell* group is a group of claims held by the Vancouver Island Mining & Development Co., Ltd., of Victoria—head office, London, England. At the beginning of 1907 a Sullivan diamond drill was installed and a series of holes put down on the formation to a depth of about 150 feet each. The results were fairly encouraging, and from the data gathered from this work it was decided to put down a shaft. Towards the end of the year this work was commenced, the incline shaft being now down about 110 feet. This is following the ore body, and although the point touched by the diamond drill has not yet been reached, the prospects are decidedly encouraging, at several points the ore showing fair values.

The *King Solomon* mine, adjoining the *Bluebell* and owned locally, has had very little work done during the past year. The present exposures certainly seem to warrant a further expenditure of capital. The whole formation in this district appears to be shattered, and it is the opinion of experts who have prospected the ground that there is every reason to expect settled and payable ore deposits in depth.

Miscellaneous.

Silica Brick.

An industry new to the Province, viz.: the manufacture of so-called "Silica brick," has been started at Parson's Bridge, about six miles from Victoria, on the line of the E. & N. Railway, by the Silica Brick & Lime Company, Limited, a company composed of Victoria business men. As a new plant it would be deserving of mention, but as a new industry, which has a wide application, and might well be established at other points in the Province, a more extended notice of the process seems desirable.

Silica brick, so called, are made from sand and lime (a description of the process is given later), and the product is a brick of absolutely standard dimensions, with sharp angles and corners and plane surfaces, filling the requirements of what is known in the east as a pressed "face brick," serving for the construction of ornamental fronts or faces of buildings, the uniform size and shape of the brick permitting of their being laid with almost imperceptible joints, and giving a smooth and uniform coloured front or face. The colour of the brick can be varied somewhat by the colour of the sand used in its manufacture, but those so far produced in Victoria are of a light gray colour. The brick, therefore, finds a market as a "face brick," competing successfully with imported brick of this class, and is, in British Columbia, sold at a much lower price, as the freight rate on imported brick is almost prohibitive. For all work where appearance is a factor in deciding the brick to be used, silica brick competes successfully with repressed clay brick, but for rough walls, where ordinay clay brick serves the purpose, it is not expected that, in the matter of cost per thousand, silica brick will compete with the common clay red brick, although it is claimed that the silica brick, being more regularly shaped, can be laid more quickly and cheaply than the irregularly-shaped red brick. Whether silica brick will become a substitute for red brick is a question of cost rather than of the quality, or durability, of the finished work.

The manufacture of silica-lime brick, while new in British Columbia, has been carried on extensively in Germany, the United States and Eastern Canada for 20 years, and the experience there obtained is that properly made silica-lime brick is quite as lasting as well burned clay brick, with which we are familiar.

The Silica Brick & Lime Company's plant, near Victoria, consists of:—One Berg patent brick press; pressure, 1,700 tons; capacity, 18,000 to 20,000 bricks a day; 1 rotary sand dryer, 1 75-H. P. engine, 1 150-H. P. boiler, 2 60-ft. cylindrical retorts, 2 14-ft. mixers, 3 belt elevators, 1 pulverizer, 2 worm conveyors, 40 flat cars, 12 hydrating cars, 200 lime boxes, with necessary tram tracks, turn-tables, etc. This plant is housed in suitable buildings, between which and the spur from the E. & N. Railway is a large "dock" or platform for the storage of brick awaiting shipment.

The size of the manufactured brick is $8\frac{1}{4}$ by 4 by $2\frac{3}{8}$ inches thick. The raw materials for the brick-making are found immediately adjoining the plant and can be obtained at a minimum expense. The output of the plant up to December 31st, 1907, was about 1,100,000 brick.

The process in detail is as follows:—The sand is wheeled from the sand-bed to a shaft leading to the basement, where a current of hot air is turned upon it until it is thoroughly dry; the sand is then raised by an elevator, passed through a screen, where all particles of gravel are separated out and "conveyed" to a storage bin. In the meanwhile a somewhat similar process is going on with the lime. The limestone is carried from the quarries upon the company's ground to kilns, where it is burned; it is then "hydrated," or slaked, by steam in an immense retort, in separate tins capable of holding about 50 pounds each; thence it is "conveyed" to a storage bin on the same level with the storage bin for sand. The sand and lime from the storage bins are automatically dropped into a "dry mixing machine"—a covered trough in which revolves a shaft furnished with many arms—in the proportion of from 6 to 8 per cent. of lime to 92 or 94 per cent. of sand. After being thoroughly shaken together, the mixture is conveyed to the upper story, where the "wet mixing machine" is located. This machine is similar to the "dry mixer," save that, as the shaft with the arms attached revolves through the mixture, water is dropped upon it from taps above. When the mixture reaches the proper consistency, which is determined by the foreman in charge of the work, it is ready for forming; it is then fed automatically down a shaft into the 4-mould "press," a huge iron machine, furnished with a number of moulds into which the mixture of lime, sand and water is automatically forced by great pressure. The mixture going in at one end of the machine and appearing to be but a mass of sand, comes out at the other in the shape of a dark grey brick. The bricks, as they are turned out by the machine at the rate of about 2,500 per hour, are placed by hand on iron cars; the latter are pushed by hand along a track to the "retorts,' huge cylinders of steel, capable of holding 20 cars bearing 20,000 bricks; the retorts are then closed and 130 pounds pressure of steam is turned on from valves in the shell of the retort, the bricks being left under this pressure for from eight to ten hours, when they are ready for use and are conveyed to the shipping platform.

The strength and lasting qualities of silica brick—properly made—has been amply demonstrated in the East, where this brick has been in use for years, and it is found that the bricks increase in strength and hardness with time, which is essential to the proper "setting" of the lime. That the Victoria company's brick are "properly made" and up to the Eastern standard, it is of course impossible to prove by the test of years, but the company evidently intends to apply every other test to its product, and has caused these tests to be made by competent and independent persons. The Govern-

ment Laboratory tested the absorption of water by the brick, and found it to absorb less than 10 % moisture. Sample bricks were completely, or partially, submerged in water, and, while wet, were subjected to 20° frost for three days, after which they were thawed quickly and raised to temperatures of from 200 to 250° F., and at the end did not appear any the worse for the test, not having scaled or cracked, being apparently unaltered. It would appear, therefore, that the brick is unaffected by climatic changes.

The crushing strength of silica brick has been demonstrated by Mr. James K. Rebbeck, consulting engineer, of Victoria, who reports as follows, after making twenty-three distinct tests :—

Mean breaking strain of ordinary red building brick, as given by accepted standard authorities—lbs. per square inch = 1,845.

Mean breaking strain of tests of the "original product" of Silica Brick & Lime Company —lbs. per square inch = 2,492.

Mean of tests of "standard product" of Silica Brick & Lime Company—lbs. per square inch = 3,326.

By "original product" Mr. Rebbeck means the first product of the plant when unscreened sand was used, and by "standard product" the present output, made with screened sand and other improvements in the manufacture.

The following are among the important structures already built with silica brick :—

Victoria Transfer Co., Victoria, 3 stories; St. Joseph Hospital, new extension, 5 stories; Brackman & Ker's warehouse, Victoria; Bakeries, Limited, Victoria West; David Spencer's new building, Vancouver, 8 stories.

Cement. The Vancouver Portland Cement Co.'s plant at Tod Inlet has been in active operation all the year, and has made and sold nearly 150,000 barrels of Portland cement (350 lbs. to the barrel), of a total value of nearly $225,000; of this quantity, 125,000 barrels were used in the Province. A description of the plant as it then existed was given in the Report for 1904, since when the plant has been very much enlarged and improved, until now it has a capacity of 300,000 barrels a year.

Lime. On Esquimalt harbour Raymond & Sons are operating two large and improved lime-kilns, producing a lime of exceedingly good quality, which finds ready sale in Victoria and Vancouver. Messrs. Elford & Co. also are operating a lime-kiln on the west side of the Saanich arm, and are shipping lime in barrels.

The following office statistics have been contributed by the Mining Recorder of the Division :—

OFFICE STATISTICS—VICTORIA MINING DIVISION.

	1906.	1907.
Free miners' certificates	490	708
" " (special)	7	7
Mining claims recorded	81	136
Certificates of work recorded	163	122
Certificates of improvement recorded	10	15
Conveyances recorded	30	28
Permits "	2	2
Lay-overs "	1	2
Abandonments "	—	1

Revenue.

	1906.	1907.
Free miners' certificates	$5,115 45	$6,032 17
Mining receipts, general	1,684 90	1,932 70
	$6,800 35	$7,964 87

NEW WESTMINSTER MINING DIVISION.

REPORT BY J. MAHONY, MINING RECORDER.

I have the honour to submit the following report of mining operotions in the New Westminster Mining Division for the year 1907:—

The claims recorded during the year were distributed as follows:—

Britannia, Howe sound and vicinity	62
Bowen island	22
Gambier island	13
Burrard inlet and vicinity	11
Capilano, Lynn and Seymour creeks	46
Sechelt inlet	3
Welcome pass	3
Nelson island	5
Jervis inlet	12
Pitt lake	1
Stave lake and vicinity	50
Harrison lake and vicinity	15
25-Mile creek	7
Chilliwhack and vicinity	10

There has been an increase in the number of free miners' certificates issued, and there has been a slight falling-off in the number of claims recorded for the year. There has been a great deal of prospecting at Stave lake and vicinity, Bowen island, and also in the vicinity of Harrison lake, and I expect that considerable development work will be done during the year 1908. There has been a considerable increase in the number of certificates of work issued during the year 1907, showing that the holders of mineral claims are doing the development work required by the Mineral Act, and also showing that the mineral resources of this Division are being steadily developed.

Through the courtesy of Mason T. Adams, managing director of the Britannia Copper Syndicate, Limited, I am enabled to supply some particulars of the work done on the claims held by the above company. There has been considerable development and diamond drill work done at the *Britannia* mine, with very encouraging results. The mine camp has been practically remodelled, in the way of boarding-houses and dwellings; a new saw-mill erected, and, at the beach, a new 25-drill compressor plant, driven by Pelton water-wheel, has been installed, the air being conducted to the mine through 18,000 feet of 8-inch pipe. The old mill has been completely remodelled, the milling plant changed from fine crushing to coarse crushing, with a gradual reduction of intermediate jigging operations on sized products. This construction work is not yet finished, but will practically be completed by the beginning of the year 1908.

The office receipts show an increase over the year 1906.

OFFICE STATISTICS—NEW WESTMINSTER MINING DIVISION.

	1906.	1907.
Free miners' certificates issued	1158	1403
Quartz claims recorded	283	261
Certificates of work recorded	157	246
Certificates of improvement recorded	15	23
Conveyances recorded	94	47

Revenue.

	1906.	1907.
Free miners' certificates	$6,484 85	$7,295 30
Mining receipts, general	2,507 70	2,131 50
	$8,992 55	$9,426 80

REPORT ON THAT PORTION OF THE COAST OF BRITISH COLUMBIA, EXTENDING FROM POWELL RIVER TO KINGCOMBE INLET, INCLUDING THE ADJACENT ISLANDS.

By J. Austen Bancroft.

(From Summary Report of Geological Survey of Canada, 1907.)

The work outlined in the following report is a continuation of that which was carried on by Mr. O. E. LeRoy during the summer of 1906. A week less than three months was spent this summer in actual field operations on the coast by the writer, who had with him a most efficient assistant in Mr. R. P. D. Graham, Demonstrator in Mineralogy at McGill University. That portion of the coast extending from the mouth of Powell river to the entrance of Kingcome inlet was covered, an examination being also made of the islands within this stretch, between Vancuver island and mainland.

The general trend of the coast is here N. 52° W., corresponding to a line drawn between these points, and along such a line the distance traversed was 112 miles. An idea can, however, be gained of the irregular nature of this coast by the statement that 1,540 miles of coast were examined, 680 of this being mainland and the remainder representing the extent of shore line presented by the numerous islands. This is as fine an example as exists in the world of a deeply dissected land area which has been submerged. Vancouver island once was connected with the continent, and in the intermediate lowland there then existed at least one or two river systems, receiving tributaries chiefly from the east. Submergence drowned the river valleys, thus accounting for the salt water straits and inlets of to-day, while the many rugged islands represent former inter-stream areas.

During Triassic, and probably late Palæozoic, times this region formed a portion of the ocean floor, and sedimentation was taking place. The latter part of the Triassic was marked by intense volcanic action, probably subaqueous in origin. This history is expressed in the isolated area of argillites, quartzites, and limestones, and the many varieties of volcanic rocks, such as amygdaloidal diabase, porphyrites, agglomerates, and tufas.

During Upper Jurassic times these stratified rocks, which once covered the region, were intruded in a widespread manner by granite and allied rocks. This vast intrusion, known as the Coast Range batholith, is largely composed of granite, but over wide areas it passes into basic facies which are most interesting. Diorites and gabbros are very common, while in Bute and Knight inlets it exists over quite large areas as almost pure hornblende. On a few small islands to the west of Midsummer, and north of Fire island, there is a beautiful development of an orbicular or kugel diorite.

The stratified rocks, then, formed the roof of this batholith. During the intrusion of the latter, portions of the roof were stoped off and engulfed within the magma; others, partially attached to the roof, draped themselves into it as "roof pendants," while, in other places, the stratified rocks may have been actually folded into the magma. Especially up the deeper inlets, that is, towards the axis of the Coast range, the granite is locally gneissoid, and a schistose structure has been developed in some of the areas of stratified rocks. The strike o such gneissoid and schistose structures corresponds in general with the axial direction of the range. Two sets of dark dikes have cut the region since the cooling down of the batholith.

To-day, erosion has removed the roof, with the exception of a few isolated patches, and has truncated the included stratified masses. It is exceedingly important that these scattered

areas of stratified rocks be located and mapped, for it is within them, and especially along their contact with the intrusive batholith, that the prospector should look for minerals of economic value. Within the region examined about fifty areas of such rocks were located.

Though only one fossil specimen had hitherto been found within the whole of this area, we were fortunate enough to discover five localities that contained among them at least four species.

About thirty-five prospects were visited during the course of the summer. South Valdez island was the only locality where mining operations were being carried on in the district at the time of visitation. From Kelly point to Quathiasca cove this island is underlaid by volcanic rocks. These represent a portion of one of the roof remnants of the batholith. Once floating on the plastic magma, during the adjustment upon cooling down, small faults formed in these volcanics. Heated waters and vapours passing up the fault and joint-planes deposited copper minerals along these cracks, and where the adjacent rock was very porous, because of its amygdaloidal character, it became impregnated, chiefly with chalcocite, and with less quantities of bornite and native copper. This accounts for the stringers of chalcocite along a zone of shearing in the *Ajax* claim, situated on the north of Deepwater bay (at an altitude of 950 feet above sea-level and about one mile from the shore), and for the irregular vein on the *Ingersoll*, situated about two miles from *Copper Cliff*. On the *Ingersoll* a very irregular vein of chalcocite with a gangue of calcite and quartz may be traced for 350 feet with a maximum width of fifteen inches, the country rock being unevenly impregnated for a width of thirty-four feet. The *Copper Cliff*, *Commodore* and *Steep Island* mining properties are situated on highly amygdaloidal beds through which are disseminated, over wide areas, chalcocite, a little native copper, and, on the *Commodore*, some bornite.

From Open bay, on the east of South Valdez island, to within a mile and a half of Granite bay, on the west side, there extends a series of limestones and interbedded greenstones having a maximum width of a little over a mile. In this area, which deserves the most careful prospecting, a number of claims have been located. On the *Lucky Jim*, along a contact between the limestone and a greenstone layer, chalcopyrite, pyrrhotite, pyrite and some magnetite have been deposited. On the *Geiler*, a shaft twenty feet deep, sunk on a similar contact, displays a very good showing of chalcopyrite. A speck of free gold was noticed in a specimen taken from the *Geiler*. This area is, of course, not yet sufficiently examined to properly determine its possibilities, for at no point has it been opened up to a greater depth than twenty-five feet.

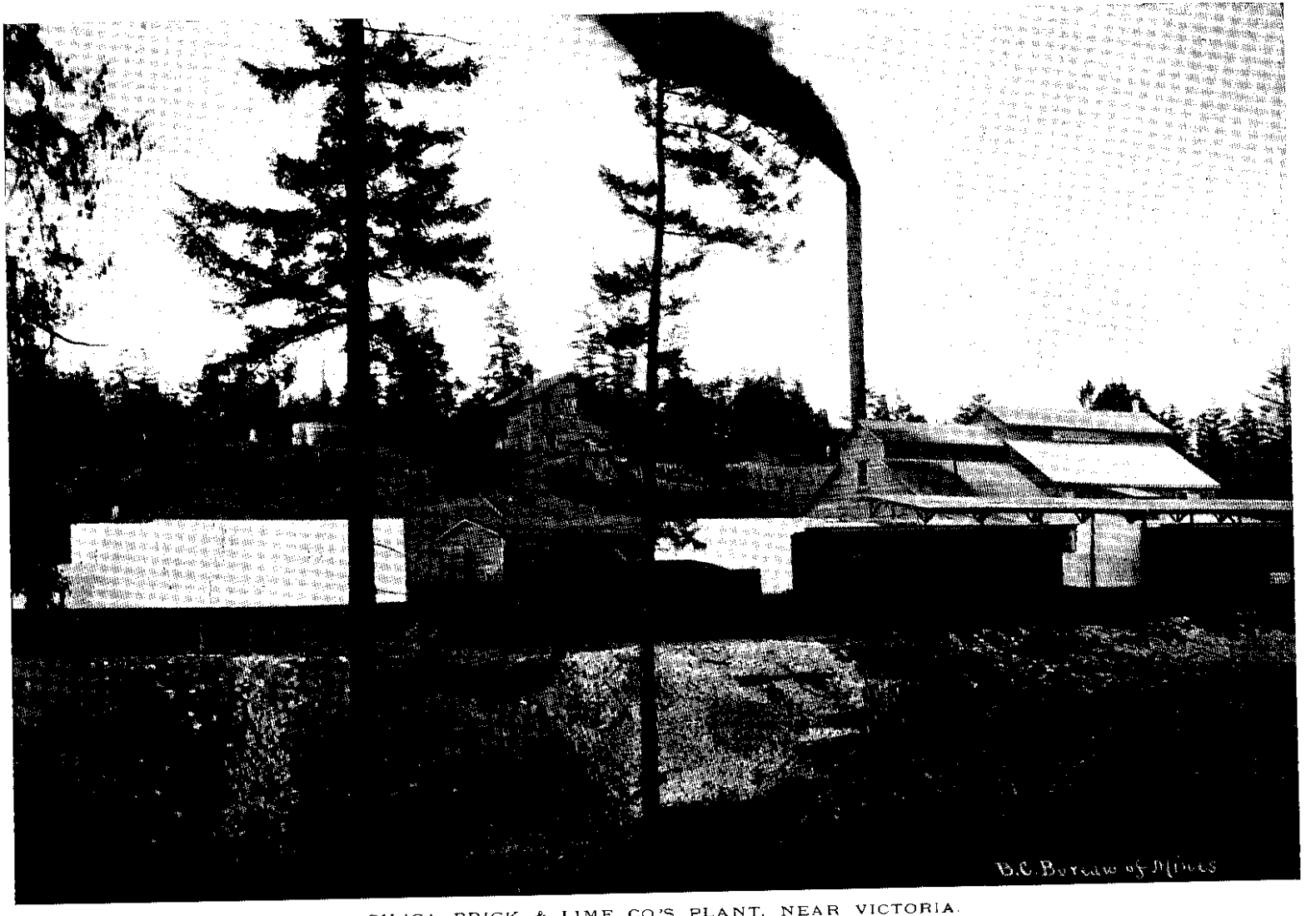
On the north of Rodonda island the *Elsie* claim is staked on a deposit of magnetite that occurs at a contact between the granite and a patch of marble. At an altitude of 500 feet, one open cut has exposed fifty-four feet of magnetite, with a width of thirty-five feet, and at two other points smaller amounts have been uncovered. This property should be tested in depth, for the ore is high-grade, and shipping facilities, although the ascent from the water is steep, could be quite easily arranged.

The Shoal Bay area, which is now deserted, is associated with contact phenomena between the granite and stratified series.

On Mars island, to the south-west of Baker island, small quantities of bornite and galena were found in a limited area of argillites and limestones. On one of the joint planes of a quartzite layer flecks of leaf gold were seen.

On the north-west of Village island, in another area of argillites, a small amount of chalcopyrite and bornite was noticed.

Granite, suitable for building stone, may be found at a number of different localities with excellent opportunity for immediate shipment by water. At Squirrel cove, Walsh cove,



SILICA BRICK & LIME CO.'S PLANT, NEAR VICTORIA.

towards the head of Pendrell sound, and at Kwatsi bay, the granite affords such commercial possibilities. The area of orbicular diorite above mentioned would furnish a unique and very beautiful ornamental stone.

In certain depressions on South Valdez island, Maurelle island and especially Reade island, the finer grained glacial clays should make excellent material for the manufacture of bricks.

INSPECTION OF METALLIFEROUS MINES.

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REPORT OF JAMES McGREGOR, INSPECTOR, WEST KOOTENAY AND BOUNDARY DISTRICTS.

I have the honour to submit my annual report for the year 1907, with respect to the condition of the metalliferous mines in my district.

ROSSLAND DISTRICT.

During the year the principal shipping mines in this district have added greatly to their already large mining plants, and have also extended the mine workings to a considerable extent by continuous development. During my inspections I have always found the mines in a safe condition and the Act complied with.

AINSWORTH DISTRICT.

In this district there has been a great amount of development done, but as yet the number of shipping mines has not increased to any extent. Those mines which come under the Inspection Act I have found in a safe condition, the powder-houses also being well protected and the bunk-houses in a creditable condition.

SLOCAN DISTRICT.

There has been some improvement in this district during the year, an increase in the number of mines operating under lease, also an increased activity in developing other mines and prospects. In every case, upon inspection, the mines which come under the Act I found in a safe condition.

NELSON DISTRICT.

In this district the number of shipping mines remains about the same as in previous years, with an increased number of mines being developed. Upon my different rounds of inspection I found the mines being operated in accordance with the Act.

BOUNDARY DISTRICT.

The many mines in this district have accomplished much during the year, by increasing the facilities for handling larger outputs; also, to further increase the same, they have extended the workings considerably. Upon inspection, I found them in good condition and the Act being observed.

LARDEAU DISTRICT.

In this district the number of shipping mines has not increased during the year, but a great amount of prospecting and developing has been carried on. Upon inspection of the different mines coming under the Act, I found them carefully managed with regard to safety.

KAMLOOPS DISTRICT.

The principal work in connection with mining in this district, carried on during the year, consisted principally of prospecting and developing.

SIMILKAMEEN DISTRICT.

The number of shipping mines in this district remains about the same as last year. A number of properties have been developed continuously and a great amount of prospecting has been carried on. I have always found, upon inspection, a desire displayed by the different managements to comply with the Act.

Appended is a list of accidents which have occurred in or about the mines within my district during the year 1907.

Report of Thos. Morgan, Inspector of East Kootenay District.

I have the honour, as Inspector of Metalliferous Mines for the East Kootenay District, to submit my annual report for the year 1907.

The *St. Eugene* mine, situated at Moyie, and the *Sullivan* and *North Star* mines, near Kimberley, are the only mines that have worked during the year. Whenever I have visited these mines I have found all the requirements of the Act complied with and all precautions used for the safety of the men.

St. Eugene. The *St. Eugene* mine, situated at Moyie, is operated by the Consolidated Mining & Smelting Co. of Canada. The mine has been working steadily all the time and considerable work has been accomplished, with very gratifying results. The mine is well ventilated by compressed air and natural ventilation, and the timbering is all in good order. I last visited this mine on November 2nd.

Sullivan. The *Sullivan* mine is situated about 2½ miles in a northerly direction from Kimberley, and is owned and operated by the Sullivan Group Mining & Smelting Co. Extensive work has been carried on during the year, with satisfactory results. On my last visit, October 2nd, I found everything in good order, sufficient ventilation, the timbering in good condition, and all other requirements of the Act complied with.

