

ANNUAL REPORT  
OF THE  
MINISTER OF MINES

FOR THE  
YEAR ENDING 31st DECEMBER,  
1900,

BEING AN ACCOUNT OF  
MINING OPERATIONS FOR GOLD, COAL, ETC.,

IN THE  
PROVINCE OF BRITISH COLUMBIA.



---

VICTORIA, B. C.:  
Printed by RICHARD WOLFENDEN, Printer to the King's Most Excellent Majesty.  
1901.

---

---

REPORT  
OF THE  
MINISTER OF MINES,  
1900.

---

*To His Honour The Honourable SIR HENRI GUSTAVE JOLY DE LOTBINIÈRE, K. C. M. G.,  
Lieutenant-Governor of the Province of British Columbia.*

MAY IT PLEASE YOUR HONOUR:

The Annual Report of the Mining Industries of the Province for the year 1900 is herewith respectfully submitted.

RICHARD McBRIDE,

*Minister of Mines.*

*Minister of Mines' Office,*

*March 11th, 1901.*



RAINY HOLLOW--HEADWATERS OF KLEHINI RIVER--CHILKAT M. D.--B. C.

---

---

# REPORTS

—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, 1900.

The following 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.*

*Victoria, B. C., March 11th, 1901.*

## MINERAL PRODUCTION OF BRITISH COLUMBIA.

:o:

### METHOD OF COMPUTING PRODUCTION.

In assembling the output of the lode mines in the following tables, the established custom of this Department 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 output of the mine for 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 of 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 included 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 1900.

Gold, placer.....	\$ 62,584,443
Gold, lode.....	12,812,860
Silver.....	13,649,809
Lead.....	7,619,956
Copper.....	4,362,583
Coal and Coke.....	49,140,917
Building stone, bricks, etc.....	1,950,000
Other metals.....	34,640
Total.....	\$152,155,208

TABLE II.

#### PRODUCTION FOR EACH YEAR FROM 1890 TO 1900 (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
Total.....	\$152,155,208

Table III. gives a statement in detail of the amount and value of the different mineral products for the years 1898, 1899 and 1900. As it has been impossible as yet to collect accurate statistics regarding building stone, lime, bricks, tiles, etc., these are estimated.

TABLE III.

## AMOUNT AND VALUE OF MINERAL PRODUCTS FOR 1898, 1899 AND 1900.

	Customary Measure.	1898.		1899.		1900.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold, placer.....	Ounces.....	32,167	\$ 643,346	67,245	\$ 1,344,900	63,936	\$ 1,278,724
" lode.....	".....	110,061	2,201,217	138,315	2,857,573	167,153	3,453,381
Silver.....	".....	4,292,401	2,375,841	2,939,413	1,663,708	3,958,175	2,309,200
Copper.....	Pounds.....	7,271,678	874,781	7,722,591	1,351,453	9,997,080	1,615,289
Lead.....	".....	31,693,559	1,077,581	21,862,436	878,870	63,358,621	2,691,887
Coal.....	Tons, 2,240 lbs	1,135,865	3,407,595	1,306,324	3,918,972	1,439,595	4,318,785
Coke.....	" "	35,000	175,000	34,251	171,255	85,149	425,745
Other materials.....	".....		151,500		206,400		251,740
			\$10,906,861		\$12,393,131		\$16,344,751

TABLE IV.

## PRODUCTION OF MINERAL BY DISTRICTS AND DIVISIONS.

NAME.	DIVISIONS.			DISTRICTS.		
	1898.	1899.	1900.	1898.	1899.	1900.
CARIBOO DISTRICT.....				\$ 389,360	\$ 381,900	\$ 684,527
Cariboo Mining Division.....	\$ 159,500	\$ 180,000	\$ 162,000			
Quesnel ".....	214,860	193,300	510,000			
Omineca ".....	15,000	8,600	12,527			
CASSIAR DISTRICT.....				107,300	819,380	467,479
KOOTENAY, EAST, DISTRICT.....				161,370	523,668	2,855,851
KOOTENAY, WEST, DISTRICT.....				6,042,975	6,187,859	6,020,783
Ainsworth Division.....	159,801	297,930	349,465			
Nelson ".....	694,880	879,185	787,082			
Slocan ".....	2,619,852	1,740,372	2,063,908			
Trail Creek ".....	2,470,811	3,229,086	2,739,300			
Other parts.....	97,631	41,286	81,028			
LILLOOET DISTRICT.....				47,814	69,558	88,493
YALE DISTRICT.....				432,512	315,865	1,422,465
Oboyoos (Grand Forks-Kettle River) Division.....	364,112	234,167	1,358,383			
Similkameen Division.....	7,560	6,609	4,800			
Yale ".....	60,840	75,089	59,282			
COAST DISTRICTS (Nanaimo, Alberni, W. Coast V. I., Victoria).....				3,725,530	4,094,903	4,805,153
				\$10,906,861	\$12,393,131	\$16,344,751

## PLACER GOLD.

Table V. 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 for 1898 and 1899, 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 V.

## YIELD OF PLACER GOLD PER YEAR TO DATE.

1858.....	\$ 705,000	1880.....	\$1,013,827
1859.....	1,615,070	1881.....	1,046,737
1860.....	2,228,543	1882.....	954,085
1861.....	2,666,118	1883.....	794,252
1862.....	2,656,903	1884.....	736,165
1863.....	3,913,563	1885.....	713,738
1864.....	3,735,850	1886.....	903,651
1865.....	3,491,205	1887.....	693,709
1866.....	2,662,106	1888.....	616,731
1867.....	2,480,868	1889.....	588,923
1868.....	3,372,972	1890.....	490,435
1869.....	1,774,978	1891.....	429,811
1870.....	1,336,956	1892.....	399,526
1871.....	1,799,440	1893.....	356,131
1872.....	1,610,972	1894.....	405,516
1873.....	1,305,749	1895.....	481,683
1874.....	1,844,618	1896.....	544,026
1875.....	2,474,004	1897.....	513,520
1876.....	1,786,648	1898.....	643,346
1877.....	1,608,182	1899.....	1,344,900
1878.....	1,275,204	1900.....	1,278,724
1879.....	1,290,058		
		Total.....	\$62,584,443

TABLE VI.

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

## 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	<i>Nil.</i>	<i>Nil.</i>			73,948
1891..			4,500	4,000	<i>Nil.</i>	<i>Nil.</i>			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
Total.	690,615	\$12,812,860	22,570,953	\$13,649,809	206,081,558	\$7,610,956	35,412,605	\$4,362,583	\$38,445,208

TABLE VII.—PRODUCTION IN DETAIL OF THE

DISTRICT.	YEAR	TONS.	GOLD—PLACER.		GOLD—LODS.		SILVER.		COPPER.	
			Ounces.	Value.	Ounces.	Value.	Ounces.	Value.	Pounds.	Value.
				\$		\$		\$		\$
<b>Cariboo</b> .....										
Cariboo Division...	1897		6,250	125,000						
	1898		7,975	156,500						
	1899		9,000	180,000						
	1900		8,100	162,000						
Quesnel " .....	1897		10,000	200,000						
	1898		10,743	214,860						
	1899		9,665	193,300						
	1900		25,500	510,000						
Omineca " .....	1898		750	15,000						
	1899		430	8,600						
	1900		626	12,527						
<b>Cassiar</b> .....										
Atlin Lake Division...	1898		3,750	75,000						
	1899		40,000	800,000						
	1900	300	22,500	450,000	120	2,479				
All other Divisions ..	1897		1,353	37,060						
	1898		1,615	32,300						
	1899		969	19,380						
	1900		750	15,000						
<b>East Kootenay</b> .....										
Fort Steele Division ..	1897	2,497	600	12,000			116,657	69,780		
	1898	1,971	530	* 17,000			69,780	35,623		
	1899	716	500	* 10,000			33,516	18,970		
	1900	86,368	500	10,000			960,411	560,308		
Other Divisions .....	1899	13					1,627	921	397	69
	1900	94	15	300			2,219	1,295	2,147	948
<b>West Kootenay</b> .....										
Ainsworth Division ..	1897	5,556					624,678	313,607		
	1898	1,723					167,147	93,515	203	24
	1899	3,760			91	1,588	268,165	151,731		
	1900	5,313			26	578	352,167	205,454		
Nelson " .....	1897	50,014			2,076	41,520	961,124	574,752	3,453,644	172,682
	1898	52,762			3,322	76,459	692,367	383,225	1,965,083	235,196
	1899	58,302			16,569	342,303	438,659	273,751	1,370,513	239,840
	1900	94,378	30	600	31,612	653,106	109,370	64,098	36,929	5,979
Slocan " .....	1897	33,567			193	3,360	3,641,287	2,177,490		
	1898	30,691			60	1,194	3,068,648	1,698,496		
	1899	21,607			14	284	1,891,025	1,070,320		
	1900	25,520			5	103	2,121,176	1,237,435		
Trail Creek " .....	1897	68,304			97,024	1,940,480	110,068	65,821	1,319,586	90,979
	1898	111,282			87,343	1,748,861	170,804	94,539	5,232,011	629,411
	1899	172,665			102,976	2,127,482	136,318	105,173	5,693,889	996,431
	1900	217,636			111,625	2,306,172	167,378	97,648	2,071,865	335,435
All other Divisions ..	1897	1,731	300	6,000	9	180	116,657	69,761		
(Revelstoke, Trout Lake, Lardeau.)	1898	621	552	11,040	346	6,923	121,510	67,256		
	1899	294	300	6,000	118	2,439	48,463	27,430	1,120	196
	1900	622	250	5,000	208	4,297	96,416	56,249		
<b>Lillooet</b> .....										
	1897	755	1,874	37,480	113	2,360				
	1898	900	2,130	42,614	260	5,200				
	1899	1,557	2,135	42,700	1,300	26,858				
	1900	5,713	1,845	36,905	2,497	51,533				
<b>Yale</b> .....										
Osoyoos Division ..	1897	6,098	440	8,800	6,674	133,480	1,174	702		
(Grand Forks, Ket- tle River.)	1898	14,320	382	7,632	17,324	356,480				
	1899	13,034	180	3,600	11,066	229,028	2,719	1,539		
	1900	103,426			13,133	374,628	112,145	65,426	5,672,177	918,325
† Similkameen Div'n. (Vernon.)	1897		1,175	23,500						
	1898		373	7,560						
	1899	1	330	6,600			16	9		
	1900		240	4,800						
Yale Division .....	1897		2,934	58,680						
(Ashcroft, Kaml'ps.)	1898		3,042	60,840						
	1899	538	3,736	74,730	2	45	47	27	1,700	297
	1900	† 580	2,377	57,542						
<b>Coast and other Dis- tricts (Nanaimo, Al- berni, W. Coast V. I., Victoria).</b>	1897	290	250	5,000	47	940	1,426	853	51,950	2,597
	1898	1,159			405	8,100	2,145	1,187	84,381	10,150
	1899	14,901			6,159	127,241	24,858	13,782	654,972	114,630
	1900	14,346	703	14,050	2,925	60,430	36,398	21,232	2,139,962	355,202
<b>‡ Miscellaneous</b> .....	1897									
(building stone, brick, etc., other metals, etc)	1898									
	1899									
	1900									
<b>TOTALS</b> .....	1897	169,362	25,676	513,520	106,141	2,129,320	5,472,971	3,272,336	5,825,180	266,258
	1898	215,944	32,167	643,346	110,061	2,501,217	4,392,401	2,375,941	7,271,678	374,781
	1899	287,343	67,245	1,344,900	138,315	2,367,573	2,989,413	1,663,708	7,722,591	1,351,453
	1900	554,796	63,936	\$1,273,724	167,153	\$3,453,331	3,953,175	\$2,909,200	9,997,060	\$1,615,289

\* Estimated. † 100 oz. Platinum in 1898, \$1,500.



METALLIFEROUS MINES FOR 1897, 1898, 1899, AND 1900.

LEAD.		TOTALS FOR DIVISIONS.				TOTALS FOR DISTRICTS.			
Pounds.	Value.	1897.	1898.	1899.	1900.	1897.	1898.	1899.	1900.
	\$	\$	\$	\$	\$	\$	\$	\$	\$
		125,000				325,000	360,360	381,900	684,527
			159,600						
				180,000					
		200,000			162,000				
			214,860						
				198,300					
			15,000		510,000				
				8,600					
					12,527				
			75,000			37,060	107,300	818,380	467,479
				800,000					
		37,060			452,479				
			82,300						
				19,380					
					15,000				
						168,796	133,368	66,294	2,215,560
2,291,451	82,036	163,796							
2,286,608	77,745		133,368						
881,167	35,423			61,393					
33,494,077	1,639,848				2,210,151				
22,653	911			1,901					
81,354	3,466				5,409				
						6,765,708	6,042,975	6,187,359	6,020,733
3,543,237	126,848	440,545							
1,978,297	67,262		159,801						
3,588,677	144,261			297,930					
3,366,962	143,433				349,465				
7,291	261	739,215							
			694,880						
579,245	23,286			879,185					
1,485,899	63,299				787,082				
30,707,705	1,099,336	3,280,686							
27,063,695	920,162		2,619,352						
16,660,910	669,768			1,740,372					
19,565,743	826,310				2,063,908				
		2,097,230							
			2,470,811						
				3,229,086					
					2,739,500				
1,045	45								
2,291,451	82,036	157,977							
865,064	12,412		97,631						
129,884	5,231			41,236					
363,439	15,432				81,023				
		39,840				39,840	47,314	69,558	83,493
			47,314						
				69,558					
					83,493				
						226,762	432,512	315,365	1,420,725
		142,982							
			364,112						
				234,167					
102	4				1,358,363				
		25,100							
			7,560						
				6,609					
		58,680			4,800				
			60,340						
				75,089					
					57,542				
		9,390				9,390	19,437	255,648	450,914
			19,437						
				255,648					
					450,914				
		150,000				150,000	150,000	206,400	251,740
			150,000						
				206,400					
					251,740				
						\$ 7,717,551			
38,841,135	1,390,517								
31,693,559	1,077,581						\$ 7,822,798		
21,862,436	878,870							\$ 8,302,904	
63,353,621	\$2,691,837				11,600,221				11,600,221

‡ Iron Ore † Building Stone, \$250,000; Iron, \$1,740.

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

Coal.		
YEARS.	TONS (2,240 lbs.)	VALUE.
1836-52 .....	10,000	\$ 40,000
1852-59 .....	25,396	101,592
1859 (2 months).....	1,989	7,956
1860 .....	14,246	56,988
1861 .....	13,774	55,096
1862 .....	18,118	72,472
1863 .....	21,345	85,380
1864 .....	28,632	115,528
1865 .....	32,819	131,276
1866 .....	25,115	100,460
1867 .....	31,239	124,956
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
<b>Total</b> .....	<b>15,963,471 tons.</b>	<b>\$48,271,937</b>
Coke.		
1895-6 .....	1,565	\$ 7,825
1897 .....	17,831	89,155
1898 (estimated) .....	35,000	175,000
1899 .....	34,251	171,255
1900 .....	85,149	425,745
<b>Total</b> .....	<b>173,796 tons.</b>	<b>\$ 868,980</b>

# TABLE

Showing Comparative Mineral Production for 1899 of British Columbia and Other Provinces of the Dominion.

	Dominion Total.	YUKON TERRITORY.	
Gold .....		\$16,000,000	
		BRITISH COLUMBIA.	ALL OTHER PROVINCES COMBINED.
Gold .....	5,049,790	\$4,202,478	\$ 847,257
Silver .....	1,354,371	1,663,708	170,663
Copper .....	2,655,819	1,851,453	1,803,866
Lead .....	977,250	878,870	98,380
Iron .....	243,872	5,575	242,797
Nickel .....	2,067,840	—	2,067,840
Coal .....	9,040,058	3,882,396	5,157,662
Coke .....	350,022	171,255	178,767
Total .....		\$12,155,730	\$10,067,232

# TABLE

Showing Comparative Mineral Production for 1900 of British Columbia and Other Provinces of the Dominion.

	Dominion Total.	YUKON TERRITORY.	
Gold .....		\$22,275,000	
		BRITISH COLUMBIA.	ALL OTHER PROVINCES COMBINED.
Gold .....	\$5,441,752	\$4,722,105	\$ 619,647
Silver .....	2,730,598	2,309,200	421,398
Copper .....	3,063,119	1,615,289	1,447,830
Lead .....	2,760,521	2,691,887	68,634
Iron .....	584,898	1,740	583,158
Nickel .....	3,327,707	—	3,327,707
Coal .....	12,668,475	4,818,785	8,349,690
Coke .....	699,140	425,745	223,395
Total .....		\$16,084,751	\$15,041,459

## PROGRESS OF MINING.

—o—

It is with great satisfaction that we can this year again point to our statistics as proof of our rapidly increasing importance as a mining community.

Our total yearly output, while in itself not inconsiderable, is not as yet very large in comparison with that of some of the older mining countries, but it must be remembered that lode mining in British Columbia is the growth of the last six or seven years.

It is not the amount of the present output so much as the wonderfully rapid growth of the mining industry indicated thereby, which causes our present satisfaction and confidence in the future.

As has previously been said in the Reports of this Department, our actual growth as a mining community must and will be measured by our actual output, as shown by reliable statistics, and it is such actual output alone that can give us, as a Province, a standing among the mineral-producing countries of the world.

It is, therefore, best to let the statistics of the output actually made speak for themselves, and attention will simply be directed to the preceding tables.

Table I. shows the total amount which the mining industry of the Province has already, though but in its infancy, contributed to the wealth of the world, and gives details as to the minerals from which such amount was derived.

As may be seen, the wealth so contributed amounts to \$152,155,208, which has been chiefly derived from—in order of importance—gold, \$75,397,303; coal and coke, \$49,140,917; silver, \$13,649,809, and lead, \$7,619,956.

Table II. shows the amounts contributed yearly to make up this grand total, and the rapidly increasing sums credited to the recent years illustrate, as nothing else can, the growth during these years of mining in the Province.

From this table it will be seen that the value of the mineral output of the Province for the year 1900, the closing year of the century, amounts to \$16,344,751, as against an output of \$12,393,131 for 1899, an increase of \$3,951,620, and a proportionate growth for last year of nearly 32 per cent.

Table III. shows in detail the amount and value of the mineral products for the last three years, and it is interesting to note the increases made in the various products during this time. Calculated out into percentages, the following is what this table shows:—

Placer gold in 1900 shows a	5 %	decrease from 1899, and	99 %	increase over 1898.
Lode gold	21 %	increase over	57 %	" "
Combined gold	12½ %	" "	66 %	" "
Silver	39 %	" "	3 %	decrease from "
Copper	19½ %	" "	85 %	increase over "
Lead	206 %	" "	150 %	" "
Coal	10 %	" "	27 %	" "
Coke	148½ %	" "	143 %	" "
Other materials	22 %	" "	66 %	" "
Total output	32 %	" "	50 %	" "

These figures speak so eloquently of the growth of the industry that further comment seems scarcely necessary.

Table IV. shows the various districts and mining divisions, and the total value of the output which has been derived from each during the last three years.

Table V. shows the yield of placer gold for each year from 1858 to date, and it will be seen that the yield for 1900 was \$1,278,724, which amount—although less than that of 1899—was greater than any other previous year since 1879.

Table VI. shows the production of the lode mines of the Province since 1887. "Mining," in the popular acceptation of the term, means lode mining, as distinct from coal mining and placer mining, and it is to lode mining only that Table VI. refers.

The growth of lode mining in the Province is better shown by Table Lode Mining. VI. than it could be in any other way. It will be seen that in 1894 the total value of the output from the lode mines of the Province was \$781,342, in which year we may be said to have had our beginning as a mining community. We had then practically an unproven country, no railways ran through the mining districts, and there were no facilities for the treatment of ores.

In 1895 the value of the output of our lode mines had grown to \$2,342,397, and it has increased year by year, reaching the sum of \$6,751,604 in 1899, while in 1900 it amounts to \$10,069,757, an increase over last year of \$3,318,153, and equivalent to a gain of 49 per cent., a growth which is certainly a subject for congratulation.

The number of producing mines has this past year also increased materially, for in 1899 the total number of mines shipping over 100 tons during the year was 43, while in 1900 some 60 mines shipped each over 100 tons, and 39 other mines shipped various quantities of less than 100 tons.

Of the mines producing in 1899, most of them still remain in the list for 1900, although a few have dropped out this year for one cause or another; but the greatly increased tonnage of ore mined, 93% greater than in 1899, is made up from the increased output of the older mines, an argument in favour of the persistency of the ore bodies.

The list of producers contains, however, a number of new mines that may be said to have graduated from prospects into producers, and the following table, which speaks for itself, shows the distribution of the mines and the men employed:—

TABLE SHOWING DISTRIBUTION OF MINES SHIPPING IN 1900.

	No. of Mines Shipping.	No. of Mines Shipped over 100 tons in 1900.	MEN EMPLOYED IN THESE MINES.		
			Below.	Above.	Total.
<b>CASSIAR:</b>					
Atlin.....	1	1	4	4	8
<b>EAST KOOTENAY:</b>					
Fort Steele.....	4	3	288	90	378
Other Divisions.....	3	.....	24	11	35
<b>WEST KOOTENAY:</b>					
Ainsworth.....	12	2	113	45	158
Nelson.....	10	8	281	224	505
Slocan.....	28	13	539	184	723
Trail.....	9	9	668	332	1,000
All other Divisions.....	6	2	26	12	38
<b>LILLOOET DISTRICT.</b>	4	4	35	25	60
<b>YALE DISTRICT:</b>					
Osoyoos, Grand Forks and Kettle River....	17	15	367	243	610
<b>COAST.....</b>	5	3	85	139	224
	99	60	2,430	1,309	3,739

**TABLE**  
 SHOWING MINERAL PRODUCTION  
 OF  
 BRITISH COLUMBIA

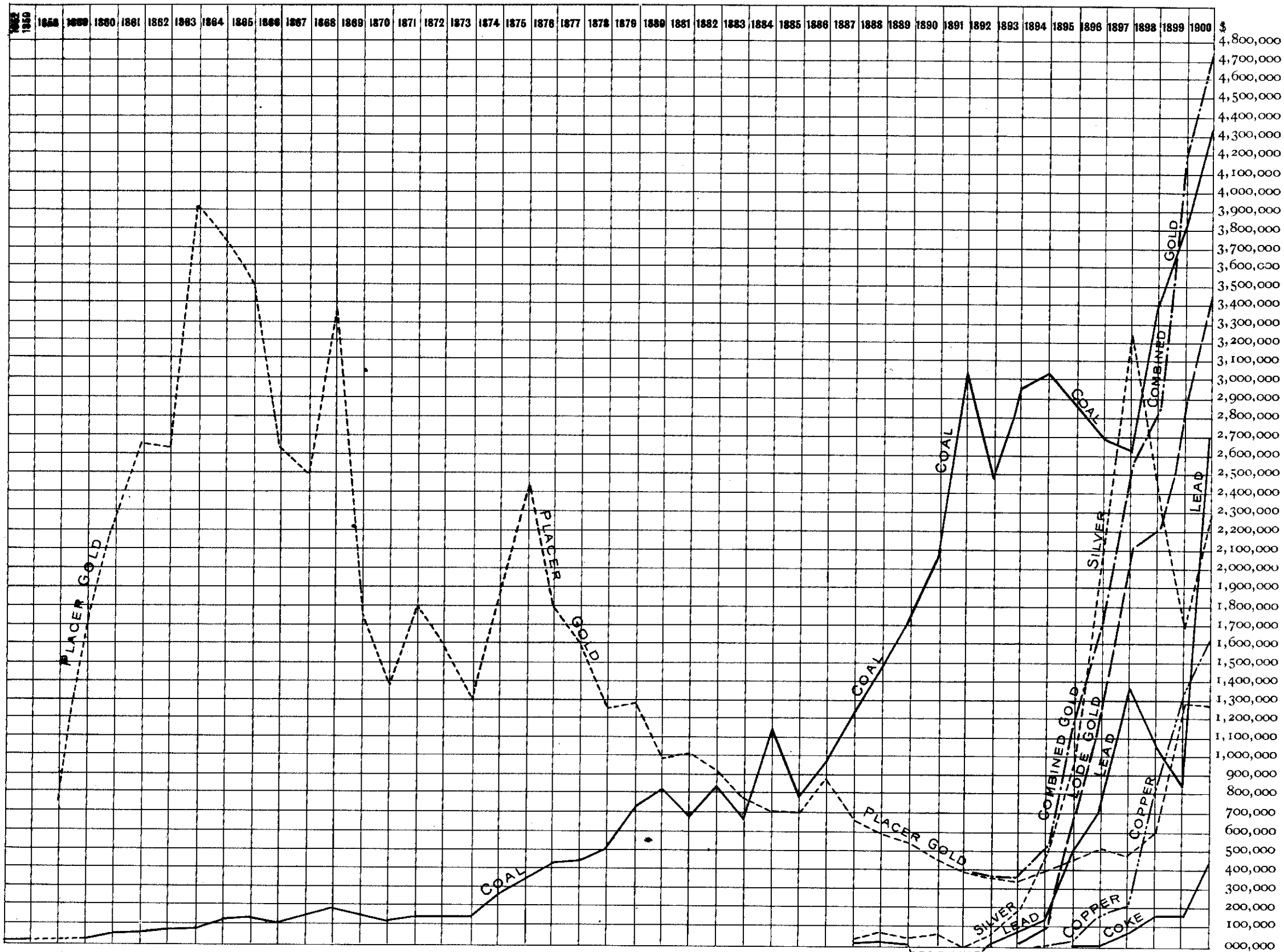


Table VII. shows in detail the production of the metalliferous mines in each District and Mining Division of the Province for 1897, 1898, 1899 and 1900.