North Star. The *North Star* mine is situated about 1½ miles in a westerly direction from Kimberley. On my last visit I found everything progressing favourably; the men were supplied with an abundance of air and the timbering was good.

Appended is a list of accidents reported from these mines during the year.

Report of Archibald Dick, Inspector of Coast District.

I have the honour, as Inspector of Metalliferous Mines for the Vancouver Island and Coast District, to submit my annual report for the year 1907.

During the past year I have inspected the following working mines:—*Marble Bay*, *Cornell*, *Copper Queen* and *Loyal Lease*, on Texada Island, in Nanaimo Mining District.

Marble Bay. The *Marble Bay* mine, on Texada Island, owned by the Tacoma Steel Co., is under the management of Mr. A. Grant. The shaft is down 800 feet from the surface, and as the collar of the shaft has an altitude of only 52 feet above sea level, the bottom of the shaft is therefore 748 feet lower than sea level. On the 6th of August I inspected all working parts and much of the old workings, and found this mine well timbered with square sets, well put in, showing that the timber had been put in by men who understood the business. Ventilation good. There were 29 men working underground and 13 men on the surface.

Here there is erected over the shaft a new head-gear, which is 90 feet high. This is not yet complete, so they are still using the old one, which at present stands in below the new head-gear. I drew Mr. Trelou's attention to the cage, that it had not got a cover overhead, and he told me that they were getting a new steel cage with a cover overhead, which was due to arrive at any time. The mine is well supplied with steam engines, compressor and pumps of various kinds.

Cornell.

The *Cornell* mine is being worked under a lease by the Cornell Operating Company, under the management of W. C. Tonkin. There is only one shaft working, which I went down to the 260-foot level, where I found only three men working, as the stope was about done with, there being no more ore in sight. The mining plant was in very good condition; the hoisting engine is 25 h.-p. and the boiler 34 h.-p.

Copper Queen.

The *Copper Queen* mine is being operated by the same company as is the *Cornell*. The shaft at this mine is down 600 feet, the collar being at an altitude of 182 feet above sea level. I went down the shaft to the 600-foot level, and at the bottom of the shaft there is a rock drift in 40 feet. There were only two miners working in the mine, putting the shaft and everything in good condition. The manager, Mr. Tonkin, told me that there would not be any mining done until he was satisfied that everything was safe and in good working order for the men.

Loyal Lease.

The *Loyal Lease* mine is situated to the north of Van Anda, near Blubber bay, and is operated by the Loyal Lease Company, Limited, with C. H. Jacobs as manager. There is a shaft here down 300 feet, which had not been put down any farther since my previous inspection. At the bottom of the shaft there is a pumping station with a steam pump; from the bottom of the shaft there are drifts to either side; the one to the east is in 170 feet, with several cross-cuts; the drift to the west side is in 150 feet. Down the shaft two miners and one trammer were working. The manager told me that they would continue the west tunnel 150 feet farther, and if they did not find ore, or something that would cause them to think that the rock was more favourable, they would have to suspend the work for a time. The equipment consists of a 20 h.-p. engine, one 50 h.-p. boiler, and one 2-drill compressor.

I have no accidents to report this year from the metalliferous mines in my district.

LIST OF ACCIDENTS IN METALLIFEROUS MINES, 1907.

No.	Mine.	Date.	Name.	Occupation.	Details.
1	Centre Star, Rossland..	Jan. 9	Loco Beau	Miner	Thumb broken by a piece of rock while loading a bucket.
2	Brooklyn, Phœnix.....	" 12	H. Scheltena..	Nipper	Slightly injured by a drill dropping on his foot.
3	Rawhide, Phœnix	" 17	Eric Lendems .	Miner	Face slightly cut by a drill.
4	Pontiac, Woodbury Ck.	" 28	Jacob Amons..	"	Killed by powder exploding in a missed hole.
5	Centre Star, Rossland..	" 31	J. A. Junkins .	Labourer ...	Fatally injured by a timber rolling on him in lumber yard.
6	" " ..	Feb. 7	Dominic Bianca	Shoveller ...	Leg broken by falling rock.
7	White Bear, Rossland..	" 15	Thomas Carnon	Miner	Killed by powder exploding in a missed hole.
8	La Plata, Kokanee Ck .	" 18	Louis Manfron.	"	Killed by powder exploding in a missed hole.
9	Centre Star, Rossland..	" 23	H. H. Johnston	Blaster	Head cut by loose rock falling down raise.
10	M. & S. Dev. Co., Mine [Woodbury	" 25	Andy Lund ...	Miner	Killed by powder exploding in a missed hole.
11	Brooklyn, Phœnix.....	" 26	John H. Guism	Timberman .	Head slightly cut by a falling rock.
12	" "	March 3	Thos. Baird ...	Miner	Head slightly injured by falling rock.
13	" "	" 5	H. Greenhulgh	"	Head slightly injured by car.
14	Argenta, Hamill Creek.	" 8	Robt. Reid....	Shoveller ..	Severely injured by exploding a box of caps in the blacksmith's shop.
15	" " ...	" 8	P. Stanechuck.	Labourer ...	Slightly injured by the same accident.
16	" " ...	" 8	Nich. McKain.	Blaster and Miner	Fatally injured by the same accident.
17	War Eagle, Rossland ..	" 9	Frank Sado ...	Blaster help'r	Eyes injured by the premature explosion of a hole.
18	" " ..	" 9	Dom Bartel ...	Blaster	Hand and arm severely injured by the same accident.
19	Idaho, Phœnix	" 11	R. E. Rohaly..	Shoveller ...	Hand slightly injured by a car.
20	Rawhide, Phœnix	" 15	Ed. T. Cooper.	Trammer ...	Foot slightly injured by rock falling from car.
21	Le Roi, Rossland.....	" 16	A. J. Bible....	Boss labourer	Killed on ore dump by frozen ore falling on him.
22	Idaho, Phœnix	" 28	Kelly Kettner.	Miner	Back slightly injured by falling into an ore bin.
23	Rawhide, Phœnix	April 4	Walter Murray	"	Ankle injured by a piece of steel.
24	Mountain Rose, Phœnix	" 4	Axel. Spanberg	"	Foot slightly injured by a rock falling on it.
25	Mother Lode, Deadwood	" 16	John Bing	Skip loader .	Ankle broken by being brought between skip and shaft timbers.

LIST OF ACCIDENTS IN METALLIFEROUS MINES, 1907.—*Continued.*

No.	Mine.	Date.	Name.	Occupation.	Details.
26	Centre Star, Rossland..	April 21	John Lynch...	Miner	Arm broken by being caught between skip and shaft timbers.
27	Snowshoe, Phœnix.....	" 27	Kelly Kettner.	"	Head slightly cut by falling rock.
28	Mother Lode, Deadwood	May 13	W. A. Clark ..	Nipper	Fatally injured, crushed between car and side of tunnel.
29	Centre Star, Rossland..	" 18	Michael Notte.	Trammer ...	Leg slightly injured by car.
30	" " ..	June 4	William Collin	Ore loader ..	Face cut by brake on railroad car at ore bins.
31	Old Ironsides, Phœnix .	" 4	E. Bragg	Shoveller ...	Leg broken by falling rock.
32	Brooklyn, Phœnix	" 15	B. Butie.....	Skip tender..	Fell off railroad car and slightly injured his wrist.
33	Eureka, Nelson.....	" 20	J. Ranville....	Manager....	Fatally scalded in sump.
34	Old Ironsides, Phœnix .	" 21	Chas. William-[son	Blaster	Ankle broken by cage striking chains.
35	" " "	" 21	Joseph Quinn..	Shoveller ...	Leg broken by cage striking chains.
36	Rawhide, Phœnix	" 22	L. G. Jukie ...	Driver.....	Leg and back slightly injured by being jambed between car and timbers.
37	White Bear, Rossland..	" 25	John Levkovig	Skip tender.	Killed by falling down shaft.
38	Rawhide, Phœnix	" 28	James Noye...	Miner	Face slightly cut by falling in stope.
39	" "	July 6	Robt. Hawkins	Shoveller ...	Back and hand slightly injured by falling rock.
40	Old Ironsides, Phœnix .	" 8	Mik. Spodirvyk	" ...	Killed by walking into chute.
41	Centre Star, Rossland..	" 9	R. Hutchensen	Miner	Foot slightly injured by drill falling on it.
42	Mother Lode, Deadwood	" 9	M. Dulovich ..	Trammer....	Fatally injured by falling down ore chute.
43	Centre Star, Rossland..	" 11	John Bensen ..	Labourer ...	Fingers injured in the rolls of sampling mill.
44	Brooklyn, Phœnix	" 16	Vyeloe Rode ..	Carman.....	Leg broken by car.
45	Snowshoe.....	" 20	Joseph Johns..	Miner	Thumb injured by machine drill.
46	Idaho, Phœnix	" 25	C. T. Cooper ..	Timberman [helper	Ankle crushed by timber falling on it.
47	Rawhide, Phœnix	" 28	Thos. Baird...	Tool sharpn'r	Eye injured by piece of steel.
48	Brooklyn, Phœnix	Aug. 5	Harry Reid ...	Timberman..	Elbow and head injured by falling timber.
49	White Bear, Rossland..	" 12	John Cavello..	Cage tender.	Crushed by cage against side of shaft and killed.
50	Le Roi, Rossland.....	" 17	John Shart....	Blaster	Killed by a premature explosion of powder.
51	Stemwinder, Phœnix...	" 20	Chas. Hamlin .	Mill-hand...	Hand injured, necessitating amputation, by slipping and striking saw in saw-mill.

LIST OF ACCIDENTS IN METALLIFEROUS MINES, 1907.—*Continued.*

No.	Mine.	Date.	Name.	Occupation.	Details.
52	Silver Dollar, Camborne	Sept. 13	M. Pierce.....	Shoveller ...	Head slightly injured by falling over dump.
53	Snowshoe, Phœnix.....	" 30	Jno. Blakemore	Miner	Head slightly cut by falling rock.
54	" "	" 30	Fred Moses ...	Labourer ...	Instep slightly injured by loose rock falling on it.
55	Rawhide, Phœnix	Oct. 9	Alex. Dansen..	Muckerboss..	Killed in ore chute by falling ore.
56	Sunset, Cody.....	" 16	Govanni Lasco.	Timberman [helper	Was found unconscious in ore chute and died the following day.
57	Le Roi, Rossland	" 22	E. Lamby.....	Sawyer.....	Killed on surface by lumber pile falling on him.
58	Sunset, Hedley.....		Jno. McKinnon	Shiftboss ...	Killed by fall of rock.
59	St. Eugene, E. Kootenay	Feb. 5	Okus Harrett..	Pumpman ..	Caught hold of the cross-bar and the bale fell on his right hand, taking off part of his thumb.
60	" "	" 11	Geo. Smith ...	Machineman	Two fingers bruised; caught between chuck and drill.
61	" "	" 12	Jas. Rossie....	Labourer....	Leg bruised; jammed between hoist and wall.
62	" "	Mar. 4	John Doyle ...	"	Ankle sprained and back bruised by a fall from a ladder.
63	" "	" 5	W. Ransome..	Machineman	Head cut by a loose piece of rock falling, which he had been told to take down.
64	Sullivan, E. Kootenay..	April 6	E. O. Sahlen ..	Miner	Right leg fractured and nose broken by drilling into powder in a missed hole.
65	" " ..	" 6	Nelson Church	"	Eyes slightly injured by the same explosion.
66	St. Eugene.....	" 10	Wm. McKane.	"	Fell off a ladder and bruised his ankle.
67	"	" 15	Jas. Conners..	Machineman	Finger smashed by the bale of the cage.
68	"	" 20	Leo Maldidier.	Timberman..	Foot bruised by a small piece of rock falling on it.
69	Sullivan	May 1	Wm. Rogers ..	Machineman	Killed by the explosion of a loose piece of powder which he struck with his pick.
70	"	" 1	D. McKay	"	Killed by the same explosion.
71	St. Eugene.....	" 9	D. Angus	Timberman [helper	Shoulder bruised by a piece of loose earth striking him and rolling him down the stope.
72	"	" 11	John Zackan..	Carman.....	Knee bruised by being jammed between two mine cars.
73	"	" 11	A. Leljenburg.	Mucker....	Finger bruised against the timbers while going down in the cage.
74	"	June 2	James Thorn..	Fireman	Right thumb cut off by the plunger of feed pump.

LIST OF ACCIDENTS IN METALLIFEROUS MINES, 1907.—*Concluded.*

No.	Mine.	Date.	Name.	Occupation.	Details.
75	St. Eugene	June 7	A. Dundurand.	Shoveller	Cut his foot by axe while cutting a plank on the side of the drift.
76	"	July 1	Mike Reagan	Chuteman	Ankle bruised by moving mine cars.
77	"	" 3	R. Robertson	Labourer	Leg bruised by a mine car which he was dumping.
78	"	" 5	L. A. Horne	Timberman	Dropped his axe through the bottom of the cage, it lodged in the timbers of the shaft, and, when struck by the car, flew back into the cage, badly cutting Horne's right arm.
79	"	" 23	Thos. Summers	Machineman	Eyes badly injured and face and chest burned by the explosion of some powder which he was tamping into a hole with a steel drill.
80	"	" 23	Wm. Preston	"	Arm slightly bruised by the same explosion.
81	"	Aug. 11	F. Rudd	Tophand	While dumping a car on top of ore bins caught his hand between the top and some timbers, cutting his finger.
82	"	" 12	J. F. Cere	"	Finger cut; caught between car and timber.
83	"	" 12	J. H. Hawke	Jigman	Was oiling shaft at Concentrator. His jumper caught on another shaft and he was wound around it, bruising back and shoulder.
84	"	" 28	James Nugent.	Carman	Foot and elbow cut by a rock falling down the stope.
85	"	" 28	Walter Sorrell.	Crusherman	Finger bruised; caught between a car and some timber on surface.
86	"	Sept. 21	A. Ostrum	Miner	Hand cut by falling on a plank with a nail in it.
87	"	Oct. 9	Neil McDonald	Machineman	Hand cut by a small piece of rock falling on it.
88	"	" 11	Maurice Peters	"	Foot cut while at work in the stope by a falling rock.
89	"	" 16	Angus McNeill	"	Arm broken and head cut by a fall of earth from the back of the drift.
90	"	Nov. 20	Allan Ford	"	Foot cut by a drill falling on it.
91	"	Dec. 6	Gus. Johnson	Mucker	Hand cut by a piece of rock falling from the roof of the stope.
92	"	" 16	Valentine Summers	"	Caught his hand between the chute and the car, cutting his finger.
93	"	" 27	J. Chisholm	Shoveller	Picked into powder in the muck, which exploded, injuring his face and eyes.
94	"	" 29	A. Pickering	Machineman	Leg fractured by fall of rock from the hanging wall.

Tabulated List of Accidents in Metalliferous Mines, 1907.

	Cause of Accident.	Extent of Injury.			Total.
		Fatal.	Serious.	Slight.	
A	Blasting	1	2	2	5
B	Defective powder	0	0	0	0
C	Drilling into old holes containing powder	4	1	1	6
D	Powder in muck	2	1	0	3
E	Shafts and cages, accidents connected with	1	5	3	9
F	Falling down shafts or winzes	1	0	0	1
G	Falling down chutes	3	0	0	3
H	Mine cars	1	1	9	11
I	Rock falling in stopes, levels, etc	1	4	13	18
J	Rock falling down chutes or openings	1	0	2	3
K	Timbering	0	0	2	2
L	Miscellaneous, underground	1	1	12	14
M	Surface	4	3	12	19
	Totals	20	20	54	94
Accidents for each 100,000 tons ore mined		1.11	1.11	3.00	5.22
Accidents for each 1,000 men employed		5.4	5.4	14.6	25.4

COAL MINING IN BRITISH COLUMBIA.

The general wave of commercial prosperity which ushered in the year 1907 carried the production of coal in British Columbia to a point higher than it had ever before reached, although the wave did recede before the year was much more than half spent. During the first half of the year the collieries were taxed to their uttermost, or at least would have been, such was the demand for coal, but that the transporting railways failed lamentably to supply cars, and the labour market to provide men enough to mine the quantity of coal desired.

Shortly after the middle of the year the financial stringency in the East, combined with the great drop in the market price of metals, began to make itself felt in the West by the retarding of all industrial enterprises, more particularly as affecting the coal consumption, by the shutting down of most of the smelters in the country and of the mines dependent on them. These conditions were more keenly felt by the collieries of the Interior, while the Coast collieries, whose chief export market is San Francisco, felt and shared the financial depression that city so early manifested; added to these difficulties the coal mines in the Orient—Australia and Japan—in the expectation of a shortage of coal here, rushed in to San Francisco and Puget Sound ports large shipments of coal which, arriving as they did on a market which had suddenly diminished, served to glut the market, with the result that the Coast collieries were forced to slacken, and, in some cases, suspend shipments during the last months of the year, and, as the returns show, put much of their product of both coal and coke into "stock."

The production of the collieries of the Province in the year 1907 was greater than that of any preceding year, and amounted to 1,800,067 tons of coal, having a value of $6,300,235, to which must be added a production of 222,913 tons of coke, worth $1,337,478. As compared with the preceding year, these figures represent the following increases:—

Coal, increased in quantity, 18.6 %, and in value, 38.6 %.
Coke, " " 10.6 %, " 34.2 %.
Increase in value of coal and coke, 37.7 %.

The producing collieries during 1907 were practically the same as in the previous year, viz.:—The Crow's Nest Pass collieries in the Rocky Mountain coal field, in the south-eastern portion of the Province, and on Vancouver Island the Western Fuel Co.'s collieries at Nanaimo, and the Wellington Colliery Co.'s collieries at Extension and Comox.

In addition to these older producers, a new colliery—the Middlesboro Colliery in the Nicola valley—began to ship coal towards the end of the year, producing about 11,000 tons, while three small collieries were opened up near Nanaimo, which, although not as yet contributing much to the Provincial output, give promise of greater things in the future.

Although at present the supply seems to be in excess of the demand, this condition cannot long remain in the face of the rapid development of the whole Pacific Coast, the greater portion of the whole supply for which must be obtained from British Columbia.

The gross amount of coal mined in the Province during the year 1907 was 2,219,608 tons (2,240 lbs.), an increase over the preceding year of 320,532 tons, or about 17 per cent.

Some 419,541 tons of this coal was made into coke, of which there was produced 222,913 long tons.

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

Coal and Coke Produced, Exported, &c., by Province during Year 1907.

Sales and Output for Year.	Coal.				Coke.			
(Tons of 2,240 lbs.)	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada	916,262	....		....	155,579	....		....
" export to U. S.	651,076	....		....	60,110	....		....
" " to other countries	22,038	....		....				
Total sales		....	1,589,376	....		....	215,689	....
Used in making Coke	419,541	....		....		....		....
Used under colliery boilers, etc.	165,931	....		....		....		....
Total for colliery use		....	585,472	....		....		....
			2,174,848					
Stocks on hand first of year	13,289	....		....	1,558	....		....
" last of year	58,049	....		....	8,782	....		....
Difference added to stock during year		....	44,760	....		....	7,224	....
Output of colliery for year		....	2,219,608	....		....	222,913	....

By-products—Fire-clay, 488 tons.

Number of Hands Employed, Daily Wages Paid, &c.

Character of Labour.	Underground.		Above Ground.		Totals.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
						$
Supervision and clerical assistance	112	$3.50 to $10	64	$3.50 to $6.00	176	3.50 to 10
Whites—Miners	1,871	3.00 to $6.50			1,871	3.00 to 6.50
Miners' helpers	560	1.75 to 3.30			560	1.75 to 3.30
Labourers	739	2.50 to 3.50	493	$2.50 to $3.00	1,232	2.50 to 3.50
Mechanics & skilled labour.	541	2.75 to 3.55	534	2.75 to 4.50	1,075	2.75 to 4.50
Boys	158	1.10 to 2.45	47	1.50 to 2.25	205	1.10 to 2.45
Japanese	132	1.35 to 2.25	42	1.35 to 1.65	174	1.35 to 2.25
Chinese	273	1.35 to 2.25	470	1.35 to 1.75	743	1.25 to 2.25
Indians	3	$2.86	20	1.48½ to 1.75	23	1.48½ to 2.86
Totals	4,389		1,670		6,059	

COLLIERIES SOON TO BE PRODUCING.

The Pacific Coal Co., a subsidiary company of the Canadian Pacific Railway, owns large coal areas at Hosmer, on the line of the C. P. Ry., a few miles north of Fernie, and adjacent to the lands of the Crow's Nest Pass Coal Company. This colliery has been under process of equipment for the past two years and would have been shipping before this, but for some legal obligation not to enter the market before 1908.

The various coal seams developed by the Crow's Nest Pass Coal Co. on the adjacent areas are here found dipping at a high angle into the hill, outcropping high up on the mountain. To reach these seams the company has driven in two large parallel tunnels through rock, starting at a point well above the valley but below the outcrops. These tunnels cut the coal seams, at a distance of from 1,300 to 1,500 feet in, nearly at right angles, and from these main tunnels workings are being started off on either side at each seam.

The tipples and other plant, as well as the coke ovens, are on a bench slightly above the general valley of Elk river, and down to this level the coal will be lowered from the tunnel mouth by an incline some 4,000 feet long.

By the end of the year the plant and equipment were nearing completion, the mines being sufficiently developed to begin large shipments at any time, and during the coming year should make a large output.

The management of the property is in the hands of Mr. R. G. Drinnan, who for some years past has successfully filled the position of manager and general superintendent of the Crow's Nest Pass collieries.

In the Nicola valley the Diamond Vale Colliery has been opened up to a certain extent, and has made small shipments since the close of the year. Further notice of this colliery is given on page 142 of this report.

On Vancouver Island three new collieries have been opened up this year, notice of which is taken in the Report of the Inspector of the district herewith attached.

COAL PROSPECTS.

Of the coal prospects seriously developed, but not as yet approaching the shipping stage, probably the most important are up the valley of the Elk river, above Michel creek, in East Kootenay, on the western slope of the Rockies. Here there are a number of areas owned by various companies, but the Imperial Coal & Coke Co.'s properties are probably the most developed, and there is little doubt but, that within a year or so, a railway will be built up the valley of the Elk which will enable them to ship their coal.

No important developments have occurred in the southern portion of what is known as the Flathead District, but in the northern part of the district, on the south fork of Michel creek, Mr. Corbin, of Spokane, and associates have done some important work and, having secured a railway charter, are expected to very soon begin serious development.

Coal has been discovered on Bear river, a tributary of the Fraser river entering above Ft. George, and near the line of the G. T. P. Ry., but this discovery requires to be developed.

The lignitic coal beds near Princeton remain undeveloped, but, as the construction of a railway to that point is nearly completed, development of these coals will not be postponed much longer.

To the west of Princeton, at the head of Granite creek, once a well-known placer gold stream, extensions of the coal beds first discovered at Collins gulch have been prospected, with results which are encouraging.

The coal field on the Telkwa river, in the Bulkley valley, is still quite undeveloped, but other small areas have been discovered in the district.

The older known coal areas on the Queen Charlotte islands have remained unprospected and undeveloped, but some new areas have been located on Skidegate channel, on which a small amount of prospecting has been done.

On Malcolm island and on the adjacent shore of Vancouver island the coal areas, long known to exist there, are being prospected by diamond drilling.

On the west arm of Quatsino sound a new coal area has been discovered and a small amount of prospecting done, which is more fully described on pages 150-151 of this Report.

COLLIERIES OF THE COAST DISTRICT.

The gross output of the Coast Collieries, including the Nicola valley, for the year 1907 was 1,342,877 tons (of 2,240 lbs.) of coal actually mined, but of this quantity some 44,760 tons were put into "stock," making the actual consumption of coal 1,298,117 tons.

Of this gross consumption, 1,079,745 tons were sold as coal, 121,701 tons were consumed by the producing companies as fuel, while 96,671 tons were used in making coke, of which there was produced some 16,372 tons (2,240 lbs.) of which 14,812 tons was sold and 1,560 tons added to stock.