Table VIII. illustrates the coal and coke production.

#### COAL.

The coal mining industry of the Province still continues to increase in importance, and has again, this year, broken all previous records with a total output of 1,590,179 tons, of which amount 150,584 tons were converted into coke, producing 85,149 tons and leaving a net production of coal of 1,439,595 tons. Of this production, 914,183 tons of coal and 51,757 tons of coke were exported.

The Vancouver Island Collieries made a gross output of 1,383,376 tons of coal, of which 47,353 tons were used for coke-making, producing 19,234 tons of coke, and leaving a net production of coal of 1,336,023 tons. Of this product, 906,215 tons of coal and 12,799 tons of coke were exported.

The Crow's Nest Pass Collieries made a gross output of 206,803 tons of coal, but half of it, viz.: 103,231 tons, was used for coke-making, producing therefrom 65,915 tons, and leaving a net coal production of 103,572 tons. Of this production there was exported to the United States 7,968 tons of coal and 38,958 tons of coke.

As will be seen, the output of our collieries this year—coal and coke—has increased in value about 16% over last year's output, and there is every indication that another large increase will be made during the year 1901, especially in the output of the Crow's Nest Pass Collieries, which are at present only being opened up, and which will have to supply at least two new smelters, besides a regular increase in consumption at the older ones.

#### GOLD.

The gold production of the Province for the year 1900, including both placer and lode gold, was worth \$4,732,105, an increase over 1899 of \$529,632.

This again "breaks the record" of gold production in British Columbia, and this year, as heretofore, does gold take first place in our tables of production.

The only decrease noted in the preceding tables is in the production of Placer Gold. placer gold, and this is due to the heavy falling off in the Atlin District.

In 1899 the cream of the placer gold in that District was skimmed off from the shallower workings, leaving only the deeper workings, which will, generally speaking, require to be worked by hydraulic methods. The necessary hydraulic plants are being installed, but from the nature of things could not be expected to make any very serious output for the first year.

Disregarding the production of Atlin District during the past two years, the remainder of the Province shows an increased placer gold output in 1900—compared with 1899—of \$283,824, due largely to the successful working of the hydraulic plants in the Cariboo District, notably that of the Cariboo Hydraulic Mining Company, at Quesnel, which is practically the only plant of this sort in the Province so far completed as to do systematic work, although several others ought to be in shape for the season of 1901.

The general placer output throughout the interior and northern part of the Province has not been very large this past year (1900), owing to the high water in the early spring, and later to the construction of the Yukon Telegraph Lines, which caused such a demand for labour at good wages that the placer claims were neglected.



Hydraulic plants in British Columbia are now just beginning to be productive, and next year we may expect to see a considerable output from the Cariboo, Omineca, and Atlin Districts.

On the west coast of Vancouver Island, a number of hydraulic leases have been taken out for beach deposits of black sand carrying gold. This branch of the hydraulic industry is new to the Province, and this past year (1900) yielded some \$12,000, or more than the cost of the installation of plants, so that next year good returns may be expected.

Dredging in British Columbia has, so far, been a failure, but many companies have tried it and are still trying it, confident of ultimate success.

The river bottoms carry gold in quantities greater than many of the successfully worked deposits of New Zealand and elsewhere, but the conditions are different in this Province, the gold being in very fine, flat flakes, hard to save, while the rivers are rapid and large boulders are frequent. It has yet to be demonstrated that a dredger has been invented that will successfully overcome these difficulties, but the prize offered for so doing is great enough to induce repeated attempts.

The output of lode gold for the year 1900 amounted to \$3,453,381, being \$595,808 greater than the previous year, and equivalent to an increase of 21%.

This increase is due largely to the operation of gold properties in the Nelson and Lillooet Districts, as well as to the increased tonnage of the Rossland gold-copper properties and to the opening up of the gold-copper properties of the Boundary District.

The gold produced from lode mining for the year 1900 has been obtained, approximately, as follows:—

From direct smelting, combined with copper . . . . .	\$2,583,905
From combined amalgamation and concentration . . . . .	869,476
	\$3,453,381

#### SILVER.

Silver and lead are very closely associated in British Columbia, so much so that over 90% of our silver production for 1900 is derived from silver-lead ores.

The total amount of silver produced this past year was 3,958,175 ounces, worth \$2,309,200, an increase in value over 1899 of \$645,492, or equivalent to 39%.

This increase has been chiefly caused by the output of South-East Kootenay, which this year has produced 960,411 ounces of silver as against 33,516 ounces in 1899.

The Slocan has made an increased production of 230,151 ounces, largely accounted for by the increased tonnage of the District.

The silver derived from copper-silver ores has been increased by the output of the "Boundary" District and the increased output of the Coast Districts, but has been diminished by the temporary shutting down of the Hall Mines, in the Nelson District, and the lesser silver values found in the ores of the Rossland Camp, Trail Creek District.

#### LEAD.

The most notable feature of the year's development has been the increase in the production of lead. The output for 1900 amounts to 63,358,621 lbs., valued at \$2,691,887. This is an increase over the previous year of \$1,813,017, equivalent to 206%.

This increase has been brought about chiefly by the energetic development of two or three mines in Fort Steele Division, although all the lead-producing districts, except Ainsworth, have shown a material increase in production.

The Slocan Mining Division has heretofore always held first place in the list of our lead producers, having an output in 1897 of almost 31,000,000 lbs., and although in 1899 it fell as low as 16,660,910 lbs. it has again increased in 1900 to 19,565,743 lbs., a gain over the previous year of about 17%.

However, the increase in Fort Steele Division of from 881,167 lbs. in 1899 to 38,495,079 in 1900 has earned for it the right to be considered the lead-producing centre of the Province.

#### COPPER.

The fine copper produced in 1900 was 9,977,080 lbs., worth \$1,615,289, an increase in value of 19.5% over the previous year.

More than half of this (5,672,177 lbs.) was produced from "Boundary Creek" ores, that district entering the field as a copper producer for the first time, while the output of the Coast mines has more than doubled, being for the year 2,193,962 lbs., a production second only to that of the Boundary District.

Rossland shows this year a copper production less than half that of the previous year, despite an increased tonnage of about 26%. The copper contents of these ores in 1899 was 33 lbs. to the ton of ore, while in 1900 it was only about 10 lbs. to the ton.

The output of the Nelson District this year shows a considerable decrease, but this is owing to the largest producer of the district having temporarily suspended shipments pending the installation of new machinery and development of the mine.

#### IRON ORE.

Iron ore is as yet only mined in this Province as a flux for lead smelting, and the copper and other ores carrying an excess of iron, which have now been discovered, are rapidly replacing this barren flux, with the result that the tonnage of iron ore mined is decreasing, and this year amounts to only 580 tons.

#### OTHER MINERALS.

Platinum. There is no record this year of any production of platinum, but the metal is reported as having been found in the neighbourhood of Dease lake, in the extreme northern part of the Province, as well as on the Thompson river.

Building Materials. The production of building materials, such as stone, brick, lime, cement, etc., has been estimated, as no statistics are available.

#### GENERAL DEVELOPMENTS OF THE YEAR.

A detailed account of the work done in each District will be found in the body of this Report and mention will only be made here of the more general developments of the year.

Placer Gold. In the Atlin-Bennett District the appreciation of the value of the bench claims is of importance, and while it is early yet to speak with certainty, the indications are that the benches will prove more valuable than the creek bottoms.

The new placer discoveries in the Chilkat portion of this District caused quite an excitement last fall and there will probably be a heavy rush into that section in the spring. The indications are promising, and the summer will prove what are the values existing.

In the neighbourhood of Dease lake, Liard Mining Division, the outlook for successful hydraulic operations is good, and the coming year will see at least one company in operation there.

In the Cariboo District the work of the year has been chiefly development—installation of hydraulic plants, of which several are in course of construction—greatly stimulated by the successful season of the pioneer company, the Cariboo Hydraulic.

In the Lillooet District several properties have been developed, showing quartz carrying gold—free and associated with iron sulphides. Five thousand seven hundred and thirteen tons of these ores have been crushed and have yielded very satisfactory results, and confidence is expressed in the future of this section.

As among the developments of the year may be mentioned two  
Coal. or three shafts and tunnels driven in new localities in the Crow's Nest coal fields. These have proved, by actual work, the results of the prospecting done previously, and have shown the fields to be very extensive and the coal of good quality, suitable for making a first-class coke.

In the Nicola valley coal fields there has been a good deal of development work done this past year, with results which are reported as highly satisfactory. A number of new finds have been made in the same locality, but as yet no shipments have been made.

In Southern Cassiar, in the neighbourhood of the Babine river, a number of coal locations have been made this past year, and a large number of licences to prospect taken out. Little development has been done to prove the ultimate value of this field, but the results so far obtained are said to be very encouraging. The distance from any railway will, of course, hold this section back for some years yet.

The coal fields on Quatsino sound, West Coast of Vancouver Island, have this past summer received some systematic exploration—with what results has not yet been learned. This coal is of good quality and in fair sized bed, but the measures are suspected of being faulted and the extent of the field has not as yet been well defined. Should these coal areas prove of consequence they will have an important bearing on the Pacific ocean carrying trade.

On the Coast a number of copper properties have come into prominence.  
Copper. At Howe sound the immense deposit of low-grade copper ore has received much attention, and there is little doubt but that within a short time large concentrating works will be started for its treatment.

Vancouver Island copper properties have stood development well—the Mount Sicker claims having this year made considerable shipments. On the Alberni canal two copper properties have been developed sufficiently to prove the existence of large bodies of copper ore containing low gold and silver values. Some preliminary shipments of the ore have been made, on which the smelter returns showed 10% copper.

On the West Coast of Vancouver Island new discoveries of copper have been made and some small amount of development work done, but not sufficient to prove the values of these properties.

On Texada Island—notwithstanding the financial difficulties of the principal company—the copper mines have more than held their own.

Throughout the "Boundary" country other copper-gold properties have continued to be developed, notably the "Mother Lode" at Greenwood, which, this coming year, together with certain claims in the Phoenix camp, will be a further factor in our copper production.

In the Similkameen three or four copper properties are reported as showing up well, but as yet transportation facilities are lacking, and serious operations will be delayed until the advent of the railway, which is expected within a year or so.

There has been considerable excitement on the Coast over deposits of iron Deposits. magnetic iron ore, chiefly in the neighbourhood of Alberni Canal. These deposits have been known for some time and were inspected by the Provincial Mineralogist in June. They were found to consist of extensive surface showings of very good magnetic iron ore. The development work consisted largely of surface stripping, and while the surface indications were excellent, the depth or permanence of the deposits had not been proved by any shaft or sufficient tunnel.

Before iron ore will attain any value on this Coast it must be proved to exist in sufficient quantity and under such conditions for cheap mining as to justify the establishment of an iron blast-furnace and rolling-mill. Such a plant requires about ten years' supply of ore absolutely in sight, and such an amount of ore will never be shown to exist by surface stripping.