The following tables gives an aggregate summary of the output of the Coast Collieries for the year 1907, and shows the dispositions made of such product:—

Sales and Output for Year.	Coal.				Coke.			
(Tons of 2,240 lbs.)	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada	698,041	....	.....	....	14,592	....		
" export to United States	359,666	....	.....	....	220	....		
" " other Countries	22,038	....	.....	....	.....	....		
Total sales	.....	....	1,079,745	....	.....	....	14,812	....
Used in making Coke	96,671	....	.....	....				
" under Colliery boilers, etc	121,701	....	.....	....				
Total for Colliery use	.....	....	218,372	....				
			1,298,117	....				
Stock on hand first of year	13,289	....	.....	....	219			
" last of year	58,049	....	.....	....	1,779			
Difference added to stock during year	.....	....	44,760	....	.....	....	1,560	
Output of Colliery for year	.....	....	1,342,877	....	.....	....	16,372	....

By products ..... Fire Clay (tons), 488.

Number of Hands Employed, Daily Wages Paid, &c.

Character of Labour.	Underground.		Above Ground.		Totals.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
		$		$		$
Supervision and clerical assistance	72	3.50 to 10	45	3.50 to 6.00	117	3.50 to 10
Whites—Miners	1,160	3.00 to 6.50	.....	.....	1,160	3.00 to 6.50
Miners' helpers	440	1.75 to 3.30	.....	.....	440	1.75 to 3.30
Labourers	539	2.50 to 3.50	93	2.50 to 3.00	632	2.50 to 3.50
Mechanics and skilled labour	120	2.75 to 3.55	194	2.75 to 4.50	314	2.75 to 4.50
Boys	123	1.10 to 2.45	43	1.50 to 2.25	166	1.10 to 2.45
Japanese	132	1.35 to 2.25	42	1.35 to 1.65	174	1.35 to 2.25
Chinese	273	1.35 to 2.25	470	1.35 to 1.75	743	1.25 to 2.25
Indians* and Hindus†	3*	2.86	20†	1.48½ to 1.75	23	1.48½ to 2.86
Totals	2,862	.....	907	.....	3,769	.....

INSPECTION OF COAL MINES, 1907.

VANCOUVER ISLAND AND COAST INSPECTION DISTRICT.

REPORT OF ARCH. DICK, INSPECTOR.

SIR,—I have the honour to herewith submit my annual report for the collieries in this District for the year ending 31st December, 1907, together with a list of all accidents and the colliery returns.

The collieries operating during the year, including the new mines that have been started, were :—

NANAIMO : The Western Fuel Company—No. 1 shaft, Protection Shaft, No. 4 Northfield Mine.

Fiddick Property, South Wellington, Cranberry District, 1 tunnel, 1 shaft.

Gilfillan Colliery, Wellington, 1 slope

New East Wellington Colliery, Mountain District, Nanaimo, 1 slope.

EXTENSION : The Wellington Colliery Company—Nos. 1, 2, and 3 mines. All worked from what is known as the No. 1 tunnel.

CUMBERLAND : The Wellington Colliery Company—Nos. 4 and 7 slopes, and Nos. 5 and 6 shafts.

NICOLA VALLEY : The Middlesboro Colliery, Nicola Valley Coal and Coke Company's Nos. 1 and 2 mines.

The Western Fuel Company.

Head Office, San Francisco, Cal.

Officers.	*Address.*
John L. Howard, President or Chairman,	San Francisco, Cal,
James B. Smith, Vice-President or Vice-Chairman,	San Francisco, Cal.
D. C. Norcross, Secretary,	San Francisco, Cal.
Joseph L. Schmidt, Treasurer,	San Francisco, Cal.
Thomas R. Stockett, Manager,	Nanaimo, B.C.
Thomas Graham, Superintendent,	Nanaimo, B.C.

Capital of the Company, $1,500,000.

The above company has operated the following collieries at Nanaimo during the past year, viz. :—No. 1 or Esplanade Shaft, Nanaimo ; Protection Island Mine ; No. 4 Northfield Mine.

The following returns show the combined output of the company's mines for the past year :—

Returns from Western Fuel Co.'s Mines for Year 1907.

Sales and Output for Year.	Coal.				Coke.			
(Tons of 2,240 lbs.)	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada	221,712							
" export to United States	218,014							
" " to other countries	4,309							
Total sales			444,035					
Used in making coke								
" under colliery boilers	51,602							
Total for colliery use			51,602					
			495,637					
Stocks on hand first of year	9,367							
" last of year	18,022							
Difference added to Stock during year			8,655					
Output of Colliery for year			504,292					

Number of Hands Employed, Daily Wages Paid, &c.

Character of Labour.	Underground.		Above Ground.		Totals.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
		$		$		
Supervision and Clerical Assistance	45		20		65	
Whites—Miners	496	3.30 - 6.50			496	
Miners' Helpers	71	2.86			71	
Labourers	472	2.86 - 3.25	28	2.75	500	
Mechanics and Skilled Labour	95	2.86 - 3.55	92	3.00 - 4.50	187	
Boys	52	1.10 - 2.45	21	.50 - 2.25	73	
Japanese						
Chinese			100	1.50 - 1.75	100	
Indians, native B. C.	3	2.86			3	
Totals	1,234		261		1,495	

No. 1 Shaft, Esplanade, Nanaimo.

In the early part of the year the above mine was under the management of Mr. Thomas Mills, then for a time under Mr. Thomas R. Stockett; now Charles Graham is manager, with Mr. John Newton overman. I have examined parts of this mine frequently each month during the year.

No. 1 shaft and Protection Island mine can properly be regarded as one mine, as they are connected underground, and are under one system of ventilation; all the workmen employed

in the Protection Island section of the mine go up and down that shaft, but all the coal mined is conveyed to and hoisted out of No. 1 shaft. The workings of No. 1 shaft are spread over a very extended area; from the working face on the north side to the workings on the south side, by the road, it is nearly five miles. There are two seams of coal in this mine now extensively worked, known as the Upper and Lower seams. The former is the coal that has been generally worked for a great number of years. In the north side this upper seam is mined in what is now known as the Nos. 2 and 3 inclines off No. 1 north level, in which all the mining has been at pillar coal. From the No. 1 level of this upper seam there are two rock tunnels down to the lower seam, known as Nos. 1 and 2 slopes, which seam is about 60 feet vertically below the upper seam. Most of the rock intervening between the two seams is hard conglomerate, which makes a strong roof for the lower seam. In the lower seam the coal varies in thickness from 30 to 40 inches, which is all of excellent quality, very hard, and stands handling well, and is worked on the "longwall" system, to which it is well adapted.

The coal from the above districts is loaded into mine cars, which are collected from the different entries with mules and taken fully two miles to the bottom of No. 1 shaft by electric motor, two powerful motors being kept busy, and it being no unusual thing to see them going along with 90 cars loaded with coal.

No. 1 Slope.

This slope branches off No. 1 north level to the east, about 70 yards from the shaft bottom, and is down 6,513 feet. No. 7 east level branches off this slope at 5,055 feet down from No. 1 level, and is the lowest workings now in this mine. The level face is about 6,000 feet from the slope and at a depth of 1,200 feet vertically below the mud-flats of the Nanaimo river. The coal mined here is hard and of good quality.

About 1,000 yards down No. 1 slope, what is known as the Diagonal slope, branches off to the east. The workings off this slope and No. 7 east level are connected in many places, all the mining done in No. 7 level being towards the working of the Diagonal slope. The prospects for coal down this slope are good, and it is being extensively opened out. The coal from here is very good, much of the seam is over 9 feet thick and forms a large proportion of the output of No. 1 shaft. This slope has been driven into a large basin, with the coal rising all around, and to do away with the basin and much of the haulage the company went up the slope to what appears to be the rim of the basin, and has started a level rock tunnel to run across and strike the coal on the opposite side of the basin, where the workings now are. This rock tunnel will be 1,000 feet long, half of which is complete, having a sectional area of 7 by 10 feet. When this tunnel is finished the basin above-mentioned will be allowed to fill with water, which will then make it safe against any collection of gas.

PROTECTION ISLAND MINE.

This mine is under the same management as No. 1 shaft, Charles Graham, manager; Thomas McGuckie, overman. It is a continuation of No. 1 mine by the way of No. 1 slope to No. 3 north level, which level branches off No. 1 slope to the north, about 1,000 yards below the No. 1 north level, and is about 1½ miles long to where it originally intersected with Protection mine in the upper seam, where there are now only a few men working at pillars (coal) in what is known as No. 3 panel.

From this No. 3 level there is a rock tunnel similar to that mentioned in No. 1 level of No. 1 shaft. From the bottom of the No. 1 slope there is another slope, but this is in the lower seam; this slope goes to the east, and is again connected with No. 5 level of the upper seam slope by a level rock tunnel. The air for ventilating this lower seam comes down

Protection island shaft; thence down the slope to the level above-mentioned, through the rock tunnel at No. 5 level, up along all the working faces, out at the top, and away to the exhaust fan near No. 1 shaft.

The coal in this lower seam is similar to that in No. 1 mine, and varies from 30 to 40 inches in thickness with a hard rock roof. This seam has proved its regularity all under Nanaimo harbour, Newcastle island and Protection island, and is now very extensively worked by a large number of men.

The ventilation of the above mines is good, there being an average of 92,000 cubic feet of air a minute going out the return airway to the No. 1 fan shaft, in addition to what goes out at Newcastle shaft. In this division there are 200 men and 20 mules.

The No. 7 East level and the Diagonal slope are connected with the south return airway, in which 44,000 cubic feet of air a minute passes, going to the same No. 1 exhaust fan. In these lower districts there was a total of 60 men and 12 mules employed.

In making my inspection I always have a Wolf safety lamp, and it is very seldom that I have seen a trace of explosive gas. The Wolf safety lamp is now the only safety lamp used in the Western Fuel Company's mine, and is found to give good satisfaction.

In addition to Charles Graham, manager, with John Newton, overman at No. 1 shaft, and Thomas McGuckie, overman at Protection mine, there are fifteen firemen constantly going about the mine, watching that everything is in safe working condition. Besides these, there is a special fireman, whose sole duty is to travel and inspect the old workings and to find out the condition of the same. In addition to the other inspections, the miners working in the mine appoint a committee to examine all accessible parts of the mine, to see the condition and find out if there is any standing gas. This is done once every month, and takes sometimes three days with three men, and the result of their finding is posted up in a conspicuous place near the entrance of the mine.

The following are the official returns from the No. 1 Shaft and Protection Island mines for the year 1907:—

Sales and Output for Year.	Coal.				Coke.			
(Tons of 2,240 lbs.)	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada	154,982							
" export to U. S.	142,623							
" " to other Countries	4,309							
Total Sales			301,914					
Used in making Coke								
" under Colliery Boilers, &c.	28,933							
Total for Colliery use			28,933					
			330,847					
Stock on hand first of year	8,842							
" last of year	13,997							
Difference added to stock during year			5,155					
Output of Colliery for year			336,002					

NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &C.

CHARACTER OF LABOUR.	UNDERGROUND.		ABOVE GROUND.		TOTALS.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
		$		$		
Supervision and clerical assistance	31		16		47	
Whites—Miners	286	3.30 - 6.50			286	
Miners' helpers	30	2.86			30	
Labourers	236	2.86 - 3.25	24	2.75	260	
Mechanics and skilled labour	67	2.86 - 3.55	74	3.00 - 4.50	141	
Boys	39	1.10 - 2.45	16	.50 - 1.65	55	
Japanese						
Chinese			65	1.50 - 1.75	65	
Indians, natives of B. C.	3	2.86			3	
Totals	692		195		887	

Mine worked 295 days during year.

No. 4 NORTHFIELD MINE, NANAIMO COLLIERY.

George Wilkinson, Manager.

It was noted in a previous report that this mine gave promise of being a very productive coal mine, and this has now come true, as the annual colliery returns will show. The seam worked varies from 30″ to 40″ thick, yet in one shift of eight hours over 1,200 tons of coal were hoisted out of this mine. Nearly all this coal finds its way to the California market, where it is in great demand, and the calling steamships that have once tried it always want to get it again when they come back.

The main hoisting is by a shaft 60 feet deep, from the bottom of which is a main slope, now nearly one mile long, on which the haulage is by the "endless rope" system; the rope haulage and bull-wheel being down nearly a mile.

The workings of the mine are to the right and left of this main slope, and are known as follows:—Nos. 1, 2½, 3, 4 and 5 left levels, and Nos. 2, 3 and 4 right levels, No. 1 being stoped for the present. All the workings in this seam are worked on the longwall system, for which it is well adapted. Much timber is used in cogging the roof. The brushing, to make height for the roads, is taken from the floor. The seam, although thin, has proved to be regular and very extensive, and is the same being worked in Protection and No. 1 shaft, Nanaimo.

In addition to the above seam, there are three rock tunnels to the upper seam, or what was called in early times the "Douglas coal." This coal is hard and of very good quality, although somewhat faulted in places. The first of these rock tunnels is started at about 800 yards down, and has a grade down "with the load" of about 1 in 4 feet. After getting the coal here, a connection with the old Fitzwilliam or Newcastle mine was made and a pump was put in that old mine, the water from these workings draining to it. This connection serves as the air intake, as well as a good travelling way.

Near the bottom of the slope, on the left side, is another rock tunnel through to the upper seam, as well as a shaft for ventilating that district. The coal there was four feet thick, good and hard, but very little development had been done.

The ventilation is good. Air velocity on the return airway, $1010 \times 65 = 65,650$ cubic feet passing a minute, split as follows:—

No. 1	left,	17,000 feet,	60 men	and 4	mules.
" 2½ and 3	"	10,000 "	50 "	3	"
" 2	right,	5,000 "	22 "	1	mule.
" 3	"	6,000 "	34 "	1	"
" 4 right and	left,	10,500 "	47 "	2	mules.
Incline,		8,250 "	50 "	1	horse.
Total.....		56,750			

The above shows a leakage of 8,900 feet.

I have examined all the above works frequently, well up into the breaks in the roof, with a safety lamp, but have not yet seen a trace of explosive gas.

In addition to the manager, there is a staff of 11 men continually on the move, watching and seeing that everything is all right.

In this mine a large number of mining machines, run by compressed air, are at work, which is a great help to the ventilation.

During a great part of last year a gang of men was working on the return airway, cleaning out all refuse and making it larger. This return airway is also the travelling road into the mine, and for a long distance is lighted by electricity, as is also the main haulage slope from the one end to the other, with electric lights placed at intervals of 30 feet, and with extra lights at all sidings.

The following are the official returns of the Northfield colliery for the year ending the 31st December, 1907:—

Sales and Output for Year.	Coal.				Coke.			
(Tons of 2,240 lbs.)	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada	66,730	....	.....	....	.....	....	.....	....
" export to U. S	75,391	....	.....	....	.....	....	.....	....
" " to other Countries	.....	....	.....	....	.....	....	.....	....
Total Sales	.....	....	142,121	....	.....	....	.....	....
Used in making Coke	.....	....	.....	....	.....	....	.....	....
" under Colliery Boilers, &c	22,669	....	.....	....	.....	....	.....	....
Total for Colliery Use	.....	....	22,669	....	.....	....	.....	....
			164,790					
Stocks on hand first of year	525	....	.....	...	.....	....	.....	....
" last of year	4,025	....	.....	....	.....	....	.....	....
Difference added to stock during year	.....	....	3,500	....	.....	....	.....	....
Output of Colliery for Year	.....	....	168,290	....	.....	....	.....	....

NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &c.

CHARACTER OF LABOUR.	UNDERGROUND.		ABOVE GROUND.		TOTALS.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
		$		$		
Supervision and clerical assistance	14	.....	4	.....	18	.....
Whites—Miners	210	3.30 - 5.00	.....	.....	210	.....
Miners' helpers	41	2.86	.....	.....	41	.....
Labourers	236	2.86 - 3.25	4	2.75	240	.....
Mechanics and skilled labour	28	2.86 - 3.55	18	3.00 - 3.55	46	.....
Boys	13	1.10 - 2.20	5	1.00 - 2.25	18	.....
Japanese	.....	.....	.....	.....	.....	.....
Chinese	.....	.....	35	1.50 - 1.75	35	.....
Totals	542	.....	66	.....	608	.....

Mine worked 292 days during year.

Wellington Colliery Company, Limited.

Head Office—Victoria, B. C. Capital $2,000,000.

Officers.

Hon. James Dunsmuir, President, Victoria, B. C. H. M. Hills, Secretary, Victoria, B. C.
F. D. Little, Vice-President, " J. A. Lindsay, Treasurer, "

The Wellington Colliery Company, Limited, has been operating the following mines during the year 1907, under the general management of F. D. Little, M.E. :—

The Extension Colliery, in Cranberry District (Extension); Andrew Bryden, Manager.

The Union Colliery, in Comox District, John Matthews, Manager.

The amount and disposition of the combined output of this company's collieries is fully shown in the following table :—

SALES AND OUTPUT FOR YEAR.	COAL.				COKE.			
(Tons of 2,240 lbs.)	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada	463,220	....	.....	....	14,592	....		
" export to United States	141,652	....	.....	....	220	....		
" " to other countries	17,729	....	.....	....	.....	....		
Total Sales	.....	....	622,601	....	.....	....	14,812	—
Used in making Coke	96,671	....						
" under Colliery Boilers	69,794	....						
Total for Colliery Use	.....	....	166,465	....				
			789,066	....				
Stocks on hand first of year	3,858	....	.....	....	219			
" last of year	38,930	....	.....	....	1,779			
Difference added to Stock during year	.....	....	35,072	....	.....	....	1,560	
Output of Colliery for Year	.....	....	824,138	—	.....	....	16,372	—

By products.....Fire Clay (tons)..488.

Number of Hands Employed, Daily Wages Paid, &c.

Character of Labour.	Underground.		Above Ground.		Totals.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
		$		$		$
Supervision and clerical assistance	25	3.50 - 10.00	21	3.50 - 6.00	46	3.50 - 10.00
Whites—Miners	609	3.30 - 6.00	.....	.....	609	3.30 - 6.00
Miners' helpers	361	1.75 - 3.30	.....	.....	361	1.75 - 3.30
Labourers	53	2.50 - 3.50	40	2.50 - 3.00	93	2.50 - 3.50
Mechanics and skilled labour	24	2.75 - 3.50	94	2.75 - 4.40	118	2.75 - 4.40
Boys	71	1.10 - 2.20	22	1.00 - 2.20	93	1.00 - 2.20
Japanese	132	1.35 - 2.25	42	1.35 - 1.65	174	1.35 - 2.25
Chinese	273	1.35 - 2.25	357	1.25 - 1.75	630	1.25 - 2.25
Hindus	.....	.....	20	1.48½ - 1.75	20	1.48½ - 1.75
Totals	1,548	.....	596	.....	2,144	

EXTENSION COLLIERY.

Andrew Bryden, Manager.

No. 1 or Tunnel Mine.

William Jones, Overman.

The only work being done at this mine is by a few men employed timbering and keeping the roads in repair. The mine was originally worked on the pillar and stall system, and during the early part of the year all the coal taken out was from pillars, and even this work, as well as all development work, was suspended during the latter half of the year.

The roads are kept up, the ventilating fan is kept going, and the mine is kept as it was when producing, with the object of at some future day mining the coal still remaining in the mine.

No. 2 Mine.

Alexander Shaw, Overman.

This mine commences at the inner end of what is known as No. 1 or Big Tunnel, from which there are two levels, one to the east, and the other to the west. Overhead the west level, at about 100 yards in, is a continuation of No. 2 Slope, which was started outside on the hill, and is continued down below the west level, until it gets into a basin, when it rises by a slope on the opposite side, until it again comes out to the surface. About 200 yards to the east of the tunnel there are two other slopes, known as the new No. 2 slope and the Diagonal slope. This No. 2 slope is also down across the basin and up the opposite side, and now gives a road out that way, but it is not yet completed for traffic, though it could be used if required, and eventually all this district will get its air this way. Much air is coming in here now, but it has to be regulated, or it would be so cold that the men could not work at making the road. The Diagonal slope, above referred to, works round the east end of the basin, and is now connected with the level on the opposite side, so that the three slopes referred to constitute one and the same mine.

Much of the mining in the No. 2 slope is removing pillars; all other work is pillar and stall. The coal in all these workings is very good, and for the most part has a solid conglomerate rock roof, which is an unusual thing for this coal. The prospect for coal here seems to be good for many years to come.

I have examined this mine (in all its parts that it was possible to get in) frequently during the past year, both as regards timbering and ventilation. I always found that the timbering was good, with generally plenty of timber on hand. The average quantity of air passing in for this mine a minute was 66,000 cubic feet. There were employed in this mine 70 men and 14 mules. I examined all the above works with a Wolf safety lamp, and it was very seldom that I could find a trace of explosive gas.

No. 3 Mine, Extension.

James Sharp, Overman to October 1st; now, Alexander Bryden, Overman.

This mine, at the beginning of the year, had the largest production, but now that honour belongs to No. 2 mine. Most of the coal now coming from No. 3 mine is from the pillars, of which there is a very large area; or, in other words, about two-thirds of the original coal, and that in all the levels from one to seven.

At one time all the coal was through No. 4 west level by motor to No. 1 tunnel, but a slant motor road was constructed, with but a slight grade against the loads going out, and by this slant the motor now takes the coal from the lower levels, but all the coal to the rise of No. 4 level comes out through that level.

There are four openings from this mine to the surface, three of which are always open. The intake air-way for this mine comes in near the face where most of the men are at work. The three mines might almost be considered as one mine, since they are all connected underground at various places, and all the coal goes out the same tunnel, but below the No. 4 level or Big tunnel large barriers of coal have been left between the mines, thereby defining and isolating each mine, so that in case of fire, or other mishap, the particular mine in which the mishap took place could be shut off or flooded without interfering with the other two. All the underground haulage in the Extension colliery, through the Big tunnel, is by electric motor, one motor not infrequently taking out a trip of 100 loaded cars.

The general supervision of the mines is entrusted to Mr. Andrew Bryden, as manager, with overman at each mine. In addition to these, there is a staff of eight men in Nos. 2 and 3 mines acting as firebosses and shotlighters and supervising the mine generally, under the instructions of the manager and overman.

The following are the official returns of the Extension Colliery for the year ending 31st December, 1907:—

Sales and Output for Year.	Coal.		Coke.	
	Tons.	Tons.	Tons.	Tons.
Sold for consumption in Canada	267,429			
" export to United States	111,003			
" " other Countries	1,821			
Total sales		380,253		
Lost in washing coal	32,542			
Used in making Coke				
" under Colliery boilers	15,914			
Total for Colliery use		48,456		
		428,709		
Stock on hand first of year	611			
" last of year	5,495			
Difference added to stock during year		4,884		
Output of Colliery for year		433,593		

By products—Fire Clay (tons), 488.

Number of Hands Employed, Daily Wages Paid, etc.

Character of Labour.	Underground.		Above Ground.		Totals.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
		$		$		$
Supervision and clerical assistance	4	.....	14	.....	18	.....
Whites—Miners	446	3.30 - 4.95	.....	.....	446	3.30 - 4.95
Miners' helpers	349	2.75 - 3.30	.....	.....	349	2.75 - 3.30
Labourers	.....	.....	12	2.50 - 3.00	12	2.50 - 3.00
Mechanics and skilled labour	8	2.75 - 3.00	42	2.75 - 4.40	50	2.75 - 4.40
Boys	45	1.10 - 2.20	6	1.30 - 2.20	51	1.10 - 2.20
Japanese	.....	.....	1	1.65	1	1.65
Chinese	.....	.....	126	1.48½ - 1.75	126	1.48½ - 1.75
Hindus	.....	.....	20	1.48½ - 1.75	20	1.48½ - 1.75
Totals	852	.....	221	.....	1,073	.....

Name of Seams or Pits—Wellington.

Description of seams, tunnels, levels, shafts, &c., and number of same—Nos. 1, 2 and 3 mines, with airways and levels.

Description and length of tramway, plant, &c.—10 miles railways and sidings; 6 locomotives; 196 gondola coal cars, capacity 25 tons; 150 coal cars, capacity 3 tons; 4 stationary engines; electric power house, with 2 generators; electric tramway, with 4 locomotives; wharves and bunkers at Ladysmith, Oyster harbour.

UNION COLLIERY, COMOX.

John Matthews, Manager.

No. 4 Mine.

David Nellist, Overman.

No. 1 Slope.

This slope was not advanced any during the past year. No. 11 west level was kept going ahead for the first three months of the year, since when it has been at a standstill, but this will continue for a short time only, as the coal is good, but it is expected that a much shorter and better way will soon be made into this working face. There are two inclines off No. 11 level, from which much coal comes through extracting of pillars. In Nos. 14 and 15 West levels the coal has much improved since my previous annual report, both of the above levels now producing first class coal. To the dip, on the north side of No. 15 level, the coal is very good, but at present little mining is being done here, as it is intended to take the coal out the proposed new haulage road already mentioned.

Ventilation down this slope is good. In November there was 42,450 cubic feet of air a minute for a total of 72 men and 21 mules on one shift.

No. 2 Slope.

No. 2 slope branches off to the right from the No. 1 slope, a short distance after going underground. The bottom of this slope is the deepest workings in No. 4 mine. Some years

ago this mine was on fire, which necessitated it being filled with water, but this water has now been almost entirely taken out. When the water was out much of the workings were found to be caved, but most of the level roads are now opened and the mine is in a fair way to take out coal. Down this No. 2 slope they are working in Nos. 10, 11, 12, 13, and 14 West levels, off the slope, and on the opposite side of the slope Nos. 10, 11, 12, 13 and 14 East levels are being worked. Of the above levels, Nos. 10 and 11 west, and Nos. 10, 11 and 12 East levels are extracting pillars. I will here mention that Nos. 12, 13 and 14 West levels are now working up towards the No. 15 west level of No. 1 slope, and will get all the coal to the dip of this No. 15 level, this being a much better way to work the coal, as well as a better way for haulage.

A travelling road has been made through the old parallel to the slope, as well as a return airway through the old workings on both sides of the slope. The men and mules go down and up by this travelling road, so that there may be as few people as possible on the slope. The ventilation is good, some 32,000 cubic feet of air a minute going down to the works mentioned, in which, on the east and west sides, there was a total of 82 men and 13 mules.

I have examined the above mines frequently during the past year with a Wolf safety lamp. Sometimes I would see a trace of explosive gas, but not much standing gas at any time. Brattice always is kept close up to the face.

No. 5 Shaft.

John Kesley, Overman.

There has not been any work done in the lower seam here during the past year, all the mining being confined to the upper seam. This upper seam is 240 feet from the surface and 350 feet above the lower seam. This upper seam coal is very hard and of good quality, but in some districts is very much mixed with impurities.

At present this upper seam is limited under section 28 of the "Coal Mines Regulation Act," so that not more than 20 men can be employed underground at any one time, there being only one connection with the surface. During the past year great effort has been made to remove this limitation by making a connection with No. 6 shaft, which will now soon be accomplished, when double the number of men can be employed in this portion of the mine, as places are already prepared for a large number of men.

The ventilation is very good. Air velocity, $370 \times 65 = 24{,}050$ cubic feet of air passing a minute where there are 19 men and six mules. I have frequently examined this mine with a Wolf safety lamp, and, with the exception of two different times when I got a faint showing of gas in my lamp, explosive gas could not be detected.

The landing at the upper seam when the cage is away is an open shaft, except for the heavy iron gate, which is hung and only to be opened by the cager. In addition to the gate there are safety catches on the track, about 40 feet from the shaft, to catch the mine cars as they come out of the level, so as to prevent them getting to the iron gate or shaft.

No. 6 Shaft, Upper Seam.

This shaft is on the same seam as is No. 5 shaft, but is about a mile south of No. 5 shaft. All the working here is on the pillar and stall system, with a hard rock roof. This coal, as in No. 5, is very hard and formerly was blasted out of the solid, but now mining machines are employed to under-cut the coal before blasting. These machines do good work and give nearly all lump coal, while the consumption of powder and other costs of mining are materially reduced.

The ventilation is very good. Air velocity, 800 x 35 = 28,000 cubic feet of air a minute for 19 men and 6 mules. I have frequently examined this mine with a Wolf safety lamp, and it is a rare thing to see a trace of explosive gas.

The number of men in this mine is also restricted, owing to there being only one connection with the surface, but this restriction will soon be removed, as No. 5 and No. 6 shafts are now only a short distance apart. The same precaution is used at the bottom of this as at the No. 5. A proper road is made around the end of the shaft, so that no person requires to cross the shaft from the one side to the other.

No. 7 Mine.

David Walker, Overman.

As I have said in a previous report, this mine is about four miles in a north-westerly direction from No. 5 shaft and two miles from No. 4 mine. There is a standard gauge track, extending from the Company's railway system to the mine, where extensive sidings and other labour-saving appliances are provided for the handling and assorting a large output of coal. This mine is opened by a slope, which is now down 1,000 yards on a gentle incline; this slope has been extended very little during the past year, as very much trouble has been experienced with faults and water, and most of the mining has been done in what is known as No. 4 east level.

The coal from this mine is very hard and of good quality, and is known as the "Cumberland anthracite."

I mentioned in a previous report of a series of bore-holes having been put down, but nothing further has been done towards proving the continuity of the coal beds.

The ventilation is very good, 35,280 cubic feet of air passing a minute, the motive power being a 30 x 11 feet exhaust fan, which runs at a very low speed. In this mine there were 32 men and 5 mules working.

The picking table at this mine has been very much enlarged, so as to give better facilities for removing the rock that may come in the cars with the coal. There are times, directly after shot firing, when there is considerable smoke, so that rock may get into the car with the coal unintentionally.

Attached are the official returns of the Union Colliery for the year ending 31st December, 1907:—

Sales and Output for Year.	Coal.		Coke.	
(Tons of 2,240 lbs.)	Tons.	Tons.	Tons.	Tons.
Sold for consumption in Canada	195,791		14,592	
" export to U. S.	30,649		220	
" " other countries	15,908			
Total Sales		242,348		14,812
Used in making coke 33,344	64,129			
Lost in washing 30,785				
Used under colliery boilers, &c.	53,880			
Total for colliery use		118,009		
		360,357		
Stock on hand first of year	3,247		219	
" last of year	33,435		1,779	
Difference added to stock during year		30,188		1,560
Output of colliery for year		390,545		16,372

NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &C.

CHARACTER OF LABOUR.	UNDERGROUND.		ABOVE GROUND.		TOTALS.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
		$		$		$
Supervision and clerical assistance	21	3.50 - 10.00	7	3.00 - 6.00	28	3.00 - 10.00
Whites—Miners	163	3.50 - 6.00	.....	....	163	3.50 - 6.00
Miners' helpers	12	1.75 - 2.50	.....	.....	12	1.75 - 2.50
Labourers	53	2.50 - 3.00	28	2.50 - 2.75	81	2.50 - 3.00
Mechanics and skilled labour	16	3.00 - 3.50	52	2.75 - 3.50	68	2.75 - 3.50
Boys	26	1.50 - 2.00	16	1.00 - 1.50	42	1.00 - 2.00
Japanese	132	1.35 - 2.25	41	1.35 - 1.50	173	1.35 - 2.35
Chinese	273	1.35 - 2.25	231	1.25 - 1.75	504	1.25 - 2.25
Indians	.....	.....	.....	.....	.....	.....
Totals	696	.....	375	.....	1,071	.....

Name of Seams or Pits:—No. 4 Slope, No. 5 Shaft, No. 6 Shaft, No. 7 Slope.

Description of seams, tunnels, levels, shafts, &c., and number of same:—No. 4 Slope, with airways and levels; No. 5 Shaft, with airways and levels; No. 6 Shaft, with airways and levels; No. 7 Slope, with airways and levels.

Description and length of tramway, plant, &c.:—20 miles railway, 4 feet 8½ inches gauge; 4 locomotives; 150 coal cars; 1 second class passenger coach; 5 stationary engines; 5 steam pumps; 5 electric pumps; 1 dynamo; 1 steam saw-mill; 1 coal washer; 200 coke ovens; 2 wharves, and 1 pile-driver.

Macgowan & Co.

Head Office—Vancouver, B. C.

Officers.	*Address.*
A. H. B. Macgowan, President,	Vancouver, B. C.
John John, Superintendent,	Wellington.

GILFILLAN COLLIERY, NEAR WELLINGTON.

John John, Manager.

This is a new Colliery, started during the past year, and is operated by Macgowan & Co., of Vancouver. This Company's property adjoins the western boundary of the old Adit Mine of Robert Dunsmuir & Sons, now the Wellington Colliery Company. The entrance to the mine is by a slope driven to the north, and about two chains from the above boundary. The slope starts from the level but gradually inclines downwards until the coal and then the floor is reached, on which it continues nearly flat, the dip being to the old Wellington workings. The top coal is six feet thick, very good and hard, and underneath this coal is two feet of soft black shale, then about two feet more of coal. This lower coal is not so clean as the top coal. There was not any rock over the coal, but there was quite a thickness of strongly cemented granite.

At present there are ten miners at work. All the coal has to be teamed to Wellington, where it is put in cars and taken to the market.

The ventilation is good. As the coal is near the surface, a hole has been put down which is used as an upcast air shaft, with a fire as the motive power.

The railway from Wellington station on the E. & N. Railway is being extended to the mine, and in a short time the cars will be going to the mine.

In several places the workings of this mine have broken through to the "Old Adit" workings, which are all caved, and I could not find a trace of explosive gas.

I believe this company has also acquired the coal rights of what was at one time known as the West Wellington Coal Company.

The following are the official returns of the Gilfillan Colliery for the year ending 31st December, 1907 :—

Sale and Output for Year.	Coal.		Coke.	
(Tons of 2,240 lbs.)	Tons.	Tons.	Tons	Tons.
Sold for consumption in Canada	2,675			
" export to U. S.				
" " other countries				
Total sales		2,675		
Used in making coke				
" under colliery boilers, &c	138			
Total for colliery use		138		
		2,813		
Stock on hand first of year				
" last of year	35			
Difference added to stock during year		35		
Output of colliery for year		2,848		

Number of Hands Employed, Daily Wages Paid, Etc.

Character of Labour.	Underground.		Above Ground.		Totals.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
Supervision and clerical assistance	1				1	
Whites—Miners	10	$3.50			10	$3.50
Miners' helpers						
Labourers	2	3.00			2	3.00
Mechanics and skilled labour	1	3.50			1	3.50
Boys						
Japanese						
Chinese			4	$2.00	4	2.00
Indians						
Totals	14		4		18	

Name of Seams or Pits:—Pit known as Gilfillan mine; seam as Old Wellington seam.

Description of seams, tunnels, levels, shafts, etc., and number of same:—Coal seam is 9 feet in thickness, with band of dirt about 2 feet from bottom, that varies in thickness from 1 to 2 feet. Top bench usually 5 feet in thickness, hard coal of good quality. Bottom bench has two streaks of rock that varies somewhat in thickness. Seam is worked on pillar and stall system, entered by means of slope dipping about 1 foot in 6; dip lies to north. The mine was started in June; is in at end of year 350 feet.

Description and length of tramway, plant, etc.:—Tipple is being built on north limit of property, with 1,000 feet of tramway from mouth of slope to same.

Plant consists of 2 upright boilers of 13 and 20 horse-power respectively; 2 small pumps, capable of handling 150 gallons per minute.

Ventilation is created by means of steam jet.

South Wellington Coal Mines, Limited.

Head Office—Victoria, B. C.

Capital, $200,000.

Officers.	*Address.*
John Arbuthnot, President,	Victoria, B. C.
T. O. McKay, Secretary,	"
George Wilkinson, Superintendent,	Nanaimo, B. C.

FIDDICK COLLIERY, SOUTH WELLINGTON.

George Wilkinson, Manager.

This is also a new colliery, having started operations on what is known as the "Fiddick" and "Richardson" estates, near to the old Alexandra mines of the Wellington Colliery Company. The mine is four miles from Nanaimo, on the E. and N. Railway, and is on the seam of coal known as South Wellington. A tunnel goes under the E. and N. Railway into the mine, while a shaft 40 feet deep has been sunk to the coal, on the opposite side of the railway from where the tunnel comes out. After the mine is in operation this shaft will only be used as a ventilating shaft.

You will see by the annual return that they have sold 575 tons of coal, which means considerable drifting.

The ventilation is good. In the three shifts there are 18 miners employed.

The prospects for coal here are good; the seam is six feet thick and of good quality. There is much outside work yet to be done.

The following are the official returns for the year 1907 :—

Sales and Output for Year.	Coal.		Coke.	
(Tons of 2,240 lbs.)	Tons.	Tons.	Tons.	Tons.
Sold for consumption in Canada	575			
" export to U. S.				
" " other countries				
Total sales		575		
Used in making coke				
Used under colliery boilers, etc				
Total for colliery use		575		
Stocks on hand first of year				
" last of year				
Difference added to stock during year				
Output of colliery for year		575		

Number of Hands Employed, Daily Wages Paid, Etc.

Character of Labour.	Underground.		Above Ground.		Totals.	
	No. Employed.	Average daily wage.	No. Employed.	Average daily wage.	No. Employed.	Average daily wage.
		$		$		
Supervision and clerical assistance	1		2		3	
Whites—Miners	18	3.30			18	
Miners' helpers						
Labourers	12	2.75	12	2.75	24	
Mechanics and skilled labour			4	3.00	4	
Boys						
Japanese						
Chinese			3	1.50	3	
Indians						
Totals	31		21		52	

Name of Seams or Pits—South Wellington.

Description of seams, tunnels, levels, shafts, etc., and number of same—One drift and one shaft. Upper seam about 6 feet in thickness.

The Vancouver-Nanaimo Coal Mining Co., Ltd.

Head Office—Vancouver, B. C.

Capital, $250,000.

Officers.	*Address.*
H. W. Maynard, President,	Vancouver, B. C.
F. W. Leeson, Vice-President,	"
W. R. Phillips, Secretary-Treasurer,	"
J. J. Grant, Managing Director and Superintendent,	"

Value of Plant, $4,000.

NEW EAST WELLINGTON COLLIERY.

J. J. Grant, Superintendent.

This is another new mine which has been started to the east of the old "East Wellington Colliery," in the Mountain District only about one mile west of the City of Nanaimo, and is operated by the Vancouver-Nanaimo Coal Mining Co., Ltd.

This coal was first found on the slope of what is known as the Little Mountain, not far from the Rifle Butts, and is a continuation of the coal down the valley of the Millstone river, from Wellington and East Wellington. The coal here is of good quality, dipping towards the valley 60°, and in opening out, a slope is being run across the dip, going down at 40°. At present I cannot say much, as the work is only starting, but I think that the coal will flatten as they get into the valley. You will see by the returns that 156 tons of coal have been sold, teaming it to Nanaimo, then loading it into the cars. I expect that this mine will be able to give good returns at the end of the coming year.

The following are the official returns for the year 1907:—

Sales and Output for Year.	Coal.		Coke.	
(Tons of 2,240 lbs.)	Tons.	Tons.	Tons.	Tons.
Sold for consumption in Canada	147			
" export to U. S.				
" " other countries				
Total sales		147		
Used in making coke				
Used under colliery boilers	9			
Total for colliery use		9		
		156		
Stocks on hand first of year				
" last of year				
Difference added to stock during the year				
Output of colliery for year		156		

Number of Hands Employed, Daily Wages Paid, Etc.

Character of Labour.	Underground.		Above Ground.		Totals.	
	No. Employed.	Average daily wage.	No. Employed.	Average daily wage.	No. Employed.	Average daily wage.
		$		$		$
Supervision and clerical assistance						
Whites—Miners	9	3.30			9	
Miners' helpers						
Labourers			9	2.85	9	
Mechanics and skilled labour						
Boys						
Japanese						
Chinese			6	1.75	6	
Indians						
Totals	9		15		24	

Name of Seams or Pits—The Wellington Seam. The New East Wellington Mine.

Description of seams, tunnels, levels, shafts, etc., and number of same—At present driving slope.

Description and length of tramway, plant, etc.—Length of slope, 150 feet.

Nicola Valley Coal & Coke Co., Ltd.

Head Office—Vancouver, B. C.

Capital, $1,500,000.

Officers.	*Address.*
John Hendry, President,	Vancouver, B. C.
W. H. Armstrong, Vice-President and General Manager,	"
J. J. Plommer, Secretary-Treasurer,	"
Alexander Faulds, Mine Superintendent,	Coutlee, B. C.

Value of Plant, not including buildings, $50,000.

MIDDLESBORO COLLIERY,

Of the Nicola Valley Coal and Coke Company, Coutlee.

Alexander Faulds, Mine Manager.

This is also a new colliery, not mentioned in any previous reports, and although only recently in operation is now a producing work. This colliery is at the lower end of the Nicola valley and near the Coldwater river.

No. 1 Mine.

Hugh Gillespie, Overman.

This mine is opened by an adit tunnel about 800 feet into the hillside, and at 550 feet it is intersected by a slope from Coal gully, where the coal was first discovered and where the company started the slope, which, after being put down 853 feet, was stopped, as they saw that the coal was good and regular, having a dip about 22° and 18 feet thick. At this distance down the slope was stopped, knowing that it was now down to the level, at which the tipple would be built.

At this level an adit tunnel was started, to find the coal outcrops, and it was successful. This adit tunnel makes a roadway 7 feet wide and 7 feet high, inside of all timber, and intersects the slope at 550 feet from the entrance. There were only a few men working inside as miners, as the outside equipment was not ready to handle the coal. A large gang of men was put to work so as to have the tipple in operation as early as possible. The last time I was there the tipple was almost far enough advanced to be used.

The natural ventilation up the Long Slope above referred to is good, but the Manager, Mr. Faulds, told me that it was planned to soon have a ventilating fan.

I could not find a trace of explosive gas.

No. 2 MINE.

John Ovington, Overman.

The above mine is also on the hill, similarly situated as is No. 1, but about one mile apart and on a higher seam.

This tunnel is now in 1,000 feet, and at a distance from the outside of about 500 feet it was intersected by a slope from a higher level. This slope is 460 feet down, with a pitch of 22°. The seam is about 6 feet thick, but of this one foot is rock, which has to be put into the gob. Overlying the coal is about 40 feet of sandstone rock. The coal is of a very good quality, clean to handle, and having a very bright black lustre. The seam is worked on the "long-wall" system, and when I was there it had not taken the first "break of the roof," neither did it show much weight on the timbers, but it is only a matter of time when it will break, when some idea can be formed as to how suitable to the seam this class of work will be.

Ventilation was good, motive power natural, 10,500 cubic feet of air passing per minute for 24 men and two horses. I could not find a trace of explosive gas.

To these mines there is a siding of about one mile long, from the Nicola Valley branch of the C. P. Railway.

At No. 1 mine the tipple was almost ready for operation, with the C. P. Railway cars passing under to receive the coal.

There are other seams of coal in sight, but the two mentioned are the only places where they are producing coal.

The following are the official returns of this Colliery for the portion of 1907 that it was at work :—

SALES AND OUTPUT FOR YEAR.	COAL.		COKE.	
(Tons of 2,240 lbs.)	Tons.	Tons.	Tons.	Tons.
Sold for consumption in Canada	9,712			
" export to U. S.				
" " other countries				
Total sales		9,712		
Used in making coke				
" under colliery boilers, &c.	158			
Total for colliery use		158		
		9,870		
Stocks on hand first of year	64			
" last of year	1,062			
Difference added to stock during year	998	998		
Output of colliery for year		10,868		

NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, ETC.

CHARACTER OF LABOUR.	UNDERGROUND.		ABOVE GROUND.		Totals.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
		$		$		$
Supervision and clerical assistance	.....	.....	2	5.00 - 10.00	2	5.00 - 10.00
Whites—Miners	18	5.00	.....	.....	18	5.00
Miners' helpers	8	2.75	.....	.....	8	2.75
Labourers	.....	.....	4	3.00	4	3.00
Mechanics and skilled labour	.....	.....	4	3.30 - 5.00	4	3.30 - 5.00
Boys	.....	.....	.....	.....	.....	.....
Japanese	.....	.....	.....	.....	.....	.....
Chinese	.....	.....	.....	.....	.....	.....
Indians	.....	.....	.....	.....	.....	.....
Hindus	.....	.....	.....	.....	.....	.....
Totals	26	.....	10	.....	36	.....

Name of Seams or Pits—"Jewel" and "Ells" seams, Nos. 1 and 2 mines respectively.

Description of seams, tunnels, levels, shafts, etc., and number of same—"Jewel" seam of No. 1 mine with stope 6 feet by 6 feet by 800 feet, in coal to intersection of tunnel, and tunnel 9 feet wide by 7½ feet high by 845 feet, 200 feet of which is in rock and the remainder in coal, being gangway or level. Slope dips from surface 13° to 24° at intersection of tunnel. Grade of tunnel to intersection of slope 1 in 150, and therefrom to face in coal 1 in 200; provided with a ditch and manway. All well timbered where necessary.

"Ells" seam of No. 2 mine with slope 6 feet wide by 5 feet high by 465 feet to intersection of main gangway or level and tunnel level or gangway to intersection of slope 460 feet by 12 feet wide by 6 feet high, in coal, provided with ditch and manway; 100 feet of tunnel being timbered; roof good. Seam dipping 24°. Grade of main gangway or level 1 in 200.

"Jewel" seam 18½ feet.
"Ells" " 6 "

Description and length of tramway, plant, etc.—Haulage by horse-power; tramway 430 feet from portal to Mitchell tipple at No. 1 mine, with trestle 210 feet long. Haulage by horse-power; tramway 530 feet from portal to Mitchell tipple at No. 2 mine, with trestle 140 feet long. Tunnels and tramways laid with 30 lbs. per lineal yard steel rails. Face of No. 1 mine tunnel main gangway or level from portal in 845 feet, and No. 2 mine tunnel face in 1,170 feet from portal.

Diamond Vale Coal Company.

This is a new coal company, whose south boundary is the north boundary of the Middlesboro Colliery's property, the coal dipping into the Diamond Vale estate from the Middlesboro property. The last time I was there two shafts were on the way down. No 1 was down 90 feet, but was stopped for the present. No. 2 shaft was some distance "to the rise" in the rock formation, and was down 60 feet, and from boring they expect to strike coal at 70 feet from the surface, and I have reason to believe that good coal was found at the above distance down.

I have not anything special to say in connection with this mine except that from appearances the coal seam is the same as that in the Middlesboro property.

EAST KOOTENAY INSPECTION DISTRICT.

REPORT OF THOMAS MORGAN, INSPECTOR.

I have the honour, as Inspector of Coal Mines for the East Kootenay District, to submit my annual report for the year 1907. The only company actually producing coal in this district, as yet, is the Crow's Nest Pass Coal Co., Ltd., but this company is operating three separate and dlstinct collieries.

Crow's Nest Pass Coal Co., Ltd.

Officers.	*Address.*
G. G. S. Lindsey, K.C., President,	Toronto, Ont.
Hon. Robt. Jaffray, Vice-President,	"
R. M. Young, Secretary,	"
E. R. Wood, Treasurer,	"
Chas. Simister, General Superintendent,	Fernie, B. C.

Capital of the Company, $3,500,000.

The above company is now operating the following extensive collieries on the western slope of the Rocky mountains in the East Kootenay District, viz. :—

Coal Creek Collieries, situated on Coal creek, about five miles from the town of Fernie, on a branch railway to the mines.

Michel Collieries, situated on both sides of Michel creek, on the line of the C. P. Railway, being 23 miles in a north-easterly direction from Fernie.

Carbonado Collieries, situated on Morrissey creek and connected by a branch railway with the C. P. Railway and the Great Northern Railway at Morrissey. The colliery is about 14 miles from Fernie by rail, in a south-easterly direction. This colliery has been shut down for more than a year, but is now being opened up again.

The total output of the Company's collieries for the past year was 876,731 tons. Of this 322,870 tons were used in the manufacture of coke, yielding 206,541 tons, of which 5,664 tons were added to stock, 140,987 tons were sold for consumption in Canada, and 59,890 tons were exported to the United States. The coal exported to the United States amounted to 291,410 tons, while 218,221 tons were sold for consumption in Canada.