It is reported, unofficially, that an American syndicate has bonded the properties referred to and has this past fall sunk shafts and driven tunnels, which continue to give satisfactory showings. This is a very large undertaking and, as must be expected, work will proceed slowly and cautiously, so that it will be a couple of years yet before sufficient knowledge is obtained of the deposits to justify the establishment of Iron Works.

#### CONCERNING PROSPECTS.

While production must be the ultimate measure of our success as a mining community, yet but a small portion of the energy of the country is employed in a class of mining which is at the present time productive. Every accessible section of the Province is being "prospected" more or less thoroughly, and many sections are being developed with good promises of success, while still others which are known to contain valuable mineral must necessarily lie dormant until the growth of the country provides sufficiently good transportation facilities to enable them to be opened up.

Prospects are "promises," and the degree of faith placed in their fulfilment will be measured by the manner in which our mines—the prospects of a few years ago—are now fulfilling the promises then given.

The statistics show what these mines have, during the past year (1900), paid back in principal and interest to the lenders of the money for their development.

This total amount so returned was, in 1898, \$6,529,420; in 1899, \$6,751,604; and in 1900 reached the sum of \$10,069,757; an increase of 49% over 1899, and 54% over 1898.

Prospects may be said to borrow money on promissory notes and, unfortunately, many "promising prospects" have failed to meet their obligations, with the result that the capitalist can only be induced to advance money by the expectation of a high premium and a large rate of interest on the loan.

In consideration of such high premium and rate of interest the lender must necessarily expect to make losses in individual cases, but if, in a series of transactions, the principal and a

---

---

fair rate of interest is returned, then this form of investment must be considered a profitable one, and that it is so profitable is found by those who investigate the matter.

These "notes" of the prospects have, however, to pass through the hands of promoters who, too often, not content with a regular commission, raise the "notes" or add on such a premium that but a small percentage of the original loan is available for the development of the prospect.

A prospect which gets, say \$10,000, might pay back such loan doubled or trebled; but why should it be saddled with a debt of \$1,000,000 and expected to pay this back with interest? Is it any wonder that a prospect like this becomes a failure?

Why should mining investment not be entered into as would any commercial business—only after serious investigation?

If the investing public—the real lenders of money to the prospects—would exercise ordinary business caution and see to it that the money for the stock they buy is used as it should be—*on work* and not to fatten the promoter—there would be more successful working mines in the Province to-day.

---



---

**DEPARTMENT OF MINES.**

— o —

**WORK OF THE YEAR.**

Besides the usual routine work of the office, the following is a brief summary of the work of the Department for the year.

The publication of the Annual Report was somewhat delayed, owing to changes of Ministry, and the attention of the Provincial Mineralogist was claimed until July 14th by the office work and the holding of the Spring Examination for Assayers. He then visited the copper and iron properties on the Alberni Canal and Barclay Sound, extending his journey, on the next trip of the boat, up the West Coast of Vancouver Island to Quatsino sound and visiting the coal locations there.

Returning to Victoria during the earlier part of the Session, on August 15th he left for an inspection of the Atlin and Bennett Lake District. This trip was extended to include an inspection of that portion of the Bennett Lake Mining Division lying about the headwaters of the Chilkat river, where new placers were reported to have been found.

He returned to Victoria on October 2nd, and spent from the 2nd to the 8th in attending to such technical work as had accumulated, leaving again, on the latter date, for a hurried run to some of the newer producing mines in the Kootenays and the Boundary Creek District, and visiting, also, the copper properties on Howe Sound before returning to Victoria on November 9th.

On November 12th the Fall Examination for Assayers was held, occupying two weeks' time.

A Special Examination for Assayers having been ordered to be held at Nelson he, together with the Provincial Assayer, left for that point, held the examination as ordered, and returned to Victoria on December 13th, when he at once began preparations for the gathering of statistics and preparation of the Annual Report.

The following is a summary of the work of the assay office, as reported by the Provincial Assayer.

During the past year 860 assays and a large number of determinations of mineral specimens were made, together with the usual amount of work for other Departments of the Government.

The fees collected were as follows:—

Ordinary assay fees . . . . .	\$ 506 00
Gold bullion, melting fees . . . . .	6 00
Fees from Students . . . . .	85 00
Assayers' examination fees . . . . .	600 00
	<hr/>
	\$1,197 00
Value of work done for other Departments and not charged . . . . .	300 00
	<hr/>
	\$1,497 00

The amount of gold-dust from the north brought to the Government Assay Offices for melting and assaying has shown a remarkable falling off, being this year less than half what it was last, amounting in value to only \$97,332 as against \$219,036 in 1899.

Of the amount stated, some \$95,224 was melted in Vancouver and only \$2,108 in Victoria: thus, while the falling off in general has been great, Victoria seems to have almost lost all gold-melting, a fact which may be accounted for by the proximity of the United States' mint at Seattle, where the United States' Government purchases gold for exactly the same price as the mint in New York, enabling the seller to get an immediate full settlement for his dust at New York prices, and thus saving him the expense of expressage and brokerage in sending the gold east and the loss of interest on the money.

The total number of assays made this year shows a considerable increase, and it is worthy of note that there have been more control assays and assays on pulped samples, while the hand samples brought in indicated a more careful system of sampling on the part of prospectors.

During last year an increased number of prospectors took advantage of the offer of the Department to determine mineral specimens free of charge.

Among the samples sent in there were a number of specimens carrying traces and small quantities of nickel, but, so far, this metal has not been found in greater amounts than a few tenths of one per cent.

Samples of ore from the southern part of the New Westminster Mining Division were examined and found to carry tellurides, associated with considerable quantities of free gold. Samples of mispickel from the West Coast of Vancouver Island were also found to carry high gold values.

Six students availed themselves of the use of the laboratory during the year, and of this number two successfully passed the examination for licence to practise assaying in British Columbia.

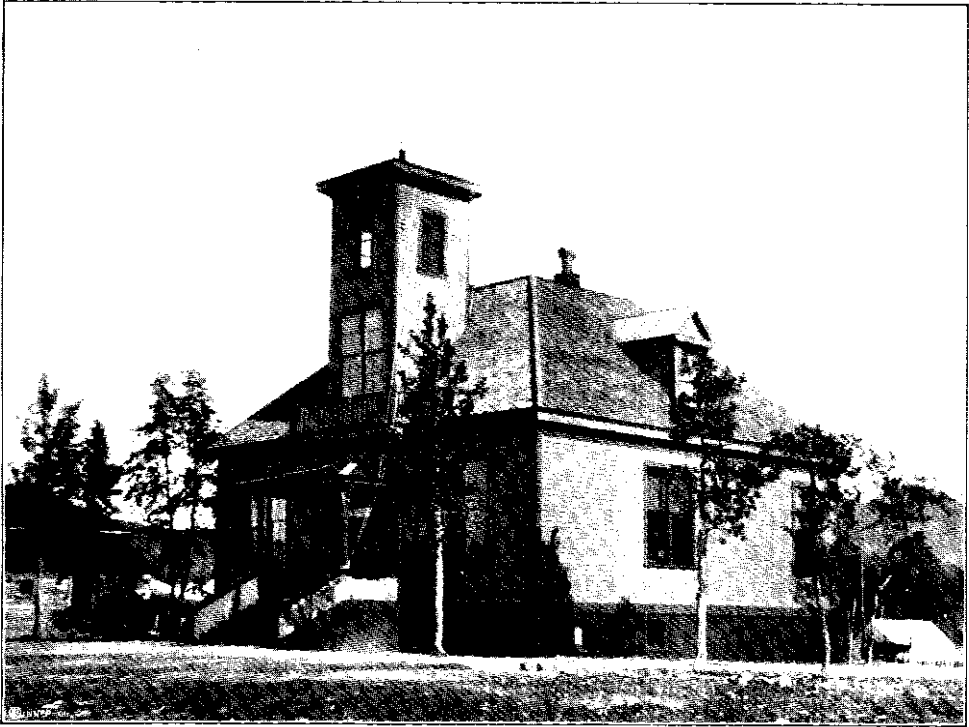
Free Determinations of Minerals. It might be well to again call the attention of the prospecting public to the fact that the Department is at all times prepared to make free qualitative tests of mineral samples, and to give information as to the methods of treatment and market values of ores.

Mineral Museum. The collection of ore samples in the Mineral Museum is now practically all arranged and is fairly representative of the various Districts and the ores mined therein.

The cases are gradually filling up, but the spaces allotted to the following Mining Divisions are still very bare, viz.: Lardeau, Arrow Lake, Yale, Ashcroft, Similkameen and Bella Coola. This is largely accounted for by the fact that these Divisions have not received any very serious prospecting, but it is particularly requested that typical samples of ore from the parts mentioned, together with full descriptions of the properties from which they are obtained, be forwarded to the Department.

The collection now in the Museum is the best and most typical of the ore bodies of the Province to be seen anywhere, and the opportunity thus given to owners of mineral properties, which will bear comparison and investigation, to exhibit their ores, etc., free of any charge or commission, is well worthy of their attention.

In addition to the usual duties of his office the Provincial Assayer visited the principal properties in the southern section of New Westminster Mining Division, and also the black sand properties which are being worked for gold at Wreck bay, on the West Coast of Vancouver Island.



GOVERNMENT BUILDING - ATLIN.



SCOWS LEAVING ATLIN FOR DAWSON.



The Provincial Assayer also attended the Winnipeg Exhibition, where he arranged a collection of minerals and supplied all information relating to the Province; he also attended the New Westminster Exhibition and arranged a collection of minerals. Details and reports of the various exhibits made last year follow.

### EXHIBITS OF MINERALS.

Mention was made in the Report of last year of the collecting by the Provincial Mineralogist and forwarding to the Paris Exposition of 1900 an exhibit of the ores of this Province.

Paris. The collection as exhibited in Paris, and as arranged under the supervision of the late Dr. George M. Dawson, Director of the Geological Survey of Canada, met with very general approval and elicited many complimentary press reports.

Not only did the Exhibit meet with popular approval, but what is more important, since it is of a more critical and competent nature, it met with the approval of the judges, and the Department of Mines has been notified that the Mineral Collection of the Province of British Columbia has been awarded a "Grand Prix" by the International Jury of the Paris Universal Exhibition. This is to be accompanied with a diploma and medal, which have not as yet been received from Paris.

In addition, the same jury has awarded to the Provincial Mineralogist a gold medal, as "Collaborator of the British Columbia Mineral Exhibit."

Glasgow. The Dominion Government had arranged to move their entire Mineral Exhibit—in which that of British Columbia was included—from Paris to Glasgow for the Exhibition to be held there in 1901, and by order of the British Columbia Government the Provincial Exhibit was allowed to go to Glasgow with that of the Dominion, and will be exhibited there again with the prestige gained at Paris and without further cost to this Province.

Winnipeg. As described in the appended report of the Provincial Assayer, who accompanied the exhibit, a collection of ores which was creditable to this Province was displayed at the Winnipeg Exhibition and appeared to direct the attention of a large number of people in that section of the Dominion, and the adjacent parts of the United States, to the mineral wealth of British Columbia.

The report of the Provincial Assayer follows:—

DEPARTMENT OF MINES,  
VICTORIA, B. C., 8th August, 1900.

*To the Provincial Mineralogist,  
Victoria, B. C.:*

SIR,—I have the honour to report to you that I arrived in Winnipeg on the 19th ult. to set up an exhibit of Minerals of this Province at the Annual Exhibition held in that city.

I was given the choice of position and space in a special British Columbia Building, built of British Columbia lumber and erected principally by the saw-mill owners.

The building is a distinct credit to the Province, being the best on the grounds; the interior is lined with well dressed Douglas fir with cedar panelling and, being varnished, shows up the wood to good advantage.

The Mineral Exhibit, which consisted of some 500 representative samples, occupied the centre of the building with a pyramid 8 feet high, on which the large samples were placed in a good position opposite the main door.

The exhibit was divided into two principal groups, the silver-lead and the gold-copper ores, and each sample had a suitable descriptive card attached to it.

The walls were adorned by large photographic pictures of British Columbia, some of which were lent by the Canadian Pacific Railway.

The exhibition was largely attended and thousands of people from both Canada and the United States examined the mineral exhibit; a considerable number of copies of the Mines Report were distributed and information was given about the Province.

The exhibit showed up to good advantage, was especially well patronized and received very favourable notices from the press.

After the exhibition was over the samples were carefully re-packed and returned to the Coast.

I wish to thank both the officials of the C. P. R. and of the Exhibition for the assistance and help which they gave in making the exhibit a success.

I would suggest for next year that the Province make a more general exhibit in the British Columbia Building, not confining it to Mining. I would propose a good sized pyramid of large and showy samples of ore in the centre of the building, while around the sides might be shown samples of lumber and lumber products, canned salmon, fruit, etc., all of which products Manitoba is deficient in.

I believe such an exhibit would form an attractive feature of the Exhibition and be a good advertisement for the Province generally. Photographs should also be made a feature, as such an exhibit from Alberta attracted considerable attention.

I have, etc.,

(Signed) HERBERT CARMICHAEL.

There was also an Exhibit of Ores displayed at the New Westminster New Westminster Fair held in 1900. This consisted of a collection owned by the Royal Agricultural Society, supplemented by such duplicates as could be spared from the Provincial Mineral Museum, forming in all a very good and representative collection of ores of the Province.

A number of private individuals resident in the Kootenays and Spokane. "Boundary" made an Exhibit of Ores at the "Spokane Fair." This would appear to have been a very creditable exhibit, inasmuch as this Department is in receipt of a notification that the Province has been awarded the first prize, a gold medal and diploma.

### ASSAYERS' EXAMINATION.

#### REPORT OF THE SECRETARY OF BOARD OF EXAMINERS.

SIR,—I have the honour to submit my annual report as Secretary of the Board of Examiners for Certificates of Competency and Licence to Practise Assaying in British Columbia, as established under the "Bureau of Mines Act Amendment Act, 1899."

At these Examinations 8 candidates presented themselves, of which number 2 passed examinations satisfactory to the Board of Examiners and were recommended to the Honourable the Minister of Mines as entitled to certificates of competency, which certificates were duly issued to them.

These two successful candidates were—

James Hargreaves, of Fernie, B. C.  
Robert Drinnan, of Nanaimo, B. C.

The following is a list of those holding certificates of competency under the Act:—

REGISTERED LIST OF COLLIERY MANAGERS SERVICE CERTIFICATES ISSUED UNDER SECTION 26,  
"COAL MINES REGULATION ACT, 1897."

John Bryden, M. P. P., Victoria.  
\*James Gillispie.  
Edward G. Prior, Victoria.  
Thomas A. Buckley.  
John Dick, Nanaimo.  
Archibald Dick, Government Inspector of Mines.  
James Dunsmuir, Victoria, Premier of Province.  
Thomas Cairns, Comox, farmer.

"COAL MINES REGULATION ACT, 1877," REGISTERED LIST OF CERTIFICATES OF COMPETENCY.

Name.	Address.	Date.
Shepherd, Francis H.	Nanaimo	5th March, 1881.
Gibson, Richard	"	" "
*McGregor, William	"	" "
Honobin, William	not known	1st May, 1882.
*Muir, Archibald	"	" "
Little, Francis D.	Union	" "
Martell, Joshua	Nanaimo	" "
*Scott, Robert	"	" "
Chandler, William	not known	21st December, 1883.
Priest, Elijah	Extension	" "
McGregor, James	Nanaimo	18th January, 1888.
Randle, Joseph	"	" "
*Dickinson, Urick Evan	"	8th January, 1889.
Matthews, John	Union	" "
*Jones, John Bunyan Louis	"	" "
Norton, Richard Henry	"	26th August, 1889.
Bryden, Andrew	Extension	30th December, 1889.
Russell, Thomas	Nanaimo	20th April, 1891.
Sharp, Alexander	not known	27th October, 1891.
*Lindsay, Wm. Alfred	"	4th March, 1892.
Kesley, John	Union	" "
Wall, William H.	Nanaimo	30th May, 1896.
Morgan, Thomas	"	" "
Wilson, David	Extension	" "
Smith, Frank B.	Crow's Nest, Fernie	" "
*Jamieson, Robert	"	" "
Bradshaw, George B.	Nanaimo	12th June, 1899.
Simpson, William G.	Extension	" "
*Fisher, Robert	"	5th November, 1899.
Hargreaves, James	Crow's Nest, Fernie	5th February, 1901.
Drinnan, Robert G.	Nanaimo	" "

\*Dead.

---



---

## CARIBOO DISTRICT.

---

—o—

REPORT BY JOHN BOWRON, GOLD COMMISSIONER.

---

In submitting my twenty-sixth annual report on the mining industry of Cariboo District, I have the honour to say that the season has been a fairly prosperous one, all things considered.

The heavy and protracted rains had the effect of keeping the main trunk road in an almost impassable condition, which prevented heavy machinery from being brought in and consequently delayed development work on some of the larger enterprises referred to in my last year's report. The increased product of the Cariboo Consolidated Hydraulic Mining Co. at Quesnel Forks during the present year (1900); the development done by the Miocene Company of Horsefly, proving the existence of a large, ancient river channel, rich in gold; and the success which has at last attended Mr. F. C. Laird's efforts to reach and prove the value of the deep channel of Willow river, are, however, all matters for congratulation, and are likely to have a salutary effect on the future material progress and prosperity of the District.

There have been, during the season, in the neighbourhood of 150 companies working throughout the whole District, employing, approximately, 1,200 men (about one-half of whom are Chinese), but few companies of any magnitude are as yet placed on a paying basis. The smaller mines in various stages of development, from the initiatory proceeding of being opened up, to the producing mine, it will be unnecessary in this report to particularize.

In order, however, to secure as definite and reliable information as possible of the more important mining enterprises now in operation, the success or failure of which is likely to exert an influence on the future of the country, I addressed notes to the foremen or managers of such, requesting information as to the season's operations and the present status of their respective works, etc., nearly all of which met with a ready response, and from the information thus obtained the following summary of the season's operations is largely taken. To a better comprehension of the present situation a perusal of my last year's report will be found advantageous.

---



---

## CARIBOO MINING DIVISION.

---

THE CARIBOO CONSOLIDATED, LIMITED.

Mr. M. Bailey, Engineer for this Company has been good enough to furnish the following information:—

Lowhee Creek Claim.	“ During the season a double compartment sluice flume has been constructed, having a total length of 732 feet. Two pipe lines, consisting of 11 and 15-inch diameter pipe with 3 and 4-inch nozzles, have been in use during the past season, operating under a head of about 250 and 180 feet, respectively.
---------------------	---

"Substantial mess and bunk houses have been built, and the claim thoroughly equipped. The old ditch from Lowhee creek has been re-built and enlarged, and an additional length of a quarter of a mile has been constructed at the lower end of Stoney creek ditch, making this latter ditch  $5\frac{1}{2}$  miles in length.

"The season's operations were confined mainly to the removal of the accumulations of tailings, boulders and débris left from the previous working of this claim in the early days.

"The total progress made in opening up the channel from rim to rim, advancing up the creek, was over 350 feet, and the returns, considering the nature of the material moved, were most encouraging. The coming season from all indications should demonstrate the value of this claim. About 20 white men were employed during the season.

"During the past year a prospecting tunnel was run on this claim for Ah Quay Claim, a total length of 580 feet through rim rock to determine the value and Lightning Creek. depth of the gravel overlaying a back channel. From this tunnel drifts, upraises and shafts were run a total of 204 feet, thoroughly determining the position and depth of the channel. There were 12 white men employed during the year.

"The claim was worked this season, with very good results, by a small hydraulic plant, using water from Last Chance creek, and for next season a new sluice flume 464 feet long has been built to take the place of the small sluice boxes used this year, and this will materially increase the output. The Company is now considering the advisability of constructing a large system of ditches, etc., from Lightning creek and Little Swift river tributaries.

"This claim will be worked next season on a much larger scale than San Juan Claim, heretofore. A pipe line will be put in of 11 and 15-inch pipe, using a Williams Creek. 4-inch nozzle. Lumber is now being hauled to the claim for constructing a new sluice flume 240 feet in length. Cabins are to be built and the plant thoroughly equipped.

"Plans and estimates have been made for prospecting and developing numerous other properties held by this Company, and active work is shortly to be expected."

#### THE CARIBOO GOLD FIELDS, LIMITED.

Wm. Thompson, M. E., F. R. G. S., Superintendent.

It is most unfortunate, not only to the shareholders, who have expended upwards of half a million of dollars in equipping the property, but to the country generally, that the system adopted in opening up this mine of undoubted value has so far proved a failure. The great elevation (about 100 feet) to which the gravel must be raised by the present hydraulic elevator plant, and the shortness of the season during which a sufficient water supply can be obtained, are responsible for this not being a paying proposition. It is now proposed to introduce a new system better adapted to handling the auriferous gravel, which is found to be quite as rich as anticipated by the Company.

The Engineer reports as follows regarding the season's operations:—

"The operations of the Company were chiefly confined to securing reliable data upon which a new system for elevating the gravel by means of bucket elevators could be based, as past experience conclusively proved that the present mode of using hydraulic elevators was not a success, owing to the great height to which it was necessary to lift the gravel, together with the shortness of the water season.

"Plans have now been prepared for a new system. These have been submitted to the directors and will probably be approved.

"The present elevators were used during the past season, for a period of three weeks, at the end of which time the old workings were uncovered and it was necessary to suspend elevation by this method. A temporary incline hoisting plant was erected for the purpose of taking out the old timbers and material in the bottom of the pit, in order to ascertain the depth and position of the channel.

"The main drain tunnel was then extended up this channel a distance of 175 feet, from which point a cross-cut was run 96 feet, which thoroughly drained the channel at its lowest point, thus making it possible to construct the foundations of the new plant without hindrance of seepage water.

"The bottom of the present elevators was found to be about eight feet above bedrock, resting upon the old workings and thus accounting for the non-success in saving gold, as it of course settled down through the old workings when disturbed.

"All gravel taken from the pit by hoisting was run through sluice boxes, and the values obtained were most encouraging for the future success of this property.

"As a great deal of expense and trouble has been caused in controlling the water from Williams creek during the winter, a channel was excavated from the bulkhead, at the mouth of the waste flume, extending down stream to a point below the pit. The bulkhead at Barkerville was also extended a distance of 475 feet, and suitable gates were put in the end of same to control the water required to be diverted to the Williams creek ditch.

"The average number of men employed was about 25 for about four months."

#### THE WILLOW RIVER ENTERPRISE.

F. C. Laird, Manager.

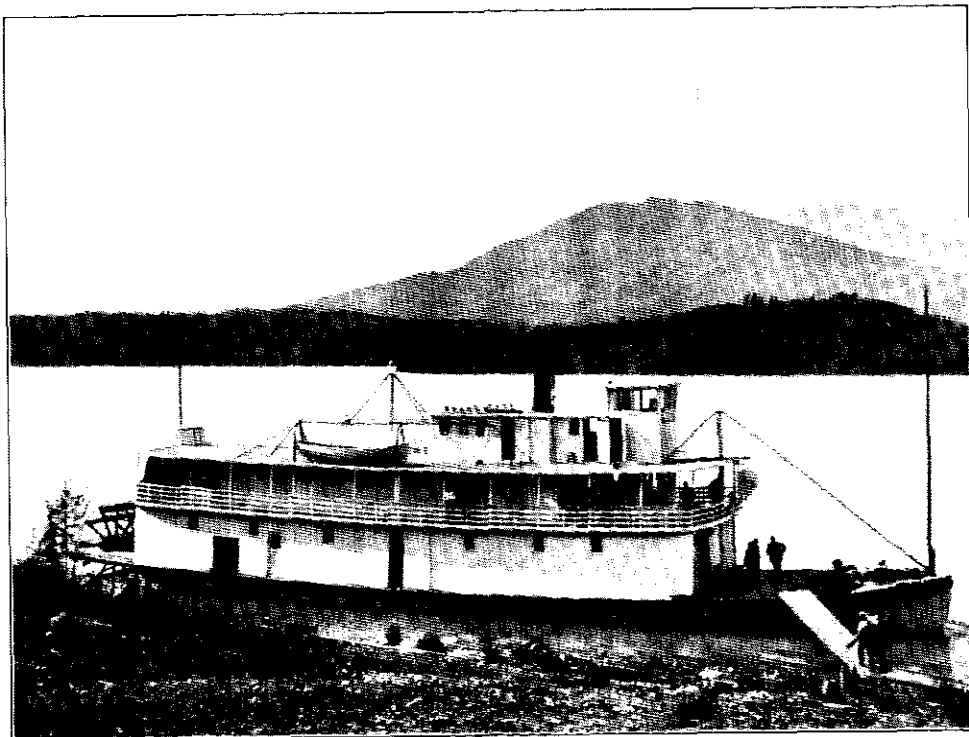
This Company, after encountering and overcoming almost insuperable difficulties during the past four years, has been rewarded in at last reaching the deep channel of Willow river, and obtaining a most satisfactory prospect of coarse gold. Before accomplishing this, however, it was found necessary to instal an air compressor plant to further aid the already very complete pumping and hoisting machinery.