The amount and disposition of this combined output is more fully shown in the following table :—

SALES AND OUTPUT FOR YEAR.	COAL.		COKE.	
(Tons of 2,240 lbs.)	Tons.	Tons.	Tons.	Tons.
Sold for consumption in Canada	218,221		140,987	
" export to U. S	291,410		59,890	
" " other countries				
Total sales		509,631		200,877
Used in making coke	322,870			
" under colliery boilers, &c	44,230			
Total for colliery use		367,100		
		876,731		
Stocks on hand first of year			1,339	
" last of year			7,003	
Difference added to stock during year				5,664
Output of colliery for year		876,731		206,541

Number of Hands Employed, etc.

Character of Labour.	Number Employed.		Total Number Employed.
	Underground.	Surface.	
Supervision and clerical assistance	40	19	59
Whites—Miners	711	.....	711
Miners' helpers	120	.....	120
Labourers	200	400	600
Mechanics and skilled labourers	421	340	761
Boys	35	4	39
Japanese	.....	.....	.....
Chinese	.....	.....	.....
Indians	.....	.....	.....
Total	1,527	763	2,290

COAL CREEK COLLIERY.

Robert Strachan, Manager.

This colliery is situated on Coal Creek, about five miles east of Fernie. The following mines have been in operation during the year:—

Nos. 5 and 9, on the north side of Coal creek, and Nos. 2 and 6, on the south side of the creek; Nos. 11 and 12 mines, about midway between Fernie and Coal creek, on north side of the creek.

No. 2 Mine.

John McClimont, Overman.

No. 2 District in this mine has been working on the pillar and stall, with the extraction of pillars, and on the long-wall method, but it is now nearly all turned to long-wall work, and in a short time there will be nothing but this class of work. On my inspection, December 5th, I found a little gas in No. 35 room, but it was soon cleared out; the balance of the district was clear and well timbered and cogged. The ventilation is with two currents of air, and 110 men and 11 horses were supplied with 50,000 cubic feet a minute.

In No. 3 District I found a little gas above the timbers in No. 17, room 4, east level, which was soon cleared; the balance of the district was clear, well timbered and cogged, and 95 men and 10 horses received 46,200 cubic feet of air a minute. Total air at fan shaft was 145,000 cubic feet a minute, leaving 48,800 cubic feet a minute for doors, stoppings and curtains. The size of the fan is 8 feet by 16 feet, making 104 revolutions a minute with 2-inch water-gauge. No powder is used for blasting the coal in this mine.

No. 5 Mine.

John Hunt, Overman.

This mine is worked on the pillar and stall system, and the extraction of pillars. The only blasting done in this mine is a little in the pillars in the outside part of the mine, and

nothing but "Negro" powder used and the shots fired with a battery. Locked safety-lamps are used exclusively; the lamps are cleaned, filled and tested at the lamp-house before they are given to the men, and are again tested by the firemen as they enter the mouth of the mine. The General and Special Rules and a plan of the mine are posted up at the mouth of the tunnel, where they can be seen by the men.

On my inspection on December 4th I found a little gas in Nos. 23, 44 and 45 stalls above the timber, which was soon cleared; the balance of the mine was clear. The ventilation was good; 80 men received 35,200 cubic feet of air a minute, the inside district running 28,000 and the slope district 7,200 cubic feet a minute. Total air at fan shaft was 59,000 cubic feet a minute, leaving 23,800 cubic feet a minute for doors and stoppings. The size of the fan is 4 feet 10 inches by 14 feet, making 80 revolutions a minute.

No. 6 MINE.

Two parallel tunnels, one 12 feet by 7 feet and the other 14 feet by 7 feet, are being driven and are in about 600 feet. On my last inspection, December 6th, I found them in good order, well timbered right up to the face and well ventilated, 8 men receiving 10,000 cubic feet of air a minute. The motive power is a Guibal fan, 2 feet 10 inches by 10 feet, running very slow.

No. 9 MINE.

David Martin, Overman.

This mine is worked by the long-wall method. The coal is of a hard nature and of first-class quality, varying from 3 to 9 feet in thickness. Locked safety lamps only are used, the lamps being cleaned, filled, locked and tested at the lamp-house and again tested as they enter the mine. On my last inspection, December 3rd, I found all the mine in good order, well timbered and cogged and the ventilation good. In the slope district 60 men and 10 horses received 40,000 cubic feet of air a minute.

In the main incline district I found a little gas in the first stall off the slant, which was soon cleared; the balance of the district was clear. In this district there were 45,000 cubic feet of air a minute passing for the use of 70 men and 10 horses. The total air at the mouth of the tunnel was 110,000 cubic feet a minute, leaving 25,000 cubic feet a minute for leakage for curtains, doors and stoppings in the mine.

No. 11 MINE.

David James, Overman.

The tunnel at this mine is in about 1,100 feet and the counter above it. The tunnel is about 7 feet by 7 feet. A Guibal fan, 2 feet 10 inches by 10 feet, running very slow, was supplying 8 men and 1 horse with 10,000 cubic feet of air a minute. The mine is well timbered wherever it is considered necessary.

No. 12 MINE.

Frank Williams, Overman.

The tunnel at this mine has been driven in about 274 feet, and is well timbered up to the face. The men are well supplied with air by natural ventilation.

The following are the official returns for the Coal Creek collieries for the year 1907 :—

SALES AND OUTPUT FOR YEAR.	COAL.		COKE.	
(Tons of 2,240 lbs.)	Tons.	Tons.	Tons.	Tons.
Sold for consumption in Canada	64,762		49,791	
" export to U. S	291,192		37,708	
" " other countries				
Total sales		355,954		87,499
Used in making coke	136,621			
" under colliery boilers, &c	29,033			
Retailed coal	1,175			
Total for colliery use		166,829		
		522,783		
Stocks on hand first of year			1,339	
" last of year			2,615	
Difference added to stock during year				1,276
Output of colliery for year		522,783		88,775

NUMBER OF HANDS EMPLOYED, ETC. (INCLUDING FERNIE COKE OVENS).

CHARACTER OF LABOUR.	NUMBER EMPLOYED.		TOTAL NUMBER EMPLOYED.
	Underground.	Surface.	
Supervision and clerical assistance	25	9	34
Whites—Miners	433		433
Miners' helpers			
Labourers	88	251	339
Mechanics and skilled labour	250	114	364
Boys	18	4	22
Total	814	378	1,192

Names of seams or pits :—Nos. 2, 5 and 9 seams worked this year.

Description of seams, tunnels, levels, &c., and number of same :—No. 6 seam still in development stage; Nos. 11 and 12 seams are being developed at the "Rock Cut."

Description and length of tramway, plant, &c. :—Same as last year. No. 6 tramway completed.

MICHEL COLLIERY.

James Derbyshire, Manager.

This colliery is situated at Michel, about 24 miles in a north-easterly direction from Fernie. The following mines have been in operation during the year: Nos. 3, 4 and 5 on the south-west side, and No. 8 on the north-east side of Michel creek.

No. 3 MINE.

Joseph Thomas, Overman.

This mine is worked on the pillar and stall method. The only explosive used in blasting the coal is "Negro" powder and the shots are fired with a battery. On my last inspection, December 11th, I found everything in the mine in good order and the timbering and ventilation all that could be desired. For the use of 67 men and 3 horses, 30,000 cubic feet of air a minute was passing.

This mine is worked exclusively with locked safety lamps, and the lamps are cleaned, filled and tested before being given to the men, and again tested before they are allowed to enter the mine. The General and Special Rules and a plan of the mine are posted up at the mouth of the tunnel, in view of all the miners entering the mine.

No. 4 MINE.

Joseph Thomas, Overman.

This mine has just resumed work, after being stopped for a long time. On my inspection, December 11th, I found everything in good order. This mine has a good roof and needs but very little timbering. The ventilation was good, 10 men receiving 35,000 cubic feet of air a minute. Total air at fan shaft was 100,800 cubic feet a minute. One fan ventilates both Nos. 3 and 4 mines. The workmen in No. 3 mine received 30,000 cubic feet a minute, which shows a leakage of 35,800 cubic feet a minute through doors and stoppings.

No. 5 MINE.

Joseph Thomas, Overman.

On my last inspection of this mine, December 10th, I found a little gas over the timbers in No. 4 room on the east side, and had it removed; the balance of the mine was clear and well timbered and the ventilation good. This mine is worked by the pillar and stall method and "Negro" powder is the only explosive permitted for blasting the coal, and the shots are fired with a battery. The mine is damp all over. On the west side, 35 men and 3 horses were supplied with 20,000 cubic feet of air a minute, and on the east side 25,000 cubic feet a minute was supplied for the use of 65 men and 3 horses. The total air at the fan shaft was 50,000 cubic feet a minute, leaving 5,000 cubic feet a minute leakage for doors and stoppings. The size of the fan is 4 feet by 10 feet, running at a speed of 100 revolutions a minute.

No. 8 MINE.

John Bastian, Overman.

In this mine there are two separate districts, No. 5 incline district and No. 3 incline district. The mine is worked by the pillar and stall method, and on my last visit, December 12th, I found all the stalls and levels were timbered and the ventilation good. For the use of 70 men and 8 horses working in No. 5 incline district, 23,900 cubic feet of air a minute was passing. No powder is used in this district.

On my last inspection of No. 3 incline district, on December 13th, I found the mine well timbered and ventilated and everything in good order. All the blasting done in this district is done at night, and nothing but "negro" powder used, the shots being fired with a battery. There were 41,600 cubic feet of air a minute passing for the use of 70 men and 13 horses employed in this district. The total air at the fan shaft was 72,600 cubic feet a minute, leaving 7,100 cubic feet per minute for leakage through doors and stoppings.

The following are the official returns of this colliery for the year 1907 :—

Sales and Output for Year.	Coal.		Coke.	
(Tons of 2,240 lbs.)	Tons.	Tons.	Tons.	Tons.
Sold for consumption in Canada	150,500		91,196	
" export to U. S.	218		22,182	
" " other countries				
Total sales		150,718		113,378
Used in making coke	186,249			
Used under colliery boilers	15,192			
Retail coal	1,569			
Total for colliery use		203,010		
		353,728		
Stocks on hand first of year				
" last of year			4,388	
Difference added to stock during year				4,388
Output of colliery for year		353,728		117,766

Number of Hands Employed (Including Coke Ovens), Daily Wages Paid, etc.,

Character of Labour.	Underground.		Above Ground.		Totals.	
	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.	No. Employed.	Average Daily Wage.
Supervision and Clerical Assistance	14		10		24	
Whites—Miners	244				244	
Miners' helpers	120				120	
Labourers	112		149		261	
Mechanics and skilled labour	165		224		389	
Boys	17				17	
Japanese						
Chinese						
Indians						
Totals	672		383		1,055	

Names of Seams or Pits : Nos. 3, 4, 5 and 8 mines working.

Description of seams, tunnels, levels, shafts, etc., and number of same : Same as last year.

Description and length of tramway, plant, etc. : Same as last year. Two new Erie city return tubular boilers installed.

CARBONADO COLLIERY.

Evan Evans, Manager.

The company has started to open up mines at Carbonado again. Two new tunnels have been started on the upper side of the tipple and level with it. They were progressing slowly with the work, owing to being bothered with the gumboo sliding down on them all the time. In all 42 men were employed.

The following are the official returns of this colliery for the year 1907 :—

SALES AND OUTPUT FOR YEAR.	COAL.		COKE.	
(TONS OF 2,240 lbs.)	Tons.	Tons.	Tons.	Tons.
Sold for consumption in Canada	215			
" export to U. S				
" " other countries				
Total sales		215		
Used in making coke				
Used under colliery boilers, etc	5			
Total for colliery use		5		
		220		
Stocks on hand first of year				
" last of year				
Difference added to stock during year				
Output of colliery for year		220		

NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, ETC.

CHARACTER OF LABOUR.	UNDERGROUND.		ABOVE GROUND.		TOTALS.	
	No. Employed.	Average daily wage.	No. Employed.	Average daily wage.	No. Employed.	Average daily wage.
Supervision and clerical assistance	1				1	
Whites—Miners	34				34	
Miners' helpers						
Labourers						
Mechanics and skilled labour	6		2		8	
Boys						
Japanese						
Chinese						
Indians						
Totals	41		2		43	

Name of Seams or Pits : Colliery continued closed until May, 1907, when Nos. 7 and 8 seams were prospected. Development work is still being carried on.

Description of seams, tunnels, levels, shafts, &c., and number of same : Two main tunnels are being driven now towards Nos. 7 and 8 seams, but are not yet in coal.

Description and length of tramway, plant, &c. : Same as last year.

Hosmer Tunnels, Hosmer.

December the 9th I inspected the Hosmer tunnels and found everything in good order. The tunnels are timbered with 12-inch by 14-inch timbers, and the size of the tunnels is 16 feet by 8½ feet and 22 feet by 8½ feet, respectively. These tunnels are in over 2,000 feet. For the use of 100 men on the shift, all told, there were 11,000 cubic feet of air a minute, passing through the tunnels.

ACCIDENTS IN BRITISH COLUMBIA COLLIERIES DURING 1907.

Causes of Accident and Nature of Injury.	Name of Colliery.																								Total for 1907.			
	Nanaimo.			Union.			Extension.			Fiddick.			Van. & Nanal'o Coal Co.			Middlesboro.			Crow's Nest.			Hosmer						
	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Total.
Gas—Explosion of	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	20
Fatal	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	....
Serious	..	..	1	..	..	2	..	..	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	18	....
Slight																												
Falls of Coal	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30
Fatal	2	..	..	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	8	..	..	....
Serious	..	2	..	..	4	..	..	3	..	..	..	..	..	..	..	..	..	..	..	6	..	..	..	..	..	15	..	....
Slight	..	..	4	..	..	..	..	..	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	....
Falls of Rock	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17
Fatal	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	....
Serious	..	..	..	..	3	..	..	..	1	..	..	..	..	..	..	..	1	..	..	3	..	..	1	..	..	7	..	....
Slight	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	8	....
Mine Cars	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	45
Fatal	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	..	..	..	..	8	..	..	....
Serious	..	8	..	..	4	..	..	1	..	..	..	..	..	..	..	..	..	..	..	9	..	..	..	..	..	22	..	....
Slight	..	..	8	..	..	..	..	..	4	..	..	..	..	..	1	..	..	..	..	..	2	..	..	..	..	..	15	....
Shot or Powder	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
Fatal	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	....
Serious	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	....
Slight	..	..	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	4	....
Ropes, Hoisting or Haulage	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Fatal	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Serious	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Slight	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	3	....
Post or Timber	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
Fatal	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....
Serious	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	4	..	....
Slight	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	....
Miscellaneous—Underground	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6
Fatal	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	....
Serious	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	....
Slight	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	1	..	..	..	..	..	4	....
Miscellaneous—Surface	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	21
Fatal	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	5	..	..	3	..	..	10	..	..	....
Serious	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	6	..	..	1	..	..	9	..	....
Slight	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	2	....
Total	4	11	22	4	10	3	4	8	23	..	..	1	..	..	1	..	2	3	16	28	7	3	2	2	31	61	62	154

SUMMARY—TABLE SHEWING ACCIDENTS OCCURRING IN B. C. COLLIERIES IN TEN YEARS—1898 TO 1907.

For the year	1898.				1899.				1900.				1901.				1902.				1903.				1904.				1905.				1906.				1907.				Total for 10 years.			
Output of coal—tons.	1,135,865				1,306,324				1,590,179				1,691,557				1,641,626				1,481,913				1,685,698				1,825,832				1,899,076				2,219,608				16,477,678			
No. persons employ'd	2,988				3,780				4,178				3,974				4,011				4,264				4,453				4,407				4,805				6,059				42,919			
Nature of Injury.																																											
Cause of Accident.	Fatal.	Serious.	Slight.	Total.	Fatal.	Serious.	Slight.	Total.	Fatal.	Serious.	Slight.	Total.	Fatal.	Serious.	Slight.	Total.	Fatal.	Serious.	Slight.	Total.	Fatal.	Serious.	Slight.	Total.	Fatal.	Serious.	Slight.	Total.	Fatal.	Serious.	Slight.	Total.	Fatal.	Serious.	Slight.	Total.	Fatal.	Serious.	Slight.	Total.	Fatal.	Serious.	Slight.	Total.
Explosion (cause unknown).	..	..	..	..	..	..	..	..	..	..	..	..	64	..	..	64	125	..	..	125	..	..	..	..	14	..	..	14	..	..	..	..	..	..	..	..	..	..	..	..	203	..	..	203
Gas explosions	2	14	3	19	3	9	18	30	..	2	22	24	2	2	12	16	1	..	8	9	21	..	16	37	7	..	8	15	..	..	9	9	..	..	1	1	1	1	18	20	37	28	115	180
Falls of coal.....	3	4	..	7	1	4	3	8	2	14	3	19	6	9	2	17	1	4	1	6	4	5	2	11	5	12	1	18	2	8	3	13	5	6	3	14	8	15	7	30	37	81	25	143
" rock	1	5	3	9	3	5	4	12	6	15	3	24	6	8	4	18	7	6	2	15	8	8	4	20	4	7	1	12	4	6	1	11	7	8	7	22	2	7	8	17	48	75	37	160
Mine cars.....	1	11	3	15	3	9	4	16	4	7	3	14	3	5	5	13	3	6	5	14	5	7	2	14	3	15	5	23	3	9	8	20	2	13	13	28	8	22	15	45	35	104	63	202
" timber	..	..	..	..	..	..	..	..	..	1	1	2	...	2	..	2	2	..	..	2	1	2	..	3	..	2	..	2	1	2	..	3	..	1	1	2	..	4	1	5	4	14	3	21
Hoisting, ropes, &c .	..	..	..	..	..	..	..	..	1	..	..	1	...	2	..	2	...	2	..	2	..	4	1	5	..	2	..	2	..	..	1	1	..	2	1	3	..	..	3	3	1	12	6	19
Powder, &c., explo'n	..	3	1	4	..	2	1	3	1	3	6	10	...	4	6	10	...	..	1	1	1	7	..	8	1	..	1	2	1	1	3	5	..	1	1	2	1	2	4	7	5	23	24	52
Underground — Miscellaneous	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	3	..	2	3	5	1	1	4	6	1	5	8	14
On surface — miscellaneous.	..	2	..	2	1	..	..	1	3	1	..	4	2	2	2	6	...	3	1	4	2	..	1	3	3	3	0	6	1	2	..	3	1	3	2	6	10	9	2	21	23	25	8	56
Fire in Mine	..	..	..	..	..	..	..	..	..	..	..	..	19	..	..	19	...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19	..	..	19
	7	39	10	56	11	29	30	70	17	43	38	98	102	34	31	167	139	21	18	178	42	33	26	101	37	41	16	94	12	30	26	68	15	36	32	83	31	61	62	154	413	367	289	1069

DETAILED STATEMENT OF ACCIDENTS IN B. C. COLLIERIES DURING 1907.

CROW'S NEST COLLIERIES.

Reported by Thomas Morgan, Inspector.

No.	Colliery.	Date.	Name.	Occupation.	Details.
1	Coal Creek....	Jan. 14	Thomas Glover....	Switchboy	While attending to the latches was struck in the leg by the rope.
2	Coal Creek....	" 29	Martin Kubrick ...	Driver	While riding on the side of the car he was jammed against the door frame and had his hip bone broken.
3	Michel	" 29	G. Pagorri	Back-hand	Was unloading timber from a car when a piece swung round and struck a post that supported one of the cross beams, which fell on Pagorri and crushed him. The doctor examined him and could find no injury, but he died 36 hours afterwards.
4	Coal Creek....	Feb. 7	Wm. Rees	Miner	Leg broken by a piece of coal falling from the face.
5	Coal Creek....	" 8	Thomas Cowan....	"	Leg broken by a falling clod.
6	Coal Creek....	" 8	Chas. Douglas.....	Car repairer.....	While Douglas was working in the car-shop at Coal Creek a snow-slide broke down the building and smothered him.
7	Coal Creek....	" 9	George Trill.....	Boilerman	Jumped on a train in the yard while it was in motion, missed his hold, and was run over and killed by one of the coaches.
8	Coal Creek....	" 11	Thomas Cronin....	Driver.....	Was travelling fast with a bunch of cars and got his legs cut by being pinched between two of them when they stopped.
9	Coal Creek....	" 13	John Riley.....	Brusher	Shoulder dislocated and one rib broken by a piece of clod which struck him while he was breaking a piece of rock.
10	Coal Creek....	" 19	Steiner Rockasby..	Miner	While taking out an old piece of timber was struck by a sharp piece of rock, which took off his right thumb.
11	Coal Creek....	March 4	Thomas Paton.....	"	A piece of timber that he was taking off a car fell on his right leg, breaking a small bone.
12	Coal Creek....	" 16	Paul Gall	"	Right arm fractured by a piece o timber on top of an empty car, which was coming into the room where Gall was.
13	Coal Creek....	" 29	Martin Smolick ...	"	Had just hitched his mule to a car when it started suddenly and Smolick was caught between the car and a post near the road and was killed. He had been warned to stand on the other side of the car.

ACCIDENTS IN CROW'S NEST COLLIERIES.—*Continued.*

No.	Colliery.	Date.	Name.	Occupation.	Details.
14	Coal Creek....	April 4	John Piasta.....	Slate pieker.....	Leg broken by an empty car coming down the switch-back by the tipple where he was standing.
15	Coal Creek....	" 5	Archibald Nelson..	Driver and hoist-[man	Jammed between two cars at the bottom of a lift and injured internally.
16	Michel	" 13	Fred Kubalo	Switchboy	Had given the signal for the loaded cars to come out but had failed to throw the switch. He ran on to the empty track, where he was followed by the cars, run over, and killed.
17	Coal Creek....	May 15	S. W. Green	Machinist helper	While carrying a pipe along the main level stumbled and broke his ankle.
18	Michel	" 17	Robert Grant	Back-hand	Leg broken by being caught between a car and the side.
19	Michel	" 20	Ernest Deluca.....	Rope-rider.....	Was killed at the bottom of a slope by a trip of trucks which broke away above him, through the cotter pin pulling out of the "kick off."
20	Hosmer.....	" 28	Peter Lemanha....	Labourer	While at work in the main tunnel a piece of rock fell on him, breaking his leg.
21	Coal Creek....	June 9	Thomas Wright ...	Trackman	While walking behind a horse it kicked him in the pit of the stomach.
22	Hosmer.....	" 12	Fred Taylor.....	Foreman.....	A fall of coal from the roof set free some gas, which was ignited by Taylor's naked light and slightly burned his face and hands.
23	Coal Creek....	" 18	Mike Kubic.....	Driver.....	Was bringing a trip of three cars to the landing, sitting on the front end of the first car. The trapper opened the door and told him to slacken up speed, when Kubic, for some unknown reason, jumped off and was fatally crushed between the car and the door-post.
24	Coal Creek..	" 21	James Hepple ...		Killed.
25			Robert Thomas ..		Fatally injured.
26			Edward Best		Badly bruised.
27			John Edmonson..		Badly bruised.
					These four men were driving a prospect tunnel and having lighted a couple of shots had retired outside. It is supposed that the explosion of these detonated some dynamite at the mouth of the tunnel, with the results above mentioned.
28	Coal Creek....	" 25	Martin Bobrowsky.	Rope-rider.....	The car that he was riding on was carrying a stick of timber which was caught by the side and fell off, carrying Bobrowsky with it and breaking his leg.
29	Coal Creek....	July 9	Andrew Gillie	Miner	Leg broken below the knee by a piece of coal falling from the face.