The introduction of this compressor necessitated much delay, owing to the fact that experienced men had to be brought from the East, besides various other drawbacks incident to the introduction of any new system in so remote and inaccessible a locality. However, all difficulties were finally overcome and the plant made to work fairly well. Upon continuing the face of the drive (which had been in bedrock) into the gravel, such prospects were obtained as to satisfy the Company at last that they had a valuable mine; but it being now near the end of October, and finding it necessary to procure a further quantity of cement to strengthen the doors between the air chambers, and to get on hand a further supply of wood, etc., the mine was shut down temporarily. A contract for several hundred cords of wood was let, and Mr. Laird at once proceeded East to obtain all requisites, and he expects to have the property again in operation some time in March.

This is regarded as a most important discovery as it is the first time the deep channel of Willow River has been bottomed, and the pay gravel may be found to extend for miles in either direction.



SCOWS AT BENNETT, B. C., LOADING FOR DAWSON.



STR. "GLEANER"--FOR ATLIN--ON TAKU ARM.

THE INCORPORATED EXPLORATION COMPANY, LIMITED, OF SLOUGH CREEK.

This Company, of which Mr. Wm. Thompson, M. E., F. R. G. S., is Managing Director, and Mr. John Hopp, Local Manager (a description of the mine and plan of which was given in my report for 1899), has during the year continued, without intermission, work on its bed-rock shaft and tunnel, using air drills and electric battery and employing an average of 25 men. Mr. Hopp has kindly furnished me with the following information:—

“The machinery mentioned in your last report as being en route from Montreal has been received and erected. We commenced sinking the main shaft on April 1st, 30 feet being sunk by hand. We then put in the air drills and electric battery. The shaft is of three compartments, one pumping compartment, 4 feet 6 inches by 6 feet in the clear, and two hoisting compartments 4 feet by 4 feet 6 inches each, in the clear. From collar of shaft to floor of tunnel is 362 feet 4 inches, and 7 feet 8 inches sump. Sinking was finished on the 31st October last.

“Considerable delay and extra expense was caused by the slipping nature of the slate bed-rock, and the amount of seepage into the shaft; the former difficulty was overcome by close timbering and the latter by a pumping station cut out of the end of the shaft at the 230 foot level, the water being puddled off into a tank and handled with a steam pump. A second steam pump is being used at the bottom of the shaft to pump seepage water from the tunnel to the station.

“We are driving a double track tunnel, using 8 foot caps and 7 foot posts, the average advance in the tunnel being from 35 to 40 feet per week. The distance from the foot of the shaft to the channel of Slough creek is 1,060 feet. The average number of men employed is 24.”

THE CARIBOO EXPLORATION COMPANY, LIMITED, OF BURNS CREEK.

John Hopp, Acting Manager.

The acting manager of this Company furnished me with the following information:—

“The Cariboo Exploration Company has equipped two hydraulic mines, with offices and camp buildings, the first of which is about five miles from Stanley and nine miles from Barkerville, on the Cariboo Waggon Road, and is located on Burns creek, which empties into Slough creek on the south side. This is one of the largest and best equipped hydraulic plants in this District. Owing to the unfortunate death of Mr. S. Medlicott, the manager, in the latter part of May, a great deal of valuable time was lost before matters could be arranged, and work was not commenced till June, when the pit and flume were continued to bedrock, and a cut was put through a hog back of rock on the rim into deeper ground. A very encouraging prospect was obtained from what gravel was washed, as well as from that in shafts sunk during the latter part of the season for the purpose of prospecting the ground.

“The second claim, which is located on Slough creek, between New creek and Nelson creek, was not worked during the past season, it being too late before arrangements could be made to do much washing. The average number of men employed during the season was ten.”

CARIBOO DEEPS, LIMITED.

H. E. C. Carry, C. E., Managing Director.

The properties of this Company have been worked during the season under the personal supervision of Mr. Carry, to whom I am indebted for the following:—

“The properties held by this Company are situated at the head of Canadian creek, on Nugget gulch and on upper Antler creek.



"On the Canadian creek property—of which only a certain interest is Canadian Creek. held by the Company—no actual development work has as yet been done; but the old shaft, through which it is intended to open up the ground, has been housed in and a small hoisting engine installed. During the past season all fluming and ditching necessary for bringing water from Grouse creek and returning it thereto has been done, and everything is now nearly ready for bailing out the shaft and starting drifting.

"It is confidently expected that, within three or four weeks after starting work, ground paying something over expenses will be reached, and that later very good pay dirt will be found.

"At Nugget gulch work has been concentrated chiefly on the lower Nugget Gulch. part of the lower claim, and here an ancient channel, the bed of which is considerably lower than that of the present stream, has been definitely located, and has been proved, by means of tunnels and shafts therefrom, to contain a large body of pay gravel.

"An attempt, at the upper part of the lower claim, to bottom the deep channel by means of a shaft from the surface had to be abandoned, *pro tem.*, on account of the excessive wetness of the season, but even the short distance sunk through the surface soil and gravel yielded a pleasant surprise, in that it was discovered, to contain a little gold throughout, whereas it had been expected to be absolutely barren. The work of testing this ground will probably be pushed to a conclusion next summer, and the prospects of developing a hydraulic mine of very considerable value are considered decidedly good.

"The lowest claim held on this creek is about one mile up stream from Antler Creek. the shallow ground that was found so rich in the early 'sixties.' The particular portion under test during the past season is a section of an ancient channel whose bed is lower than, but practically parallel to, the bed of the present stream. This channel is filled to a depth of from 20 to 30 feet with river wash, and this in turn is covered with from 60 to 100 feet of glacial drift and débris.

"The work done comprises several tunnels, the latest of which strikes right up the course of the buried channel and heads for bedrock.

"Towards the end of the past summer it was found that this tunnel had been running for about 170 feet on the highest part of the bed and with the steep rim close on the left hand.

"The prospects obtained here were all of coarse, well washed gold and were considered very promising. However, when the channel was crossed in a couple of places the deepest part, although prospecting very materially better, did not yield what, under the circumstances, could be considered to cover expenses.

"The rock was found to be very hard and worn smooth and to be without crevices. There is little doubt but that good pay dirt will be struck wherever rock of rather a softer nature shall be encountered. Such rock is believed to exist at several points further up the stream and certainly will be earnestly prospected for, as this whole ancient channel is absolutely virgin soil."

THE PREMIER COMPANY, OF PETERS CREEK.

J. G. Mathers, M. E., Manager.

The Manager of this Company sends me the following notes in regard to his operations:—

"In reply to your request I would state that, during the past seven months I have cut out a road from Beaver pass up Peters creek to the lower line of lease No. 684, have graded some of it and have corduroyed about one-half mile of the low ground over which it had to

be built; I have also built a bunk house 16 by 30 feet, another house 18 by 28 feet for a dining room, a store room, and quarters for myself.

"On lease No. 682, I have 140 feet of open cut and 170 feet of timbered and covered cut, attaining a total depth of 12 feet. At the end of the cut I have started a tunnel, which thus far has been run a distance of about 340 feet, and I am continuing it at the rate of about 7 feet per day; it is thoroughly timbered. This tunnel is to be continued till the bedrock in the deep channel of the creek is reached, which, I think, will be at about 1,600 feet from the starting point of the open cut. It is intended as a natural drain for the channel and I expect it to reach bottom about the lower line of lease No. 683, for which ground it is being run.

"I have also run another open and covered cut for about 360 feet, commencing on the ground below lease No. 682. The clay, which underlies the surface gravel, has just been reached, and is impervious to water. I shall sink a shaft a little above the point now reached on lease No. 682, and crib the collar of the shaft in such a way as to send off the surface water through the cut, so as not to be troubled with it while sinking. This shaft will probably reach the bottom of the channel at a depth of about 70 feet."

COLONIAL MINES DEVELOPMENT COMPANY OF CANADA, LIMITED, OF SUMMIT CREEK.

F. T. Hamshaw, Ex-Superintendent.

This Company, I regret to say, has recently gone into liquidation, and its affairs are now in the hands of a Receiver. Mr. Hamshaw hands me the following information relating to the Company's work during the season:—

"I herewith submit a report of the work done on the property of the Colonial Mines Development Company of Canada, Limited, within the last year, and a brief summary of the three plants as completed.

"On this claim there is a shaft 100 feet deep, and in all about 575 feet of tunnelling. This not being low enough to reach the bottom of the channel, eight blind shafts were sunk, the lowest being 30 feet, where the rock was still found pitching at 45°. Five cents to the pan were being obtained when we ceased work. As the pumps had not stopped for five months the water was well drained out, and at no time did we experience any difficulty in keeping the diggings dry.

"This claim has two pits with two monitors in each, each sluice having a double under-current of the New Zealand pattern, consisting of two tables, each 24 feet long and 5 feet wide, covered with rubber cloth over which is placed burlap, the latter being held by a corrugated steel perforated sheet which acts as a fine riffle. The coarser gold lies close to the upper part of each perforator on the burlap, the fine or flour gold passes through the burlap and is held on the rubber cloth. The under-current is placed about 300 feet from the mouth piece. This plant has 1,000 miner's inches of water. A run of thirty-two days was made, during which time 18,000 cubic yards of ground were moved. Some time was lost in opening the pits and cutting sluice ways.

"A clean-up was made of a few of the boxes, from which were taken sufficient gold to thoroughly demonstrate the value of the ground.

"On the Van Winkle hydraulic claim there have been completed two and three-quarter miles of ditch and about one mile of flume, and 3,600 feet of 18 and 16-inch pipe have been laid. There are two pits, each with a complete line of sluice boxes and double under-currents, also of the New Zealand pattern. A run of twenty-six days was made, and 32,000 cubic yards of ground washed. This plant has also 1,000 miner's inches of water with 218 feet head.

"No clean-up was made on this property, as embarrassment in the Company's finances prevented the completion of the summer's work, although the prospects obtained from the shifting of a few of the boxes more than paid the operating expenses. A great deal of time was spent in washing dead material that had to be piped off in order to cut through the rim.

"The property is excellently situated as regards water supply, the location being about 700 feet lower than Barkerville. Both plants can be run five months each year."

#### THE DISCOVERY COMPANY, OF SHEPHERD CREEK.

This Company, of which Professor E. Odlum, of Vancouver, is Managing Director, having engaged the services of Mr. W. W. Anderson, an experienced California mine manager, has devoted the whole season to making tests on various parts of its ground to determine the most advantageous manner in which to open it up for working. These tests proved eminently satisfactory, giving results of from 8 cents to \$11.40 to the cubic yard. A new ditch on a higher level was constructed, necessitating the building of a high trestle upon which to lay the pipe line, and from the result obtained from a few days piping the Company has decided to greatly enlarge its operations for 1901, Mr. Anderson having been re-engaged to carry on the work during next season.

#### THE SUTHERLAND HYDRAULIC GOLD MINING COMPANY, LIMITED.

B. A. Lasell, Manager.

This Company, at first organised to develop ground on 14-Mile creek, a tributary of Bear river, during last winter, after making a pretty fair test of the value of the ground, decided the prospects were not sufficiently good to justify the putting in of a hydraulic plant as intended. Subsequently, having purchased the Discovery mine on 8-Mile lake, a large force of men was at once put on and a ditch constructed, some 4 miles in length, taking water from Stuart creek. In the meantime, a large hydraulic plant having been placed on the property, the Company was enabled to have several weeks' piping, most satisfactory returns being obtained.

#### THE LIGHTNING CREEK GOLD GRAVELS AND DRAINAGE COMPANY, LIMITED.

Harry Jones, Manager.

This Company, reported last year as being engaged in sinking a bedrock shaft near what is known as the "Wingdam" on Lightning creek, has continued its work, with some slight interruptions occasioned by the failure of part of the pumping plant to meet requirements. The shaft was continued to a depth of 125 feet, from which a tunnel was started at the 120-foot level to tap the channel. This tunnel has been run a distance of about 200 feet, and at this writing we hear the channel has been tapped, but with what result is unlikely to be known for a month or more.

If successful in finding gold in paying quantities, the fact will be of immense importance to the District, as it will virtually prove some twenty odd miles of Lightning creek to be valuable.

#### ANTLER CREEK.

The Wolf Creek Mining Company, situated on Antler creek near the mouth of Wolf creek and working with a small hydraulic plant, has apparently struck into a hill channel running parallel with Antler creek, in which excellent pay gravel was found. As the mine is not in a sufficiently advanced state to determine whether such is the fact, I can merely remark that should this channel prove continuous it will be a discovery of considerable moment.

---

---

#### GROUSE CREEK.

The Waverly Hydraulic Company has advanced the face of its open cut about 100 feet up stream this season, but is as yet working over old ground which was drifted many years ago. The channel is getting wider and pay gravel deeper, the claim paying about running expenses, with indications decidedly favourable for the future.

The result of the working of James Deacon and others on the hill side higher up Grouse creek during the season, goes further to confirm the previously conceived opinion that another auriferous channel exists, running parallel with Grouse creek on its right bank or south side. Mr. Deacon obtained an exceedingly fine "wash-up" for the work done.

#### STUART AND COFFEE CREEKS.

On Stuart and Coffee creeks, tributaries of Big Valley creek, some ten or twelve miles north of Barkerville, two companies report the discovery of gold in paying quantities. The one on Stuart creek, after running a tunnel some 1,000 feet in length, has reached bed-rock and is now drifting on fairly good pay ground.

The company on Coffee creek, after sinking several shafts and ground sluicing to satisfy itself the ground was valuable, has installed a hydraulic plant, which is now ready for next spring's work.

#### MOSQUITO CREEK.

The mines of Messrs. Flynn Brothers & Company have kept up their reputation as among the most prolific gold-producers of the District, although their run this year was but a short one, owing to the lightness of the snowfall, upon which they had to depend in a great measure for their water supply last winter.

#### HARDSCRABBLE CREEK.

Messrs. Johnston and Fry, after completing a tunnel some 1,800 feet in length which was started at Willow river and run up the creek till it struck bedrock, are now taking out pay.

#### WILLIAMS CREEK.

Messrs. A. McPherson and Co. made a promising strike in the hill on the west side of upper Williams creek, sufficient to justify them in bringing in ditches and putting on a hydraulic plant, which they operated for a short time in the fall with flattering results.

---

### QUESNEL MINING DIVISION.

There is but little to report regarding this portion of the District, although the amount of gold produced is about the same as in former years. Chinese working in small companies or in a desultory manner are almost the sole producers.

#### THE COTTONWOOD ALLUVIAL GOLD MINING COMPANY.

Just as this Company was starting work in the spring, a large land slide came down from the side-hill, along which their ditch and flume were constructed, and destroyed a large amount of the latter, while it was found impossible to reconstruct the flume, owing to the wet and sliding nature of the ground. The Company was therefore obliged to suspend operations for the present.

## WEST CREEK.

Mr. C. J. Seymour Baker's operations on West creek (a tributary of the Fraser river, about twenty miles from Quesnel) have been unsatisfactory in some ways, but the outlook upon the whole is very promising; work was carried on during the entire season, but as the clay bedrock dips back from the river, a constant changing of the sluices became necessary. The greater part of the gold found is of a fine nature. Appearances indicate the existence of an old channel, but sufficient work has not as yet been done to fully determine such to be the fact.

Mr. Baker has also given considerable attention to an examination of mineral lodes. A drift 75 feet in length was run on a quartz vein near West creek, in which carbonate of copper and native copper were found, but not in sufficient quantity to pay. This work will be continued. A laboratory is being set up at West creek for Mr. Baker's private use.

## THE CONSOLIDATED CARIBOO HYDRAULIC MINING COMPANY, LIMITED.

J. B. Hobson, Manager.

This mine, situated on the south fork of Quesnel river, was the first to prove to the world the existence in this District of large river channels of ancient date having no connection with, or relation to, the existing water-courses or present conformation of the surface of the ground. Although this mine has in previous years produced hundreds of thousands of dollars, the present may be said to be the first season in which the Company has had the full benefit of its immense water supply, by completion last year of a magnificent system of dams, ditches, flumes, piping, etc. I am at this moment in receipt of the following information from the manager as to the Company's operations during the season:—

“During the season of 1900 the hydraulic mines of the Consolidated Cariboo Hydraulic Mining Company, Limited, which are situated at Bullion, Cariboo District, B. C., were operated 167 days of 24 hours each with 2,750 miner's inches of water.

“The product for the season's operations amounts to about \$350,000 and was recovered almost entirely from the top gravels, which average about 300 feet in depth from the surface to the floor of the hydraulic excavation.

“The product for the season would, no doubt, have reached about \$400,000 were it not for the loss of about 24 days' washing time in the month of July, caused by delay in getting explosives delivered over the heavy and almost impassable roads between Ashcroft and the mine.

“Since it is intended to include in the next season's operations a large area of lower or bedrock bench of high grade gravel, it is probable that the product for the season of 1901 will greatly exceed that of 1900.”

## HORSEFLY HYDRAULIC MINING COMPANY, LIMITED.

J. B. Hobson, Manager.

The Horsefly Hydraulic Mining Company, Limited, the mines of which are situated on the south-west side of the Horsefly river at Horsefly, B. C., has continued development work since the close of 1899.

The main tunnel was extended about 400 feet, making its total length about 1,000 feet. From the main tunnel about 1,000 feet of drifts were driven in to the deposits, which opened up a large area of good milling gravel that can be breasted out and milled at a profit.

The result of the development proved satisfactory and work will be continued during the winter and the ensuing season of 1901.

THE MIOCENE GRAVEL MINING COMPANY, LIMITED.

R. H. Campbell, Manager.

This Company, of which the mine is situated at Horsefly river, is the second company to unearth a deep blind auriferous river channel of great promise, the depth of which is found to be 550 feet below the surface, the width not yet being fully determined but it is several hundred feet at least.

In breaking out through the bedrock (in which the shaft was sunk) into the gravel excellent prospects were obtained, sufficient to justify the management in believing that gold exists in paying quantities.

In view of the important factor these blind river channels were in contributing to the immense output of the placer gold found in California, and the further fact that the Miocene Company's shaft is sunk in the valley of Horsefly river, in a rolling or hilly rather than a mountainous country, which indicates that the deep channel must necessarily be of great length, the possible importance of this discovery to the country it would be difficult to over-estimate.

Having been favoured with a copy of the manager's report to the Company, I include same, which will be read with much interest by mining men.

" HARPER CAMP, B. C., October 1st, 1900.

*"To the President and Directors of  
The Miocene Gravel Mining Company of Cariboo, Limited,  
New Westminster, B. C.:*

"GENTLEMEN,—As Manager of the Miocene Gravel Mining Company of Cariboo, Limited, I submit my annual report for the season ending September 30th, 1900.

"This report relates to the work of getting in the wood, timber and other supplies preparatory to unwatering the shaft and sinking it 65 feet deeper, which would make the shaft a total depth of 550 feet, and driving off with a tunnel where it was supposed that the bottom of the channel would be reached.

"The winter was unusually mild and snow was late coming, which delayed the wood and timber hauling; however, we were able to haul in about 800 cords of wood on snow, besides timber for the underground work necessary for the season. During the month of March, the new steam heater, additional pumping machinery and new water column arrived at the mine. The heater was placed in position; the boilers and other machinery were overhauled, and on April the 1st we began pumping. As the water was lowered in the shaft the defective water column was removed. When the 250-foot station was reached, it became necessary to enlarge the same in order to make room for the compound cylinders which were to be added to the large Worthington station pump located there. While this work was being done the new water column was put in, after which the pumping out of the lower section of the shaft was begun.

"The two large sinking pumps were placed one in each of the end compartments of the shaft, and were lowered alternately. The work progressed satisfactorily and without accident until we were within 10 or 15 feet of the bottom, when we discovered a break in the plunger

barrel of one of the large sinkers. This, after some delay, we temporarily repaired, but before we got the shaft entirely dry we discovered a bad break in the same casting of the other sinking pump, which proved too difficult for us to repair. I at once ordered two new castings from the factory, which were three weeks on the way. In the meantime, with some difficulty, we held the water down until the new castings arrived. By the disabling of these pumps, we lost nearly a month's time, wherein no headway was made in the shaft.

"After the broken castings had been replaced by the new ones, the bottom of the shaft was soon made dry, but, before sinking could be resumed, it was necessary to excavate a station at the bottom and put in a tank for catching the water. This done, both the large sinkers were lowered to this point and used to pump this water to the 250-foot station, where the station pumps pumped it to the surface. This left the bottom of the shaft perfectly dry. The shaft was then sunk 65 feet in the bed-rock, which, owing to its nature, could be worked well with the use of very little powder.

"At this depth, 550 feet from the surface, a tunnel was driven in the direction of the channel for 400 feet, and, being still in bed-rock, an upraise of about 20 feet was made, where gravel was encountered and also a small amount of water.

"This gravel gave excellent prospects in gold, 10 to 20 cents to the pan, but indications were that we were not yet in the main pay channel. Fearing that we might encounter more water than we could handle by opening this upraise more extensively, not having any pumping facilities for handling this bottom water, we decided to stop work in this upraise and extend the main tunnel another 100 feet, which was done and another upraise made, and when about 15 feet above the floor of the main tunnel we suddenly broke through into what appeared to be, and doubtless was, the bottom of the main channel. Water and gravel came in with a great rush, driving the men from the upraise. It was necessary to bulkhead this to make it safe. Very little gravel was secured from this upraise, but enough to show that it was very rich. We had placed a small sinking pump in the bottom of the shaft to pump what little water escaped from above to the pumping station in the shaft, and, while its capacity was only 80 gallons per minute, we managed to keep the main tunnel dry with this small pump for nearly three days, hoping to make another drive from the main tunnel of about 100 feet, where we intended to make another upraise tapping the gravel at another point. This tunnel had been driven a distance of 30 feet when the water in No. 2 upraise increased, covering the floor of the tunnel and making further work in the 550-foot level out of the question.

"I then made arrangements for closing down, taking out one of the large sinking pumps, but leaving all the pumps in the pump shaft intact. I also put guides in No. 2 hoisting shaft, which leaves the two hoisting compartments all clear, ready for using skips and water tanks, so that when the shaft is again unwatered it can be done with much less time and expense, as we shall then have both the tanks and pumps to use for that purpose. The shaft is now in perfect condition.

"It may now be considered that all doubt heretofore existing as to the value of the bottom gravel in this enormous dead river channel has been dispelled, and that there doubtless exists an extensive body of high-grade gravel, it having been found to be enormously rich on its rims near the surface at but a few hundred feet distant from our shaft in the "Ward" Horsefly mine. No other conclusion can therefore be consistently arrived at.

"It will now be necessary to provide a suitable hoist, with cages and water tanks complete for the hoisting of water and gravel. It will also be necessary to provide a pumping plant for handling the bed-rock water."



PLACER GOLD MINING - MCKEE CREEK, ATLIN M. D.



VALLEY OF KLEHINI - CHILKAT MINING DIVISION, B. C.



---

---

**THE HORSEFLY GOLD MINING COMPANY, LIMITED.**

R. T. Ward, Manager.

This Company, working in the immediate vicinity of the Miocene mine, and formerly known as the "Harper Leasehold," has had a fairly successful season. I am indebted to the manager for the following interesting facts relating to the season's operations:—

"Last winter a tunnel was driven some 600 feet north from the old pit, where the Company's hydraulic lift had been working, finding pay on the bed-rock the entire distance and crossing what is regarded as the Hobson channel. This spring a pit was opened out for the purpose of working north and east of the old pit, and a hydraulic elevator placed therein. This pit was completed about the first of July, at which time the water in the river had fallen, enabling the Company to begin working the bed of the present river in an easterly direction, following along the rim-rock on the north side of the ancient channel until the present Horsefly river channel was crossed. This rim was worked to a depth of 30 or 40 feet below the present river level for a distance of 700 feet.