Accidents in Crow's Nest Collieries.—*Continued.*

No.	Colliery.	Date.	Name.	Occupation.	Details.
30	Coal Creek....	July 22	George Bell	Miner	A "bump" occurred and the room that Bell was standing in caved in. When found he was dead, evidently suffocated.
31	Coal Creek....	Aug. 3	Thomas Dewsbury	"	Right leg broken by a post while he was letting down a car, with a McGinty.
32	Coal Creek....	" 17	Joseph Coccolone.	Timberman.....	While preparing the roof for a set of timber the roof collapsed, through three other sets breaking. Coccolone had his skull fractured and the top of one finger cut off.
33	Coal Creek....	" 19	Sidney Rees	Trapper	Attempted to jump on to a moving train of cars on the surface and had his leg badly gashed.
34	Coal Creek....	" 27	Albert Rhodes	Driver.....	A loaded tram jumped the track and struck a piece of timber which Rhodes was helping to handle, causing it to swing around and break his leg.
35	Coal Creek....	" 23	Albert Hoston.....	Rope-rider.....	In attempting to jump on to the front bumper of a trip of loaded cars he slipped and fell, was run over and fatally injured.
36	Michel	" 29	Gri Romano.....	Box car loader ..	Killed while standing in the yard by a piece of stump blown from some excavation work a hundred yards away.
37	Coal Creek....	Sept. 9	David Lynn.....	Driver.....	Lynn was riding on the front of his car when his horse stepped on a piece of wood, which flew up and struck his foot, badly bruising it and breaking a bone.
38	Hosmer	" 11	M. Durrant.....	Mucker.....	Burned about the face and hands by igniting some gas in the upper portion of a cross-cut.
39	Coal Creek....	" 20	Peter Johnson	Brusher	Fatally injured by the premature explosion of a charge.
40	Coal Creek....	" 20	John Debattista...	Miner	Head injured by the explosion mentioned in No. 39.
41	Coal Creek....	Oct. 2	Thomas Wilson....	Miner	Fatally injured by the fall of an overhang of coal which he was mining under. He had neglected to put in sprags, though warned to do so.
42	Coal Creek....	" 9	Gomer Davis.....	Miner	Killed by a "bump" occurring in the place where he was working, bringing down coal.
43	Coal Creek....	" 16	Luigi Basile.....	Pusher on tipple.	Two toes taken off by a loaded trip of cars which he was jumping on to when he missed his hold and fell, catching his foot in the creeper guard.

ACCIDENTS IN CROW'S NEST COLLIERIES.—*Concluded.*

No.	Colliery.	Date.	Name.	Occupation.	Details.
44	Coal Creek....	Nov. 8	John Laithwaite ..	Miner	While Laithwaite was loading a car part of the coal broke away and fell on him, breaking his leg below the knee.
45	Hosmer.....	" 11	E. Montalbetti	Labourer	Killed.
46	"	" 11	J. Maternik.	"	Killed.
47	"	" 11	G. Oniski	"	Killed.
48	"	" 11	F. Toffolutti	"	Severely injured. Were employed in a railway cutting clearing out an old hole when a charge at the bottom exploded, with the results shewn. Toffolutti had his shoulder bruised, left side ruptured, and face and neck cut.
49	Michel	" 11	George Wagstaff...	Miner	Collar bone broken by a fall of top coal.
50	Coal Creek....	" 13	Humphrey Evans..	Rope-rider.....	Was shifting a switch with his hand when one of the cars ran over it, taking off two of his fingers.
51	Coal Creek....	" 15	James White.....	Miner	While working at the face some rock fell on him, dislocating his knee and straining his back.
52	Coal Creek....	" 15	Alfred Chisholm...	Driver.....	While stepping on to a moving car he was caught against some timbers. He had one rib broken and chest and shoulder crushed.
53	Michel	" 18	Joe Symatuck	Backhand.....	While walking down a slope the trip of cars above him broke away. Symatuck was struck and fatally injured by a piece of timber falling off one of the cars.
54	Michel	" 27	Joe Kubasick	Spragger.....	Was pushing a car by the side when his coat caught and he was dragged under the car, receiving a broken leg.
55	Michel	Dec. 12	John Turisk	Backhand.....	Head cut and leg broken by a fall of rock.
56	Michel	" 13	W. Sherrocks	Miner	Was pulling down coal when a loose piece fell on his hand, crushing it badly.
57	Coal Creek....	" 12	William Smith	Flag boy.....	Flagging trips at entrance to No. 9 Mine, foot caught in switch, causing him to fall, fracturing his leg.
58	Coal Creek....	" 28	Andros Williams..	Miner	Leg broken and back lamed while at work in his stall in No. 9 Mine.

COAST COLLIERIES.

Reported by Archibald Dick, Inspector.

No.	Colliery.	Date.	Name.	Occupation.	Details.
1	Extension.....	Jan. 13	Thos. Munsie	Miner	Killed in his working place by a fall of top coal.
2	"	" 17	Benj. Evans	"	Severely burnt on the hands and face by an explosion of gas while going into another working place.
3	"	" 18	Martin Dunsmuir..	"	Foot slightly bruised by a piece of coal rolling on it.
4	Nanaimo.....	" 18	Wm. McEwan	"	Muscles of leg sprained by a car, his foot having got caught in the switch when sending the car away.
5	"	" 19	Thos. Morrison....	Coal loader.....	Squeezed around the back and hips by a small fall of top coal, while at work.
6	"	" 29	Parker Mason.....	Miner	Fatally injured by a fall of top coal while at work in his stall, and died about 13 hours afterwards.
7	Extension.....	" 25	John Mahaffy	Bratticeman	Burned on the face and hands by an explosion of gas while putting up a brattice.
8	"	" 25	Steve Berto.....	Miner	Burned on the face and hands by an explosion of gas, at same time as Mahaffy.
9	"	" 25	Frank Berto	"	Burned on the face and hands by an explosion of gas, with Mahaffy.
10	Nanaimo.....	Feb. 5	George Rolley.....	"	Fatally injured by a fall of top coal while at work in his stall.
11	Union	" 13	Wong Chong.....	"	Knocked block out from in front of car, did not stand clear, and was run over. Hip dislocated and injured.
12	Nanaimo.....	" 27	Saml. Brighton....	Machine helper..	Little finger broken by a falling lump of coal.
13	"	" 27	Thomas Fox	Pusher	The car that he was taking out ran away and went off the track, squeezing him against the roof, bruising him and cutting his fingers.
14	Extension.....	Mar. 13	Joe Lepatiah.....	"	Hips squeezed by being caught between loaded car and prop.
15	Nanaimo.....	" 21	A. Cunningham ...	Miner	Kneecap injured by a falling piece of coal.
16	Extension.....	" 21	Quin Chung.....	Labourer	Attempted to jump on to a passing coal train on surface, but missed his hold, fell among the wheels and was fatally injured.
17	"	April 5	J. Cloke	Miner	Leg broken and head cut while at work in his stall.

ACCIDENTS IN COAST COLLIERIES.—*Continued.*

No.	Colliery.	Date.	Name.	Occupation.	Details.
18	Union	April 15	Jung Kum	Miner	Leg broken by a piece of coal falling on him while mining.
19	Extension	" 18	Peter Whiskers	"	Slightly burned about the arms by an explosion of gas ignited by a naked light which he was using, although supplied with a safety lamp.
20	Nanaimo	" 28	Fred Hilley	"	Slightly cut on the arms by the piece of coal, that he was mining, falling on him.
21	"	" 30	John Constantine	Loader	Slightly burned about the face and shoulders by an explosion of gas ignited by a naked light brought in by his partner.
22	Extension	" 30	John Gracomo	Miner	Slightly burned about the face and shoulders at the same time as Constantine.
23	Middlesboro	May 11	Alex. Strang	Labourer	Cut his foot severely with an axe while clearing the right of way for a railway on surface.
24	Nanaimo	" 14	Wm. Thompson	Miner	Bruised about the shoulders, while working in his stall, by a piece of rock falling from the roof.
25	Extension	" 18	John Hill	"	Fatally injured by a fall of rock in his stall. He had fired a shot in the top rock, which failed to bring it down, and continued working in below it until it fell upon him.
26	Union	" 23	Martin Varnetta	"	Slightly burnt about the face and hands and part of the back, by the explosion of some gas which had accumulated in a stall where the brattice curtain had been pulled down by a mine car.
27	Extension	April 29	John Jones	"	Small bone of fore-arm broken by the fall of a piece of coal.
28	Middlesboro	June 24	Robert Boyd	"	Right arm accidentally lacerated by his partner's pick.
29	Union	" 29	— Matsuda	"	Leg broken by a piece of middle rock falling where he was working.
30	Extension	July 9	J. Pogerly	"	Got burned about the hands by igniting some blasting powder while working in the mine.
31	Union	" 13	W. Potter	"	Had two ribs broken, hips injured, and received wounds on scalp and chin by a piece of rock falling on him while in his stall.
32	Nanaimo	" 13	Harry Domergue	"	Foot bruised by a falling piece of coal.
33	Extension	" 16	James Conlin	"	Leg broken by a timber which he was helping to take it off a mine car.
34	Nanaimo	" 16	Anton Domino	Car coupler	Collar bone broken by a loaded car bumping into the cars that he was coupling.

Accidents in Coast Collieries.—*Continued.*

No.	Colliery.	Date.	Name.	Occupation.	Details.
35	Union	July 17	Wong Sing	Miner	Seriously crushed by a fall of coal.
36	"	" 19	Dang We Chung...	Rope-rider.....	Killed by falling off a car as it came to the outside of the mine.
37	Nanaimo.....	" 26	Jim Wing	Car-dropper.....	Slightly squeezed between two cars on surface.
38	Extension.....	Aug. 1	Mike Kesto.....	Driver	The sprag of a car broke and Kesto stepped in front to stop it, thereby bruising his leg.
39	Nanaimo.....	" 5	Sing Yen	Labourer	Killed by a car while crossing the railway, on surface.
40	Extension.....	" 7	Wayan Sing	"	Arm fractured by a passing car while Sing was crossing the railway track on surface.
41	Nanaimo.....	" 10	Thomas Gordon...	Miner	While helping the pusher with a car his hand was jammed between the side and the car and he was severely bruised.
42	"	" 13	Arthur Warring...	Chargeman	Foot bruised by the drilling machine falling on it.
43	"	" 12	J. W. Perry	Motor conductor.	The car he was riding in got off the track and tipped up on end. Perry could not get clear and had his knee-cap put out.
44	Union	" 15	Full Car	Mine helper.....	Was slightly burned about the face and hands by igniting some gas.
45	Extension.....	" 15	Moses Daniels.....	Miner	Was lowering a mine car when the prop pulled out, striking him on the head and bruising it.
46	Middlesboro ..	" 21	Edward Wood	Mucker.....	Head cut by a falling piece of rock.
47	Nanaimo	Sept. 6	Walter Pryde.....	Miner	Twisted his ankle and broke a small bone of his leg while getting out of the way of a piece of falling rock.
48	Union	" 6	Y. Matsumoto	"	Got entangled with the rope while lowering a car and received a compound fracture of the leg.
49	Nanaimo.....	" 6	Edward Devlin....	Shot-lighter.....	The loader failed to tell him that the face-man had fired shots, so Devlin was near the explosion and got bruised about the face and eyes.
50	Extension.....	7	J. Prividt.....	Mule driver.....	While helping a miner to load a car a piece of coal fell off the rib and broke his leg.
51	Extension ..	" 12	J. Koli	Miner	Burned about the face and hands by the explosion of some gas which had accumulated in the heading where Koli was working. The men were provided with safety lamps, but one of their number lit a naked light, thinking that he
52			A. Koli	"	
53			M. Wargo	Track-layer	
54			J. Byaski	"	
55			A. Robertson	Miner	
56			Gilbert Inkster ..	"	

ACCIDENTS IN COAST COLLIERIES.—*Continued.*

No.	Colliery.	Date.	Name.	Occupation.	Details
					could do so safely, as the face where he was had been worked only an hour beforehand. The accumulation was probably caused by a broken curtain.
57	Union	Sept. 19	Charles Bardrick ..	.....	Was found dead with his arm caught in the cog wheel of the electric pump that he was attending.
58	Nanaimo.....	" 20	J. W. Graham	Miner	Had fired a shot which failed to bring down but loosened the coal. As he was working on the coal the naked light he was carrying kindled some gas that had collected in the cavity and he got burnt on the hands, forearm, face and back of the neck.
59	"	" 23	Louis Perry.....	Mule driver.....	Was caught between two cars that had been shunted on to the wrong track and bruised about the knees.
60	"	" 30	Geo. Richardson...	Brusher.....	Small bone of leg broken by a mine car that jumped the track as it was passing him.
61	"	Oct. 11	Pasqual Maucine ..	Pusher	Feet injured by a mine car which overtook him on the track.
62	"	" 14	James Moore.....	Gripper.....	Body squeezed by a loaded car which he had attached to the haulage rope.
63	Extension.....	" 14	James Crossman...	Pusher	Leg broken by a stringer which rolled off a car while Crossman was unloading lumber.
64	Middlesboro ..	" 15	John Howell.....	Miner	Toes of right foot crushed by a piece of rock falling while he was at work.
65	Extension.....	" 16	John Myers.....	"	Both legs broken by the premature ignition of a shot.
66	Nanaimo.....	" 17	Isaac Lunn.....	Rope-rider.....	Shoulder caught between two cars that he was coupling and collar-bone broken.
67	"	" 21	Richard Varheds ..	Mule driver.....	Fell from the bumper in front of a loaded trip of cars. Had two ribs broken and a knee bruised.
68	"	" 22	Neil Bowater.....	Miner	Was putting a prop under a rock when it fell, breaking his nose and bruising him generally.
69	Extension.....	" 25	Thomas Simpson ..	Rope-Rider	Ankle sprained by a car running off the track.
70	"	" 25	Thomas McMullan.	"	Was standing near a slope rope when it slipped off the pulley, striking him and bruising his leg.
71	Union	" 31	Ruichi Temao.....	Miner's helper...	Fatally injured by the fall of a large piece of top coal, while he was at work in his stall.

Accidents in Coast Collieries.—*Continued.*

No.	Colliery	Date.	Name.	Occupation.	Details.
72	Union	Nov. 1	Chong	Pusher	Was riding up an incline in a mine car when it went off the track, turned over and broke his arm.
73	Fiddick	" 5	W. H. Moore	Miner	Finger hurt by a hammer.
74	Extension	" 6	Thomas Barr	"	Squeezed by a piece of rock, that he was working to get down, falling on him.
75	Nanaimo	" 8	Sam Orr, Jr.	Doorkeeper	While attempting to take a sprag out of a car wheel he fell and the wheel took off one of his fingers.
76	"	" 11	Thomas Johnson ...	Miner	Foot crushed by a falling piece of rock while he was at work.
77	"	" 16	Eunco Benoffi	Pusher	Killed by a rock which fell on him while he was getting a place ready to put up timber.
78	"	" 18	John Capman	Mule driver	Squeezed between a car and a prop while unhooking a mule from the car.
79	Middlesboro ..	" 19	James Edwards ...	Labourer	Two toes of right foot broken by standing too near a tipple.
80	Nanaimo	" 26	Joseph Nixon	Miner	Back bruised by a piece of coal falling off the rib while he was loading a car.
81	Extension	Dec. 7	Alex. Barshk	"	An explosion of gas slightly burnt his hands and made him fall off the bottom coal, dislocating his shoulder.
82	"	" 7	Mike Mercanich ...	Loader	Fatally burned by a gas explosion. The place where Mercanich was working had been examined by a fireman only a few minutes before, but no trace of gas was discovered.
83	Nanaimo	" 7	James Cook.	Faceman	Was using a rail to drive out a prop and get some rock down. When the rock came down it struck the rail, which hit Cook's leg, inflicting a flesh wound.
84	Union	" 7	Samuel Miller	Driver	Fractured his ankle by stumbling against some cars which were in motion.
85	V. & N. Col. Co.	" 9	Joseph Randle	Manager in [charge	Bruised by a passing car.
86	Nanaimo	" 11	William Cook	Faceman	While Cook was making up a shot of dynamite the caps, for some unknown reason, exploded, blowing off his left arm and putting out his left eye.
87	Union	" 12	John Anderson	Pusher	While Anderson was spragging a car a piece of coal fell from the side and squeezed him against the car, breaking several ribs.

ACCIDENTS IN COAST COLLIERIES.—*Concluded.*

No.	Colliery.	Date.	Name.	Occupation.	Details.
88	Union	Dec. 12	Wong Nun.....	Miner	Leg broken by a piece of top coal, which he was pulling down.
89	Extension.....	" 23	Joseph Lepatich...	"	Back bruised by a piece of coal rolling off the top bench.
90	Union	" 23	Andrew Bogo	"	Burned on the face and neck by the premature explosion of a shot.
91	"	" 24	Jung Hing	"	Killed while at work in his stall by a fall of top coal.
92	Extension.....	" 28	George Keserich...	"	Leg broken by a piece of top coal that he had pulled down rolling on it.
93	Nanaimo.....	" 30	William Larney ...	Rope-rider	Had his foot caught between some points which were closed by a car moving on them. The car broke his leg before it could be stopped.
94	"	June 12	Finley McRae.....	Mule driver... .	Three fingers crushed by the wheels of a car that he was spragging.
95	"	" 12	Charles Clements..	Driver.....	Collar-bone caught between two cars that he was coupling, and broken.
96	"	July 2	Arthur Scales	"	Was turning a mule when it fell on him, breaking his leg.

METALLIFEROUS MINES SHIPPING IN 1907.

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FORT STEELE MINING DIVISION.

Mine or Group.	Locality.	Owner or Agent.	Address.	Character of Ore.
North Star	Kimberley	North Star Mining Co., Ltd	Kimberley	Lead, silver.
Pay Roll	Nigger Creek	Maurice Quain	Cranbrook	Silver, gold.
St. Eugene	Moyie	Con. M. & S. Co. of Canada	Moyie	Lead, silver.
Sullivan	Kimberley	Sullivan Group Mining Co	Kimberley	"

GOLDEN AND WINDERMERE MINING DIVISIONS.

Black Diamond	Toby Creek	J. Lake	Athalmere	Lead, silver.
Charlemont	"	J. C. Pitts	Windermere	"
Comstock	North Fork Toby Creek.	Geo. M. Willard	Wilmer	"
Tecumseh and Paymaster	McDonald Creek	Wm. Haupt	"	Silver, lead.

NELSON MINING DIVISION.

American Flag		Hall M. & S. Co.	Nelson	Silver, copper.
Arlington (Erie)	Erie	Hastings (B. C.) Explor. Sy., Ltd	"	Gold, silver.
Central	Nelson	R. Legault	"	Copper, gold, silver.
Double Standard and Hunter V	Porcupine Creek	Hall M. & S. Co	"	Silver, gold.
Emerald	Sheep Creek	John Waldbeser	Salmo	Lead, silver.
Eureka	Eagle Creek	J. J. Malone	Nelson	Gold, silver, copper.
Fern	Hall Creek	The Fern Gold M. & M. Co	"	Gold, silver.
Grizzly Bear		M. Davys	"	Copper, silver.
Keystone	Mineral Mountain	Frank Finney	Erie	Gold, silver, lead.
Kootenay Belle	Salmo	Bell Bros	Salmo	Gold, silver.
La Plata	Kokanee Creek	La Plata Mines, Ltd	Kokanee	Silver, lead.
M. A. P		J. C. Devlin	Nelson	Copper, silver.
Mother Lode (Salmo)	Sheep Creek	Thos. Bennett	"	Gold, silver.
Northern Light				Gold, silver, copper.
Nugget	Sheep Creek	Geo. T. Matthews	Salmo	Gold, silver,
Poorman	Granite	Duncan United Mining Co	Williams Siding	Gold, silver, copper.
Queen	Salmo	William Waldie	Nelson	Gold, silver.
Second Relief	Erie	Second Relief Mining Co	"	"
Silver King	Toad Mountain	Hall M. & S. Co	"	Silver, copper.
Victoria	Beasley	N. J. Cavanagh	"	Copper, silver, gold.
Yankee Girl	Ymir	D. Grobe	Ymir	Gold, silver.
Ymir	"	Ymir Gold Mines, Ltd	"	Gold, silver, lead.
Yukon	"	Patrick Daly	"	"

AINSWORTH MINING DIVISION.

Baltimore	North Fk. Woodbury Ck.	Wm. English	Kaslo	Silver, zinc.
Black Diamond	Ainsworth	H. J. Wright	Ainsworth	Silver, lead.
Bismark	South Fork Kaslo Creek.	Neil McKay	Kaslo	Silver, zinc.
Emerald Hill		Bank of B. N. A	"	Silver, lead.
Empress	Bear Lake	A. C. Van Moerkerke	Whitewater	Silver.
Fergus	Ainsworth	Dr. J. Gibson	Nelson	Silver, lead.
Flint	South Fork Kaslo Creek.	C. E. Lyons	Sandon	"
Gallagher	Ainsworth	A. D. Wheeler	Ainsworth	"
Jessie-Bluebird	Woodbury Creek	Eric Johnson	Kaslo	"
Krao	Ainsworth	Krao Silver-Lead Mining Co	"	"
Libby	" "	G. H. Barnhart	Nelson	"
Maestro	"	H. Giegerich	Kaslo	"
Montezuma	Kaslo Creek	"	"	"
New Jerusalem	Ainsworth	G. H. Barnhart	Nelson	"
No. One	"	H. Giegerich	Kaslo	"
Province	Kaslo Creek	Province Mines, Ltd	"	"
Spokane-Trinket	Ainsworth	Pacific Bullion Mining Co	Nelson	"
Whitewater Deep	Whitewater	Erl Sydicate	"	"
Whitewater Mines	"	Whitewater Mines, Ltd	"	Silver, lead, zinc.

SLOCAN MINING DIVISION.

Mine or Group.	Locality.	Owner or Agent.	Address.	Character of Ore.
Adams Group	Sandon	Brandon Bros	Silverton	Silver, lead.
American Boy	"	American Boy Mining Co	Spokane	"
Arlington	Springer Creek	Arlington Mines, Ltd	Slocan	"
Buffalo	Four Mile	E. Watson	Silverton	"
California & Clipper.	New Denver	C. & Clipper Silver-lead, Mg. Co.	New Denver	"
Canadian Group	Sandon	Brandon Brothers	Silverton	"
Colonial	Slocan	A. D. Coplen	Spokane	"
Elkhorn	Sandon	Geo T. Gormley	Sandon	"
Emily Edith	Silverton	Laurenzo Alexander	Victoria	"
Forget		J. Marten	New Denver	"
Hartney Group	New Denver	A. H. Blumeneur	Spokane	"
Hewitt and Lorna Doone	Four Mile Creek	Olcott Payne	Nelson	"
Idaho-Alamo	Alamo	Idaho-Alamo Cons. Mines, Ltd	Three Forks	"
Jo-Jo	N. Fk. Carpenter Creek	Thos. Trenery	Kaslo	"
Last Chance	Sandon	L. Pratt	Sandon	"
Lone Batchelor	Three Forks	Geo. R. Petty	Three Forks	"
Lucky Jim	Bear Lake	G. W. Hughes	Kaslo	"
Majestic	Payne Mountain	A. H. Bigney	Sandon	"
McAllister	N. Fk. Carpenter Creek	C. E. Lyons	Fernie, B. C.	"
Midnight Fraction	Twelve Mile Creek	J. T. Tipping	Slocan City	"
Molly Hughes	New Denver	Thos. Avison	New Denver	"
Monte Christo		G. H. Aylard	"	"
Mountain Boomer	Silverton	Vancouver Group Mining Co	Rossland	"
Mountain Con	Sandon	Howard Thompson	Vancouver	"
Myrtle	Springer Creek	J. E. Tattersall	Slocan City	"
Neepawa	Ten Mile (Slocan)	E. Shannon	New Denver	"
Ottawa	Springer Creek	J. B. Faley	Slocan City	"
Payne	Sandon	Payne Cons. Mining Co	Sandon	"
Queen Dominion	Howson Creek	Queen Dominion Mining Co	Kaslo	"
Rambler-Cariboo	McGuigan	Rambler-Cariboo Mines, Ltd	"	"
Reco	Sandon	Reco Mining & Milling Co., Ltd	Sandon	"
Richmond-Eureka	"	Cons. M. & S. Co. of Canada	"	"
Ruth	"	The Ruth Mines, Ltd	Kaslo	"
Standard	Silverton	G. H. Aylard	New Denver	"
Silver Nugget		J. B. Smith	"	"
Sovereign	Slocan	Slocan-Sovereign Mines Co		"
Sunset	Cody	G. W. Hughes	Kaslo	"
Tamarack	Springer Creek	Geo. McNichol	Slocan	"
Vancouver	Silverton	Vancouver Group Mining Co	Rossland	"
Wakefield	Four Mile Creek	S. Watson	Silverton	"
Washington	McGuigan	The Washington Mine, Ltd	Kaslo	"
Westmont	Ten Mile	Westmont Silver M. Co., Ltd	Slocan City	"

LARDEAU MINING DIVISION.

Beatrice	Camborne	Beatrice Mines, Ltd	Fargo, North Dakota	Silver, lead.
Eva	Incomappleux Creek	Eva Gold Mines, Ltd		Gold.
Mammoth	" "	Edward Baillie Syndicate, Ltd	Nelson	Silver, lead.
Old Gold		J. M. Miller	Seattle	"

TROUT LAKE MINING DIVISION.

Silver Cup	Ferguson	Ferguson Mines, Ltd., N.P.L.	Ferguson	Gold, silver, lead.
Topsy	Poplar Creek	A. Hansen	Poplar Creek	Silver, lead.

TRAIL CREEK MINING DIVISION.

Centre Star and War Eagle	Rossland	Con. M. & S. Co. of Canada	Rossland	Gold, silver, copper.
Evening Star		A. K. Heidler	"	"
LeRoi Mining Co	Rossland	LeRoi Mining Co., Ltd	"	"
LeRoi No. 2	"	Le Roi No. 2, Ltd	Trail Creek	"
Mayflower	"			"
Nest Egg	"	Nest Egg & Firefly G. M. Co	Rossland	"
White Bear	"	Con. White Bear M. Co., Ltd	"	"

GREENWOOD MINING DIVISION.

82E/6E-5
82E/5E2

Bay	Greenwood	H. A. Fuller.	Spokane, Wash	Gold, silver.
Boundary Elkhorn	Providence Camp	W. T. McCluig	Sandon	Gold, silver, lead.
Cariboo-McKinney	Camp McKinney	G. S. McNicol	Phoenix	Gold.
Duncan & Bounty Fr	Wallace Mountain	Wallace Mountain M. Co., Ltd	Greenwood	Silver, lead.
Emma	Summit Camp	B. C. Copper Co	"	Gold, silver, copper.

GREENWOOD MINING DIVISION.—*Concluded.*

Mine or Group.	Locality.	Owner or Agent.	Address.	Character of Ore.
Oro Denoro	Summit Camp	B. C. Copper Co	Greenwood	Gold, silver, copper.
Mother Lode	Deadwood Camp	"	"	"
B. C	Summit Camp	"	"	"
Granby Co.'s Mines	Phoenix	Granby C. M. S. & P. Co	Grand Forks, B. C.	"
Providence	Greenwood	Providence Mining Co., N.P.L.	Greenwood	Gold, silver.
Riverside	Rock Creek	Dermody & Sater (D. Co.	"	"
Sally	Beaverdell	Vancouver & Boundary Ck. M. &	"	Silver, lead.
Skylark and Denver	Skylark Camp	Skylark Development Co., Ltd	Phoenix	Gold, silver, lead.
Snowshoe	Phoenix	Con. M. & S. Co. of Canada, Ltd.	"	Gold, silver, copper.
Strathmore	Greenwood	Alex. Miller	Greenwood	Gold, silver, lead.

GRAND FORKS MINING DIVISION.

Brooklyn-Idaho	Phoenix	Dominion Copper Co	Boundary Falls	Gold, silver, copper.
Mountain Rose	Summit Camp	" "	"	Silver, copper.
Rawhide	Phoenix	" "	"	Gold, silver, copper.
Sunset	"	" "	"	"
Gold Drop	Wellington Camp	Granby Cons. M., S. & P. Co. Ltd	Grand Forks	"
Lightning Peak	North Fork Kettle	W. A. Calder	Edgewood	Silver, lead.

OSOYOOS MINING DIVISION.

Dividend	Kruger Mountain	H. A. Bowerman	Fairview, B. C	Gold, copper.
Nickel Plate	Hedley	Yale Mining Co	Hedley, B. C	Gold.
Sunnyside	"	"	"	"

SIMILKAMEEN AND VERNON MINING DIVISIONS.

Aberdeen		J. Graham	Coutlee	Silver, copper.

YALE AND KAMLOOPS MINING DIVISIONS.

Kamloops Mines	Kamloops	Kamloops Mines, Ltd	Kamloops	Gold, silver, copper.

ASHCROFT MINING DIVISION.

Maggie	Cariboo Road		Ashcroft	Copper.

LILLOOET MINING DIVISION.

Lorne	Cadwallader Creek	Nat Coughlan	Lillooet	Gold.

NANAIMO, ALBERNI, NEW WESTMINSTER AND VICTORIA MINING DIVISIONS.

Nanaimo—				
Copper Cliff	Valdes Island	Copper Cliff Mining Co	Heriot Bay	Silver, copper.
Copper Queen	Texada Island	Jas. Raper	Van Anda	Gold, silver, copper.
Cornell	"	Cornell Operating Co	"	"
East Gate	"	E. M. Cox	"	"
Little Billy	"	Little Billy Operating Co	"	"
Marble Bay	"	Tacoma Steel Co	Tacoma, Wash, U.S.A	"
New Westminster—				
Bowen Island	Bowen Island			Silver, copper.
Britannia	Howe Sound	Britannia Copper Co., Ltd	Vancouver, B. C	Gold, silver, copper.
Victoria—				
King Solomon	Koksilah			Silver, copper.
Koksilah	"			"
Lenora	Mount Sicker	Lenora Mine	Mount Sicker	Gold, silver, copper.
Richard III	"	C. H. Dickie	Duncan, B. C	"
Tyee	"	Tyee Copper Co., Ltd	Victoria, B. C	"

SKEENA MINING DIVISION.

Ikeda Bay Mines	Queen Charlotte Islands.	Awaya Ikeda & Co., Ltd	Ikeda Bay, Q. C. I.	Gold, silver, copper.
Outsiders	Portland Canal	Brown Alaska Co.	Hadley, Alaska	Copper.

LIST OF CROWN-GRANTED MINERAL CLAIMS.

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CROWN GRANTS ISSUED IN 1907.

CASSIAR.

Claim.	Division.	Grantee.	Lot. No.	Acres.	Date.
Astor	Atlin	Julius M. Ruffner	523	46.15	Oct. 24
At Last	"	William Gass	277	37.52	Sept. 3
Bear Paw	"	Julius M. Ruffner	518	49.16	Oct. 24
Cub Fract	"	"	520	7.04	" 24
Etta Extension	"	Chas. F. O. Boehme	276	26.00	Sept. 4
Maybe	"	J. Frank Breeze	524	51.55	Oct. 24
Sultan	"	"	519	37.30	" 24
Sunrise	"	Louise L. Graham and Alex. McDonald	71	51.65	July 23
Sunset	"	" "	70	51.64	" 23
White Baby	"	William Gass	278	25.28	Sept. 3
Alpha	Skeena	Helen Flewin and George Rudge	486	51.58	Nov. 20
Blue Bell	"	Wm. H. Collison, Wm. Noble, Wm. E. Collison, John M. Collison, Watson D. Noble, David J. Rainey, Matthias Dangeli, David Doolan and Alfred Woodcroft	571	51.65	July 31
Brown	"	Geo. D. Mumford	567	35.79	Sept. 27
Copper King	"	William Noble, Walter R. Flewin, Wm. H. Collison, John M. Collison, Wm. E. Collison, Alfred Woodcroft, Matthias Dangeli and Alfred W. Mountain	565	51.50	May 13
Copper Queen	"	Wm. H. Collison, Wm. Noble, Wm. E. Collison, John M. Collison, Watson D. Noble, David J. Rainey, Matthias Dangeli, David Doolan and Alfred Woodcroft	574	47.33	July 31
Constance Fract	"	Geo. D. Mumford	568	6.48	Sept. 27
Donald	"	Helen Flewin and George Rudge	483	51.65	Nov. 20
Eagle	"	William H. Collison, William Noble, William E. Collison, John M. Collison, Watson D. Noble, David J. Rainey, Matthias Dangeli, David Doolan and Alfred Woodcroft	578	50.12	July 31
Elsie	"	William Noble, Walter R. Flewin, Wm. H. Collison, John M. Collison. Wm. E. Collison, Alfred Woodcroft, Matthias Dangeli and Alfred W. Mountain	581	51.65	May 13
Gama	"	Helen Flewin and George W. Rudge	480	51.27	Oct. 20
Henrietta	"	Elizabeth J. Smith, John H. Brandon, John Irving, Cuthbert C. Worsfold, Richmond B. Halhed and Alex. D. Donaldson	109	38.20	Mar. 25
Hope	"	William Noble, Walter R. Flewin, Wm. H. Collison, John M. Collison, Wm. E. Collison, Alfd. Woodcroft, Matthias Dangeli and Alfred W. Mountain	R. IV. 566	51.65	May 13
Kenneth	"	Helen Flewin and George Rudge	488	51.15	Nov. 20
Manson	"	"	485	51.51	" 20
Maple Leaf	"	William H. Collison, William Noble, William E. Collison, John M. Collison, Watson D. Noble, David J. Rainey, Matthias Dangeli, David Doolan and Alfred Woodcroft	572	45.63	July 31
Margaret	"	Elizabeth J. Smith, John H. Brandon, John Irving, Cuthbert C. Worsfold, Richmond B. Halhed and Alex. D. Donaldson	110	38.75	Mar. 25
May Queen	"	William H. Collison, William Noble, Wm. E. Collison, John M. Collison, Watson D. Noble, David J. Rainey, Matthias Dangeli, David Doolan and Alfred Woodcroft	R. IV. 577	51.65	July 31
McKinley	"	Helen Flewin and George Rudge	484	51.58	Nov. 20
Portland	"	Benjamin D. Brown	570	45.06	July 19
Regina	"	William Noble, Walter R. Flewin, William H. Collison, John M. Collison, William E. Collison, Alfred Woodcroft, Matthias Dangeli and Alfred W. Mountain	564	50.56	May 13
Revenge	"	Helen Flewin and George Rudge	482	51.65	Nov. 20
Rose	"	William H. Collison, William Noble, William E. Collison, John M. Collison, Watson D. Noble, David J. Rainey, Matthias Dangeli, David Doolan and Alfred Woodcroft	575	51.65	July 31
Rudge	"	Helen Flewin and George Rudge	481	51.65	Nov. 20
Scotland Forever Fract.	"	George D. Mumford	579	10.44	Oct. 1
Scottish Chief	"	William H. Collison, William Noble, William E. Collison, John M. Collison, Watson D. Noble, David J. Rainey, Matthias Dangeli, David Doolan and Alfred Woodcroft	573	34.89	July 31

CASSIAR.—*Concluded.*

Claim.	Division.	Grantee.	Lot. No.	Acres.	Date.
Summit	Skeena	William Noble, Walter R. Flewin, William H. Collison, John M. Collison, William E. Collison, Alfred Woodcroft, Matthias Dangeli and Alfred W. Mountain	580	41.02	May 18
Thistle	"	William H. Collison, William Noble, William E. Collison, John M. Collison, Watson D. Noble, David J. Rainey, Matthias Dangeli, David Doolan and Alfred Woodcroft	576	46.75	July 31
Tunnel Fract	"	Geo. D. Mumford	569	4.22	Sept. 27

EAST KOOTENAY.

Ajax	Fort Steele	James T. Laidlaw	6347	51.59	May 13
Big Three	"	Thos. McVittie, Alex. C. Roberson and Willis E. Johnson	5814	51.65	Mar 27
Cambrian	"	The Black Mackay Mining Co., Ltd., N. P. L	7662	51.00	Sep. 20
Daisy	"	William R. Ross	5252	41.60	Oct. 23
Dodo	"	Thomas Starbird and James A. Harvey	2088	48.60	Mar. 4
Goliath	"	James T. Laidlaw	6346	51.65	May 13
Hematite	"	James T. Laidlaw	6348	42.63	" 13
Hercules	"	Edmund A. Elton and E. Frith Cummins	4052	51.65	July 22
Hercules	"	Jas. T. Laidlaw	6349	51.16	May 13
Jubilee	"	Duncan McFarlane and Edward A. Wood	7652	51.11	Mar. 27
Kent	"	James T. Laidlaw	6350	51.64	May 13
Keystone Frct	"	James A. Harvey	2039	34 84	Mar. 4
Mammoth	"	Walter Van Arsdalen	5815	41.82	" 27
Pedro	"	John Leask, Thos. A. Crighton, Alfred E. Watts, Archibald W. McVittie and George Bremner	2313	51.65	Sept. 7
Silver Queen	"	Edmund A. Elton and E. Frith Cummins	4053	51.38	July 22
Snowdrift	"	James T. Laidlaw	6352	49.58	May 13
Tempest	"	James T. Laidlaw	6351	51.65	" 13
Victoria	"	Duncan McFarlane and Edward A. Wood	7651	44.30	" 13
Windfall	"	Alfred Doyle	7324	30.40	Dec. 23
Mabel R	Windermere	Herbert C. Hammond and Thos. Jones	5103	51.65	Dec. 16
Silver Belt	"	Chas. M. Keep	3696	51.50	July 23
Bobbie Burns	Golden	Alfred O. Beardmore	5112	23.60	Feb. 27
Carbonate Fractional	"	Charles M. Keep	3698	23.50	" 4
Sunday	"	Louis Jodoin	211	51.30	Dec. 14
Yvonne	"	Louis Jodoin	7147	36.75	" 14

WEST KOOTENAY.

Blue Quartz	Nelson	Annie R. Peters and Francis B. H. Bonter	7072	51.65	April 10
Canadian Girl	"	James Cronin, David E. Grobe, Donald A. McLeod and Eber J. Moore	7713	50.09	" 9
Celebration	"	Thos. Wall	7229	51.65	Dec. 2
Central	"	Edward Dumont, Rodolphe Legault and Louis Niven	4801	36.37	Mar. 27
Central Fractional	"	" " "	4802	5.95	" 27
Echo	"	Thomas Wall	7232	43.40	Dec. 2
Edith	"	George A. M. Young	6633	51.65	Aug. 28
Giant Frct	"	Aaron H. Kelly	6449	20.96	Mar. 27
Ibis	"	Geo. A. M. Young	6068	39.60	Aug. 28
Jennie	"	"	6632	22.70	" 28
Mastadon	"	Elisha Bigelow	1070	51.65	Mar. 26
Matton	"	Geo. A. Campbell	7877	37.92	Nov. 7
Monte Carlo	"	James R. Hunnex	1066	28.16	April 10
Nellie J	"	Elisha Bigelow	1071	51.65	Mar 26
Nellie N	"	Andrew Sostad	6057	31.29	Sept. 18
Rover	"	Annie R. Peters and Francis B. H. Bonter	7073	37.84	April 10
Santiago Frct	"	Frank D. LeMieux	2226	1.20	" 10
Snowdrop	"	Thomas Wall	7234	17.40	Dec. 2
Snow King	"	"	7235	19.80	" 2
Snowstorm	"	"	7236	20.60	" 2
Stillwater	"	William J. Wilson and Edward A. Crease (executors of the estate of A. J. Marks) and Montagu S. Davys	3811	38.20	April 10
Stillwater Frct	"	" " "	3810	21.80	" 10
Venus Frct	"	Rich. A. Hutchinson	2418	16.60	" 10
Yankee Girl	"	James Cronin, David E. Grobe, Donald A. McLeod and Eber J. Moore	7712	47.06	" 9
Yukon Frct	"	Patrick Daly, William M. Coffey, Alfred J. Hughes and John Ryan	5802	28.78	" 9
Apex	Ainsworth	Dan Henry Nellis	6505	45.60	July 24
Atlas	"	"	6268	49.15	Nov. 22
Black Bear	"	"	6262	51.17	Dec. 3
Black Fox	"	"	6506	34.50	July 24
Democrat	"	Daniel J. Munn and Alfred E. Cross	2887	46.21	Dec. 13
Dora	"	James M. Miller	4702	35.71	Nov. 22
Eva	"	Irene Mining Co	7463	51.65	May 15
Evening Star	"	Dan H. Nellis	6512	51.65	July 24
Grand View	"	William Chaplin and Alice G. Caldwell	6279	37.86	May 15
Granite	"	" " "	6278	40.08	" 15
Grey Eagle	"	Dan H. Nellis	7470	47.50	Dec. 3
Irene	"	Irene Mining Co	7464	51.65	May 15

WEST KOOTENAY.—*Continued.*

Claim.	Division.	Grantee.	Lot No.	Acres.	Date.
Jumbo	Ainsworth	Dan Henry Nellis	6510	30.20	July 24
King Frct	"	" "	6501	51.20	" 24
King Solomon	"	" "	6958	51.65	" 24
Kootenay Star	"	Daniel J. Munn, Alfred E. Cross	2836	48.04	Dec. 12
Kootenay Star Frct	"	David W. Moore	2838	12.55	Nov. 25
Kotnen	"	Dan H. Nellis	7472	51.65	Dec. 3
Moonlite	"	" "	6509	50.30	July 24
No. 1	"	" "	6002	48.27	Dec. 3
Ontario No. 2	"	Leander Hanna	3182	51.65	" 11
Opher No. 3	"	Henry Brook	7381	30.40	May 14
Red Fox	"	Dan H. Nellis	6959	27.20	" 24
Silver Cup	"	" "	6507	44.70	July 24
Silvery Moon	"	James M. Miller	4697	51.00	Nov. 23
Silvery Moon Frct	"	"	4700	34.69	" 22
Treadwell	"	Daniel J. Munn and Alfred E. Cross	2839	51.11	Dec. 13
Alta Fractional	Slocan	Lucius A. Cole	6587	5.34	June 27
Arena Fractional	"	George H. Aylard	2539	13.62	Nov. 12
B. C.	"	Horace G. Van Tuyl	5555	29.00	" 6
Bristol	"	Charles E. Hope, John A. Turner and Mary E. Rammelmeyer	5735	46.88	Dec. 23
Chicago Fractional	"	Franklin P. O'Neill	3310	3.92	Sep. 12
Commander	"	Chas. E. Hope, John A. Turner and Mary E. Rammelmeyer	5736	36.91	Dec. 24
Congo No. 2	"	Ckas. E. Hope, John A. Turner and Mary E. Rammelmeyer	5734	43.91	" 23
Deception	"	Evelyn M. Sandilands, John Tinling and Alfred R. Fingland	7685	48.16	Mar. 4
Eclipse No. 2	"	Lucius A. Cole	6586	50.70	June 27
Happy Medium	"	"	5558	26.48	" 26
International	"	"	5559	45.91	" 27
Jenny Jones	"	George H. Aylard	2533	38.22	Nov. 12
J. I. C.	"	"	2534	22.30	" 12
John D. Mabley Frct	"	Horace G. Van Tuyl	5568	15.18	" 6
Joy	"	" "	5564	50.56	" 6
Joy Frct	"	" "	5563	27.87	" 6
Lost Bear	"	Herman Cleaver and Geo. C. Warton	6871	50.97	July 18
May	"	Horace G. Van Tuyl	5553	46.96	Nov. 6
Milton	"	Robert McPherson	2159	51.44	Sep. 17
Milton Frct	"	"	3825	29.20	Oct. 18
Moonlight	"	Henry Brook	7382	42.85	June 27
Pullman Frct	"	Franklin P. O'Neill	3309	32.00	Sep. 12
Strathroy	"	Horace G. Van Tuyl	5554	36.67	Nov. 6
Vevey	"	Lucius A. Cole	5560	50.87	June 27
Ell	Slocan City	John M. McGregor	5505	43.97	Dec. 3
Exe	"	"	5504	44.80	" 3
Eye Fractional	"	"	5506	39.15	" 3
Canadian	Revelstoke	David Cowan and John H. Hickman	7493	41.26	May 15
Lorna Doone	"	John C. Ross, Edmund R. Wylie, John T. Wood and Gertrude N. Wylie	5068	39.60	Feb. 27
Martha Jane Frct	"	The Prince Mining and Development Co., Ltd.	7487	29.57	May 14
Minto	"	" " "	7486	51.65	" 14
Silver Bell	"	James I. Woodrow, Alex. W. McIntosh, George Johnson and Elizabeth McMahon	7493	50.96	July 19
A. K. Fractional	Trout Lake	Reward Gold and Silver Mining Co., Ltd., N.P.L.	7443	1.86	Sept. 10
Bell Boy	"	" " "	7442	18.27	" 10
Florence	"	" " "	7051	50.66	" 9
Forbes Frct	"	" " "	7592	0.23	" 10
Glooscap	"	" " "	7257	32.03	" 10
Glooscap No. 2	"	" " "	7258	36.40	" 10
Glooscap No. 3	"	" " "	7259	24.09	" 10
Greater New York	"	Ludger Guere	3754	32.51	July 8
Home Run Lode	"	The Reward Gold and Silver Mining Co., Ltd., N.P.L.	4253	9.96	Sept. 7
Independent	"	" " " "	7053	32.62	" 9
J. C.	"	John W. Chism, Alexander Dodds, Samuel A. Sutherland and Bruce White	7263	51.65	Oct. 23
Jumbo	"	The Reward Gold and Silver Mining Co., Ltd., N.P.L.	7052	36.00	Sept. 9
Kootenay No. 1	"	" " " "	7247	34.90	" 9
Kootenay No. 2	"	" " " "	7248	18.00	" 10
Kootenay No. 3 Frct	"	" " " "	7250	16.55	" 10
Lardo	"	" " " "	7249	26.23	" 10
May	"	" " " "	7439	22.70	" 10
May No. 1	"	" " " "	7438	22.01	" 10
" No. 2	"	" " " "	7436	36.00	" 10
" No. 3	"	" " " "	7437	33.00	" 10
" No. 4	"	" " " "	7435	47.59	" 10
" No. 5	"	" " " "	7434	47.59	" 10
Mazama	"	Gordon Logan, John D. McDonald, James Hislop and Edward Baillie	7588	39.17	Dec. 24
Minnie Frct	"	Clara G. Westfall, administratrix of the estate of John W. Westfall, deceased, intestate	7597	29.36	Oct. 9
Morning Star	"	The Reward Gold and Silver Mining Co., Ltd., N.P.L.	7252	41.19	Sept. 10
Pedro	"	Clara G. Westfall, administratrix of John W. Westfall, deceased, intestate, and James M. Miller	7596	36.03	Dec. 23
Pilot	"	The Reward Gold and Silver Mining Co., Ltd., N.P.L.	7050	29.40	Sept. 9
Pilot Frct	"	" " " "	7254	0.14	" 10
Rattler	"	" " " "	7048	42.10	" 9
Rattler No. 1	"	" " " "	7251	41.19	" 10
Reward Frct	"	" " " "	7255	13.20	" 10

WEST KOOTENAY.—*Concluded.*

Claim.	Division.	Grantee.	Lot No.	Acres.	Date.
U and I	Trout Lake	Alice E. Jowett	7589	51.65	Oct. 22
Ukiale	"	John W. Chism, Alex. Dodds, Samuel A. Sutherland and Bruce White	7267	51.65	" 23
Union Jack	"	The Reward Gold and Silver Mining Co., Ltd., N.P.L.	7049	45.00	Sept. 9
Gilman	Lardeau	Barclay Crilly	4496	51.65	May 14
Globe	"	The Spyglass Mining and Development Co., Ltd., N.P.L.	7525	50.75	" 22
Lone Star Frct.	"	Geo. Martin and Thos. Flack	3491	5.98	Jan. 23
St. Kew	"	The Elwood Tinworkers Gold Mining Co. of Lardeau, B.C., Ltd., N.P.L.	7363	48.15	May 15
Spyglass	"	The Spyglass Mining and Development Co., Ltd., N.P.L.	7524	48.89	July 22
Western Star	"	The Elwood Tinworkers Gold Mining Co. of Lardeau, B.C., Limited, N.P.L.	7354	51.65	May 15
Western Star Frct.	"	" " " "	7355	34.77	" 15
Adventurer	Arrow Lake	Thomas Abriel	1067	27.56	" 14
Golden Eagle	"	Ellen McDougal, administratrix of the estate of Arch'd McDougal, deceased intestate	3018	44.16	Jan. 23
Iron Duke	"	Richard Smith	1068	38.68	May 13
Outlook	"	Thomas Abriel	2476	33.20	" 14
Sunshine	"	Thomas Abriel and Elizabeth Scott	2477	41.19	" 14
Watchman	"	Richard Smith	2475	40.08	" 13

BOUNDARY.

Bank of England	Grand Forks	The Granby Cons. M. S. & P. Co., Ltd.	1235S.	29.57	June 27
Bank of England Frct.	"	" " "	462S.	1.63	" 27
Black Bear	"	John Mulligan	1236S.	49.51	May 14
Black Bear Frct.	"	The Granby Cons. M. S. & P. Co., Ltd	3656	7.83	June 27
Black Eye No. 1	"	Neil McCallum and Donald Morrison	2029	33.15	Nov. 7
Dabney Frct	"	David G. Evans and Edgar H. Willett	3506	6.01	Sept. 17
Deadwood	"	Frank Coryell, Alexander McDonald, James H. Hodson and Peter Wolf	590S.	17.65	Nov. 6
Derby	"	Chas. M. Kingston	2233	52.32	Mar. 26
Emma	"	Clinton A. S. Attwood and William A. Pounder	307S.	51.65	July 22
Homestake	"	Alex. McDonald, Peter Wolf and Frank Coryell	589S.	23.50	Nov. 19
Ida	"	James Newby	575S.	45.49	Oct. 22
Joker Fractional	"	John Mulligan	1810	21.26	May 14
Jumbo	"	Alonzo V. Downs	342S.	51.65	Nov. 8
Messenger	Grand Forks	Geo. C. Rose and William H. Beach	121S.	50·56	Dec. 4
Moonlight	"	Milton D. White and John Simpson	1623	51.65	Nov. 12
Mossback	"	Alonzo V. Downs	343S.	40.57	" 8
Norton Frct.	"	James F. Cunnigham	986	16.75	Sept. 4
Old Dominion Frct.	"	Ewart G. Cummins and Melvin D. Schenk	457S.	35.23	Nov. 23
Omar	"	" " "	456S.	38.10	" 23
Pinto	"	Thomas Newby	3240	45.16	Mar. 26
Prize No. 2	"	Geo. C. Rose and William H. Beach	120S.	51.65	Dec. 4
Richmond	"	Albert E. Savage	2232	48.90	" 20
Richmond Frct.	"	Henry Johnson	2918	24.93	Mar. 5
Robinson	"	Hiram R. Parsons and Geo. T. Nye	1561	39.39	May 15
Saloon Frct	"	James T. Cunningham and William T. Smith	2457	8.75	Sept. 18
Standard	"	Michael R. Feeney	3378	32.14	May 15
Thuot	"	Chas. Patsworth and Jos. H. Graham	455S.	29.74	Sep. 18
Uncle Sam	"	William M. McKay	3239	51.10	Oct. 17
Big Monte	Greenwood	James N. Patton, Forbes M. Kerby and Adolphus R. Thomas	1239	42.18	Nov. 11
Black Bess	"	Philip B. S. Stanhope	2914	42.69	" 8
Brandenberger	"	John Charles Eek	2982	51.65	July 19
Burns	"	William F. Proctor	2911	41.00	Nov. 25
Cairngorm Fractional	"	The Vancouver and Boundary Creek Developing and Mining Co., Ltd	2853	4.48	Jan. 26
Champion Fractional	"	Joseph Martin and Isaac H. Hallett	2850	28.35	Sept. 12
Climax	"	Arthur N. Pelly	2633	43.90	Feb. 28
Copper Mine Fractional	"	William Hanna	3600	0.85	Jan. 26
Custer Frct.	"	Daniel Bresnahan	160S.	41.80	Nov. 25
Dimond Frct.	"	William Dimond and John P. McLeod	2289	16.80	Feb. 4
Double Standard	"	Elizabeth McKellar	2569	47.42	June 27
Eagle Fractional	"	Elizabeth Galloway	2282	17.95	Dec. 4
Eureka Frct.	"	John Matthews	3259	29.65	Mar. 26
Gem	"	Isaac H. Hallett, Geo. R. Naden, Edward H. Mortimer, Geo. A. Rendell and Hubert J. Bayly	2632	34.88	Sept. 18
Big Bend	"	" " "	2630	43.11	Oct. 18
Hill Frct	"	Mary A. Holbrook	2945	51.65	Sept. 17
Hope No. 2	"	Chas. J. McArthur	1849	44.30	Oct. 21
Keno	"	Forbes M. Kerby	2522	51.65	July 19
Little Chief	"	William Macy and William M. Law	1406	50.82	Jan. 7
Little Ruth	"	Duncan McIntosh, Wm. M Law, Frank J. Miller, Patrick Hickey and Harry K. Morgan	881S.	12.63	Nov. 25
London	"	Geo. M. Foster and Frank F. Ketchum	2291	44.03	Sept. 12
Lucky Shot Frct.	"	Henry J. Clint, Edgar J. Smith, Christopher H. Reeves and James E. Thompson	3310	32.81	Oct. 2
Maple Leaf	"	Robert Wood	2274	50.40	July 22
Maple Leaf Frct.	"	Francis W. Groves	2040	34.91	Sept. 16
May	"	Adolph Sercu and Joseph Hedges	2629	47.06	Mar. 27
Minneapolis Frct.	"	Isaac H. Hallett	2940	35.44	" 26
Montana	"	William L. C. Gordon	3153	42.82	Oct. 2
Montana Frct.	"	Alexander Waddell and William G. McMynn	2645	34.75	Dec. 24

BOUNDARY.—*Continued.*

Claim.	Division.	Grantee.	Lot No.	Acres.	Date.
Monte Bravo	Greenwood	James Napier Paton, Forbes M. Kerby and Adolphus R. Thomas	1241	49.84	Nov. 11
Montrose Frct.	"	Forbes M. Kerby	2654	47.01	Sept. 20
Morena Frct.	"	Isaac H. Hallett, George R. Naden, Edward H. Mortimer, George A. Rendell and Hubert J. Bayly	2631	17.82	Oct. 18
Myrtle No. 2	"	Henry J. Clint, Edgar J. Smith, Christopher H. Reeves and James E. Thompson	3553	25.33	" 2
Northern Bell	"	Henry J. Clint, Edgar J. Smith, Christopher H. Reeves and James E. Thompson	3552	45.71	" 2
No. 9.	"	Harry L. Morgan, Patrick Hickey, Frank J. Miller, William M. Law and Duncan McIntosh	883S.	13.65	Nov. 25
Optic	"	Edmund T. Wickwire and James T. Erwin	966	33.25	" 22
Ottawa Frct.	"	Thomas Hemmerle and Hugh McKee	3503	40.96	Oct. 2
Putnam	"	John Matthews	3150	51.49	Mar. 26
Ruby	"	Edward Pope	452S.	49.10	Nov. 23
Salamanca Frct.	"	Sydney M. Johnson and Sidney S. Oppenheimer	2902	50.09	Oct. 10
San Juan	"	Joseph Martin and Isaac H. Hallett	2849	46.00	Nov. 4
Summit	"	Dougal McInnes, George W. Rumberger and Thomas Roderick	2157	49.55	Sep. 3
Teutonia Frct	"	John W. Frost and Mary T. McMynn	2392	23.86	Mar. 5
Victor Frct.	"	Andrew Thisted and Patrick W. George	445S.	0.32	Jan. 7
Virginius.	"	John Mulligan and William Hanna	1950	45.77	Oct. 2
W. S.	"	Elizabeth Galloway	2281	40.60	Dec. 4
Wallace Frct.	"	Forbes M. Kerby	1539	39.51	Sep. 12
Windsor Frct.	"	John O. Thompson	3008	28.50	Nov. 2
Woodstock	"	Adolph Sercu	2627	48	Mar. 27
Bones Fractional	Osoyoos	Peter Scott	2669	7.0	Oct. 10
Buller	"	The Dominion Cons. Mines Co., Ltd., N.P.L.	554S.	49.97	Aug. 23
Cabin No. 3 Frct.	"	Duncan Woods	494S.	40.11	Sep. 6
Castle Fractional	"	John Gladden, Fred'k W. Gladden, James N. Paton, Walter E. Hodges, Duncan Woods, Frederick M. Elkins and Clinton A. S. Attwood	38S.	36.10	Feb. 2
Columbia Frct.	"	Duncan Woods	495S.	41.70	Sep. 7
Cracker Jack	"	Louis O. Hedland, John Greenhill and Hans P. Nelson	3278	51.65	Mar. 4
Fairview	"	The Dominion Cons. Mines Co., Ltd., N.P.L.	556S.	41.51	Aug. 23
Fairy Queen	"	John Gladden, Fred'k W. Gladden, James N. Paton, Walter E. Hodges, Duncan Woods, Fred'k M. Elkins and Clinton A. S. Attwood	40S.	51.07	Feb. 2
Glenwood Frct.	"	Myron K. Rodgers	3465	21.09	May 14
Greenwood	"	Duncan Woods	3114	48.72	Sep. 6
Haligonian	"	The Dominion Cons. Mines Co., Ltd., N.P.L.	557S.	40.31	Aug. 23
Iron Plate Frct.	"	Chas. E. Oliver	1980	5.82	Sep. 3
Ironsides	"	James F. Campbell, Henry W. Yates and Sydney M. Johnson	724	44.30	Sep. 13
Kitchener	"	The Dominion Cons. Mines Co., Ltd., N.P.L	552S.	30.21	Aug. 23
O. I. C. Frct.	"	Louis O. Hedlund, John Greenhill and Hans P. Nelson	3276	39.80	Mar. 4
Pinnacle	"	Duncan Woods	41S.	30.00	Sep. 6
Red Top	"	John Gladden, Fred. W. Gladden, James N. Paton, Walter E. Hodges, Duncan Woods, Frederick M. Elkins and Clinton A. S. Attwood	36S.	50.93	Feb. 2
Roberts	"	The Dominion Cons. Mines Co., Ltd., N.P.L.	555S.	48.13	Aug. 23
Somerset	"	John Gladden, Fred'k W. Gladden, James N. Paton, Fred'k M. Elkins, Walter E. Hodges, Duncan Woods and Charles A. S. Attwood	39S.	15.60	Feb. 2
Sweden	"	Duncan Woods	42S.	37.38	Nov. 23
Union Jack	"	"	493S.	51.65	Sep. 6
Valentine	"	"	496S.	47.38	" 7
Big Bend	Similkameen	Isaac H. Hallett, George R. Naden, Edw'd H. Mortimer, George A. Rendell and Hubert J. Bayly	2630	43.11	Oct. 18
Chicago	"	William H. Armstrong	260	19.22	Sep. 3
Homestead Fractional	"	Geo. B. Lyon	3409	20 76	" 13
Klondyke	"	Albert E. House, Benjamin Baker and Thos. J. McAlpine	378S.	41.19	" 18
No. 66 Frct.	"	Mary A. Voigt	58S.	50.87	Jan. 24
No. 67	"	"	59S.	38.14	" 24
No. 68	"	"	60S.	39.56	" 24
No. 69	"	Nettie H. Stuart	61S.	30.43	Oct. 30
Rifle	"	William H. Thomas	2046	41.22	Sep. 17
America	Nicola	Samuel J. Bate	1533	50.62	Dec. 16
Big Dutchman	"	John E. Bate	1531	39.79	" 16
Black Prince	"	Isaac Eastwood	1565	40.84	" 13
Fortuna No. 2	"	Fraser River Copper Mining Co	1593	51.4	" 23
Fortuna No. 3	"	" "	1594	51.65	" 23
Frisco	"	John E. Bate	1534	51.65	" 16
Pekin	"	"	1545	51.65	" 16
Bonanzy	Lillooet	Geo. A. Stanton, Henry T. Ceperley, Francis W. Rounsefell, Alex. D. Irving, Louis Bayard, Otto Delevere, James J. Kenny, Joseph M. Biggert, William S. Banta, John W. G. Cofran, Richard M. Bissell, Chas. H. Tupper, John Hendry	2269	51.65	April 11
St. Verd	"	" " "	2270	50.52	" 11
St. V. Frct	"	" " "	2277	46.10	" 11
U. V. Frct.	"	" " "	2272	33.50	" 11
United Verd No. 1	"	" " "	2273	49.51	" 11
" No. 2	"	" " "	2274	17.90	" 11
" No. 3	"	" " "	2275	44.60	" 11

BOUNDARY.—*Concluded.*

Claim.	Division.	Grantee.	Lot No.	Acres.	Date.
United Verd No. 4	Lillooet	Geo. A. Stanton, Henry T. Ceperley, Francis W. Rounsefell, Alex. D. Irving, Louis Bayard, Otto Delevere, James J. Kenny, Joseph M. Biggert, William S. Banta, John W. G. Cofran, Richard M. Bissell, Chas. H. Tupper, John Hendry	2271	47.35	April 11
" No. 5	"	" " "	2278	51.41	" 11
" No. 6	"	" " "	2276	51.65	" 11

VANCOUVER ISLAND AND COAST.

Ballarat	Alberni	The Southern Cross Copper Mine Co., N.P.L	330	45.79	Dec. 9
Emily R	"	Ernest V. Bodwell	696	32	Oct. 18
Lord of the Isles No. 4	"	"	695	23.61	" 18
Rainy Day	"	William M. Brewer	379	41.50	Aug. 29
Southern Cross	"	The Southern Cross Copper Mine Co., Ltd., N.P.L	329	29.75	Dec. 9
Brooklyn	Clayoquot	The British Pacific Gold Property Co., Ltd	701	19.81	Dec. 17
Dew Drop Frct	"	Edgar Dewdney and Arthur R. Springett	581	26.52	Nov. 9
Grey Mute	"	The British Pacific Gold Property Co., Ltd	706	50.67	Dec. 17
New York	"	" " "	703	16.94	" 17
Omaha	"	" " "	702	33.53	" 17
Rebecca	"	" " "	706	8.46	" 17
Seattle	"	" " "	700	36.02	" 16
Tacoma	"	" " "	704	46.46	" 17
Nella C	Nanaimo	Donald McCallum	436	37.06	Dec. 4
Countess Fractional	Victoria	Samuel Erb	7 G	0.50	Feb. 27
Dora	"	The Koksilah Mining Co., Ltd., N.P.L	35 G	51.65	Sept. 3
Duchess	"	Samuel Erb	4 G	49.90	Feb. 27
Duke	"	"	3 G	48.50	" 27
King George	"	"	5 G	51.65	" 27
Lawarance	"	James L. Hird	20 G	51.65	Aug. 31
Lion Frct	"	"	15 G	47.62	" 31
Mabel	"	Koksilah Mining Co., Ltd., N.P.L	36 G	51.65	Sept. 3
Orwell	"	James L. Hird	3 G	33.76	Aug. 31
Princess Frct	"	Samuel Erb	6 G	13.10	Feb. 27
Queen	"	"	2 G	50.80	" 27
Rock Bluff	"	James L. Hird	1 G	47.62	Aug. 31
Ruby Frct	"	The Koksilah Mining Co., Ltd., N.P.L	37 G	9.1	Sept. 3
Thalia	"	Jerry S. Rogers	127 G	49.82	Nov. 4
Victoria	"	Samuel Erb	1 G	46.32	Feb. 27
Agnes Fractional	New Westminster	William M. Humphreys	2018	10.72	Nov. 9
Alice Fractional	"	John A. Flett	2323	34.18	Dec. 13
Amy Fractional	"	John F. Humphreys	2093	16.76	Nov. 9
Angel No. 2	"	John A. Flett	1948	3.35	Dec. 13
Angel No. 3	"	"	2279	47.58	" 13
Banker	"	James Dixon and C. Maude Wickenden	1950	28.89	Aug. 19
Black Prince	"	William Whalen	1972	6.86	Feb. 4
Bluff Fractional	"	The Britannia Copper Syndicate, Ltd., N.P.L	1971	31.97	Dec. 28
Britannia	"	William M. Humphreys	1996	28.55	Nov. 8
Casher	"	James Dixon and C. Maude Wickenden	1949	19.68	Aug. 19
Charmer	"	Bertha M. Clark	2021	51.65	Mar. 4
Etta Frct	"	John A. Flett	2322	15.8	Dec. 13
Europe	"	George E. Davis	1974	12.50	Jan. 9
Helen	"	Wm. M. Humphreys	1991	51.65	Nov. 8
Ike	"	David Sanguinete, Girolano Lavagnino and Thos. T. Scott	1975	26.00	Jan. 9
Khedive Frct	"	William M. Humphreys	1999	22.60	Nov. 8
Lottie H	"	"	1882	51.65	" 8
Mountain View Frct	"	Geo. E. Davies	2267	1.84	Mar. 5
Pasha	"	William M. Humphreys	1994	50.82	Nov. 8
Rose Frct	"	"	2013	17.68	" 8
Shannie Frct	New Westminster	William M. Humphreys	1992	3.47	Nov. 8
South Valley	"	"	1635 A	49.17	" 2
Speculator	"	John A. Flett	2321	37.02	Dec. 11
Standard	"	"	2280	50.12	" 11
Sulton Frct	"	William M. Humphreys	2012	28.54	Nov. 8
Summit Frct	"	"	1998	37.56	" 2
Wandering Jew	"	The Britannia Copper Syndicate, Ltd., N.P.L	2084	39.24	Dec. 4
Winston Frct	"	William M. Humphreys	2015	15.29	Nov. 8

GOLD COMMISSIONERS AND MINING RECORDERS.

Mining Divisions.	Location of Office.	Gold Commissioner.	Mining Recorder.	Sub-Recorder.
Atlin Mining Division	Atlin	J. A. Fraser		
Sub-office	Discovery City			Malcolm Ross.
"	Telegraph Creek			Jas. Porter.
"	Wynnton			W. H. Simpson.
"	Haines (U. S.)		(Com. for taking Affidavits)	Risdon M. Odell.
Stikine Mining Division	Telegraph Creek	Jas. Porter	Jas. Porter	
Liard "	"	"	"	
Skeena Mining Division	Port Simpson	William Manson	William Manson	Herbert Young.
Sub-office	Kitimat			Geo. L. Anderson.
"	Prince Rupert			W. H. Vickers.
"	Essington			Geo. A. Shade.
"	Stewart (Portland Canal)			Robt. M. Stewart.
"	Unuk River			Burt E. Daily.
"	Hartley Bay			Ed. McCoskrie.
Bella Coola Mining Div.	Port Simpson	William Manson (at Port Simpson)	William Manson (at Port Simpson.)	
Sub-office	Bella Coola			Chris. Carlson.
Queen Charlotte Mining D.		William Manson (at Port Simpson)		
" "	Jedway		E. M. Sandilands	
Sub-office	Skidegate			John Mathers.
"	Masset			C. Harrison.
Omineca Mining Division	Hazelton	Fred W. Valleau		
" "	"		Jas. E. Kirby	
Sub-office	Fort Grahame			Wm. Fox.
"	Fort St. James			Alex. C. Murray.
"	Fort St. John			F. W. Beatton.
"	Manson Creek			Ezra Evans.
"	Aldermere			R. Gale.
"	Skeena Canyon			J. H. Patterson.
"	Lorne Creek			F. E. Holt.
Cariboo Mining Division	Barkerville	Geo. J. Walker	R. C. S. Randall	
Sub-office	Quesnel			David H. Anderson.
Quesnel Mining Division		Geo. J. Walker (at Barkerville)		
" "	150-Mile House		C. W. Grain	
Sub-office	Quesnel			David H. Anderson.
"	Quesnel Forks			Geo. E. Stephenson.
Clinton Mining Division	Clinton	F. Soues	F. Soues	
Lillooet "	Lillooet	C. Phair A. M. Ego, Deputy	C. Phair A. M. Ego, Dep.	
Kamloops Mining Division	Kamloops	G. C. Tunstall	E. T. W. Pearse	
Ashcroft "	Ashcroft	" (at Kamloops)	H. P. Christie	
Similkameen "	Princeton	" "	Hugh Hunter	
Sub-office	Hedley	" "		Carl Hairsine.
Nicola Mining Division	Nicola	" "	Geo. Murray	
Yale "	Yale	" "	Wm. Dodd	
Vernon Mining Division	Vernon	L. Norris	H. F. Wilmot	
Greenwood Mining Div.	Greenwood	W. G McMynn	Geo. Cunningham	
Sub-office	Vernon			H. F. Wilmot.
"	Camp McKinney			H. Nicholson.
"	Beaverdell			F. F. Ketchum.
Grand Forks Min. Div.	Grand Forks	S. R. Almond	S. R. Almond	

GOLD COMMISSIONERS AND MINING RECORDERS.—*Concluded.*

Mining Divisions.	Location of Office.	Gold Commissioner.	Mining Recorder.	Sub-Recorder.
Osoyoos Mining Division..	Fairview.....	J. R. Brown	Howard A. Turner.	
Sub-office	Olalla.....	.....	.....	John McDonald.
"	Hedley	.....	.....	Carl Hairsine.
Golden Mining Division..	Golden	J. E. Griffith	F. H. Bacon	Colin Cameron.
Windermere " ..	Wilmer.....	" (at Golden)	E. J. Scovil.....	
Fort Steele Mining Div...	Cranbrook	J. F. Armstrong...	.....	
Sub-office	Steele.....	.....	.....	Joseph Welsh.
"	Fernie.....	.....	.....	J. H. McMullin.
"	Moyie	.....	.....	Fred. J. Smyth.
"	Marysville	.....	.....	Louis E. Herchmer.
Ainsworth Mining Div ...	Kaslo	E. E. Chipman	R. J. Stenson	Wm. John Green.
Sub-office	Howser.....	.....	.....	W. Simpson.
"	Poplar Creek.....	.....	.....	J. Simpson.
"	Trout Lake	.....	.....	F. C. Campbell.
Slocan Mining Division...	New Denver	E.E. Chipman (at	Angus McInnes ...	
Sub-office	Sandon	..... Kaslo)	.....	W. J. Parham.
Slocan City Mining Div...	Slocan City	" "	H. R. Jorand.....	
Trout Lake Mining Div..	Trout Lake	" "	F. C. Campbell....	
Sub-office	Poplar Creek.....	....	....	J. Simpson.
Nelson Mining Division ..	Nelson	Harry Wright	P. J. Gleazer.....	
Sub-office	Creston.....	.....	.....	J. Wilson.
"	Ymir.....	....	.....	J. A. Fraser.
Arrow Lake Min. Division	Nakusp.....	" (at Nelson)	W. Scott	
Sub-office	Vernon.....	.....	.....	H. F. Wilmot.
Revelstoke Mining Div...	Revelstoke.....	Robt. Gordon	W. E. McLauchlin.	Edward Edwards.
Lardeau Mining Division.	Camborne.....	" (at Revelstoke)	B. E. Drew	
Trail Creek Mining Div...	Rossland	John Kirkup.....	J. E. Hooson.....	
Nanaimo Mining Division	Nanaimo	Marshal Bray	Marshal Bray	
Sub-office	Ladysmith.....	.....	.....	J. Stewart.
"	Alert Bay	.....	.....	W. Woollacott.
"	Van Anda	.....	.....	Geo. McK. McLeod
"	Heriot Bay	....	.....	W. F. Armstrong.
Alberni Mining Division..	Alberni.....	H. C. Rayson	H. C. Rayson	
Clayoquot " ..	Clayoquot	" (at Alberni)	W. T. Dawley	
Quatsino " ..	Yreka.....	" "	O. A. Sherberg....	
Victoria Mining Division..	Victoria	R. A. Renwick....	G. V. Cuppage	
New Westminster Min. D.	New Westminster.	C. C. Fisher	John Mahony	
Sub-office	Vancouver	.....	.....	R. J. Skinner.
"	Harrison Lake	.....	.....	L. A. Agassiz.
"	Chilliwhack	.....	.....	J. Pelly.

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LIST OF ILLUSTRATIONS.

VICTORIA, B.C.
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Victoria, Government Printing Office, 1908.

Author.

Robertson, William Fleet. *(Provincial Mineralogist.)*

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