"The Company, having previously filled the river bed with tailings from last season's workings, was by this means able to pipe the ground where the river had formerly run. During the excavating of a new pit for the elevator, prior to the first of July, the Company had taken out only about \$3,000, but during July, August, and September the Company was on good ground, which paid well.

"At the close of the season, very rich gravel was encountered, \$7,000 having been recovered from 500 cubic yards of gravel. The expenses for the season were, approximately, \$13,000, of which amount \$3,000 was expended for additional plant and permanent improvements.

"The mine was left in excellent shape for next season's work. From 20 to 30 white men were employed during the season, but no Chinese or Japanese. The wages paid ranged from \$2.50 to \$5 per day of 10 hours, the men being boarded by the Company at \$5.25 per week. During the winter, the Company proposes sinking two shafts north of the present workings, 500 and 1,000 feet, respectively."

**VEITH, BORLAND & Co.'s PROPERTIES.**

Mr. G. A. Veith, of Keithley Creek, speaks in flattering terms of the future prospects of his part of the District. Messrs. Veith and Borland are perhaps the chief prospectors among the old-time miners of Cariboo who have interests on Keithley, Snow Shoe, Spanish and other creeks in the vicinity where prospecting work has been carried on for years. In all these creeks, Mr. Veith informs me, gold in paying quantities has been found during the present season.

Mr. Murphy, Mining Recorder of the Quesnel Division of Cariboo District, will speak further of the properties in this Division in his Report.

---

**DREDGING.**

Dredging operations in Cariboo District have been at a standstill during the present season, yet there is some evidence that another year will witness a resumption of this method of recovering the gold contained in the sands of our rivers.

Mr. A. W. Robinson on behalf of Messrs. Berry Brothers, who are the lessees of the lower ten miles of Quesnel river, visited the District in October last to examine and report on the conditions existing, with a view to putting a suitable dredge to work.

Mr. Robinson immediately put on a force of men to sink shafts in order to determine the value of the gravel from surface to bedrock, but, being so late in the season, time did not permit of his proving what he desired. Other persons, I hear, are likely to again take up dredging in the spring, but regarding this I have no definite information.

I estimate the gold product of the District for the year 1900 (exclusive of that part of the District now in the Omineca division of Cariboo District), as follows:—

Quesnel Mining Division .....	\$425,000 00
Cariboo Mining Division .....	135,000 00
Total .....	<u>\$560,000 00</u>

#### METALLIFEROUS MINING.

Very little has been done to further prove the value of our quartz veins, nor can we expect any material progress in this respect until the advent of the "Iron Horse" places Cariboo upon an equal footing with Kootenay and other favoured Districts of the Province.

Mr. Austin J. R. Atkin, who has spent a considerable part of the summer in examining our quartz ledges, writes me as follows:—

"In answer to your request for the opinion I have formed of the quartz ledges in this District, I submit the following:—

"The ledges lie in country rock of slates with seams of calcite, trending in a north-easterly direction. Although some of the ledges strike in the same direction as the slate, many of them strike across it at angles of from 10 to 75 degrees.

"Of those striking at the higher angles, some have gouge on the foot wall, while slickenside is in evidence in places to such an extent that the rock surface has taken a polish.

"With these favourable indications it is reasonable to expect permanency with depth, although in a country where the enclosing rocks are so disturbed it is probable that the ore bodies would be more or less broken, necessitating more dead work in mining than would otherwise be the case. They would probably be found more intact as depth was attained.

"Of the five ledges I have sampled in this District, there is not one but which contains ore that would pay handsomely under more economic conditions; and two at least will pay fair returns on moderate capital even with mining and milling expenses at the high figure of \$15 per ton.

"In the smaller ledges the gold seems to be carried evenly throughout, as is shown from the following assays taken across a ledge 18 inches wide.

"(A.) 2 oz. 6 dwt. per ton of 2,000 lbs.
"(B.) 4 oz. 1 " "
"(C.) 6 " "
"(D.) 3 oz. 12 " "

"From a ledge 12 inches wide:—

"(A.) 14 dwt. per ton of 2,000 lbs.
"(B.) 6 oz. 18 " "
"(C.) 1 oz. 12 " "
"(D.) 16 " "

“The samples were taken at distances of from 12 to 20 feet apart. The larger ledges carry the gold in chutes, which are surrounded by a similar looking rock in which, however, the gold contents are often very low. Fine-grained pyrites appear to indicate the pay chute in some instances. That some of these pay chutes are of considerable dimensions and richness is clear from the fact that one gave an average of 4 oz. 10 dwt. per ton of 2,000lbs. for a width of 96 inches and a length of 45 feet. Natural conditions rendered further sampling impossible.

“All the quartz I have seen in this District is heavily impregnated with iron pyrites, with a little galena in places, but although the ore is so well mineralised it can hardly be called refractory seeing that an extraction of 81 per cent. of the gold is possible by the cyanide process after the coarse gold has been removed.”

### QUESNEL MINING DIVISION.

The following report has been received from Mr. Jas. Murphy, Mining Recorder of the division:—

The actually producing companies in this division are:

The Consolidated Cariboo Hydraulic Mine . . . . .	South fork, Quesnel river.
The Horsefly Gold Mining Co. . . . .	Horsefly river.
The Hayward Co. . . . .	Snowshoe creek.
The Moore Co . . . . .	Spanish creek.
The Horsefly Hydraulic Mine . . . . .	Horsefly river.
The Golden River Quesnel Co . . . . .	South fork, Quesnel river.
The Ah Kion Co. . . . .	Snowshoe creek.
The Roses Gulch Mine . . . . .	South fork, Quesnel river.
The Golden Gate Mine . . . . .	Snowshoe creek.
The Discovery Co. Likely Gulch Claim . . . . .	Coquette creek.
The Lake View Co. Mine . . . . .	Quesnel lake.
The Ah Foot Co. Mine . . . . .	Keithley creek.
The Grotto Mine . . . . .	Keithley creek.
The Smith and Anderson Claim . . . . .	Little Snowshoe creek.

And a number of others.

Though the output far exceeds that of previous years, the season has been an unusually quiet one, owing to the fact that but little prospecting and development work has been done.

The Miocene Gravel Company, of Horsefly, completed their great shaft at a depth of 530 feet, or thereabouts, and, after tunnelling through bed-rock, tapped the long-sought-for channel, with results altogether satisfactory to the management. This company is now about to put in heavier machinery for the actual working of the mine.

The Horsefly Hydraulic Mining Company, also of Horsefly, has continued tunnelling operations, and is, I am informed, so well pleased with the dirt taken out that it contemplates putting on a large force of men next season.

The Cariboo Mining Syndicate, of the North fork of the Quesnel river, has been continuously engaged during the past winter and summer prospecting its ground, and is now arranging to set up a boring machine on the property, for the more rapid exploration of the same.

The Onward Co., of Keithley creek, after having conducted prospecting operations continuously for the past ten years or more, at a very considerable expense, has late this past autumn been, at least in part, rewarded for its perseverance by striking pay in good quantities, though not yet feeling certain it is on the sought-for channel.

The Roses Gulch Company, of the South fork of the Quesnel river, has its property opened up for hydraulicing on a small scale, and last spring and autumn took out a quantity of coarse gold. Experienced men speak favourably of this proposition, and say that, with sufficient water, which can be had with a reasonable outlay of capital, it will develop into a profitable mine.

Outside of the above-mentioned producers and undertakings, there has been no development work of any consequence. On some other leases a little work has been done, but in the majority of cases the ground has been left wholly unrepresented. Withal it must be said that the season of 1900 marks an epoch in the history of the Quesnel Mining Division, for the wonderful output of the Consolidated Cariboo Hydraulic Mine—upwards of \$350,000—has established beyond all doubt the fact that there are here well-defined deep auriferous channels, which, in richness and facility of working, compare favourably with anything of the kind known to the mining world. There can be little doubt but that many strong companies, encouraged by the success of the Consolidated Cariboo Hydraulic Mining Company, will, during the coming season, commence systematic and thorough development work on properties in this neighbourhood.

OFFICE STATISTICS—QUESNEL MINING DIVISION.

Free miners' certificates issued . . . . .	161
Mineral claims recorded . . . . .	9
Placer " " . . . . .	23
" " re-recorded . . . . .	20
Certificates of work recorded . . . . .	3
Lay-overs " . . . . .	3
Applications for placer leases . . . . .	25
Placer leases cancelled . . . . .	15
Transfers recorded (bonds, mortgages) . . . . .	15
Placer leases on which rents have been paid . . . . .	92

*Revenue Collected.*

Mineral tax . . . . .	\$ 6,172 97
Rentals on leases . . . . .	6,580 00
Free miners' certificates . . . . .	810 00
Mining receipts general . . . . .	222 85
	<hr/>
	\$13,785 82

NOTE.—The Division should be credited with some \$2,000 more than above, as many companies operating in the Division take out their certificates and pay first year's rent and all water rates into the head office of the District at Barkerville.

---

---

**OMINECA DISTRICT.**

—o—

**OMINECA MINING DIVISION.**

---

**REPORT BY FRED. W. VALLEAU, GOLD COMMISSIONER.**

I have the honour to submit my report upon the Omineca Mining Division for the season of 1900.

While there has not been as much prospecting done in the district as I should like to have seen, yet the past season has been a busy one for the different mining companies engaged in putting their properties into working order.

The summer was extremely wet and cold, and this retarded development work very much by keeping the trails in a soft condition. Nevertheless a very large amount of work has been done, nearly one hundred tons of provisions and mining supplies having been received by the different companies.

Following is a short description of the work done during the past season by the companies operating in the district:—

**THE 43RD MINING AND MILLING COMPANY OF CARIBOO, LIMITED LIABILITY.**

This, the pioneer Company of the Omineca District, after five years spent in development work upon its property, this fall (1900) began actual mining operations upon one of its claims, that situate at the mouth of Kildare gulch, on Manson creek, while everything is also in readiness now to begin work on a large scale at two other points upon Manson and Slate creeks.

The following are extracts from reports of Lt.-Col. Wright, Manager of the Company:—

“Leaving Ashcroft on April 14th with the Company’s team, I reached Quesnel on the 21st.

“Arrangements had been made during the winter with the H. B. Co., Stuart lake, for Indians with canoes to meet our party at Quesnel about April 20th, but owing to the late spring the canoes did not reach Quesnel until the 26th. Two days later (28th) I left Quesnel by canoe, taking the balance of hydraulic pipe left there the previous fall. After a tedious trip up Fraser, Nechaco and Stuart rivers I reached Stuart lake on May 9th. Arrangements were at once made to forward by scow some 6,000 lbs. of hydraulic pipe to Tatla lake landing (this pipe having been sent to Stuart lake the previous fall). The scow with the pipe started, and I left Stuart lake by canoe on May 12th, with one white man and three Indians, reaching Tatla lake landing on the evening of the 18th. The pipe was unloaded at once, and the Indians with the scow started on the return trip the same evening. I left next morning for Manson by way of Tom creek. Considerable snow was found on the trail, which delayed us. I reached Manson creek on the morning of the 24th May, where I found Mr. Cotton and party all well.

“Mr. Cotton, with the advance party, reached the mine on April 5th. An account of his trip will be found in his report.

"The different branches of the work were well under way. As usual in the early spring, considerable trouble, at a few points on the ditch, was given by the large quantity of snow water from the side-hills, causing a number of mud slides to come into the ditch from the upper bank. These dangerous points were secured by the cribbing after the water was shut out at the close of the season.

"The sides of the flume were boarded ten inches higher.

"The work of placing the monitor and changing the pipe line under the supervision of Mr. Roumage, the hydraulic foreman, being complete, the water was turned into the ditch on the 17th May, and piping started the same day at the mouth of Kildare gulch. It was found necessary to remove the deep deposits of marsh matter overlying the gravel before the elevator could be placed in position. This was done by the monitor, and the deposit piled up so as to form a levee to prevent the water from Manson creek, and that discharged by the elevator, flowing back into the pit.

"As soon as the top deposits were worked off the elevator was placed in position and washing started on June 20th. When the position of bed-rock was known, the elevator sump was deepened, and the elevator re-set five feet deeper. The suction pipe on the intake being removed allowed all material passing through the sluice boxes to flow into the mouth of the elevator and greatly increased the capacity of the machine.

"The plot (attached to this report and made by Mr. Roumage) of the ground worked will give an idea of the pit, the position of the elevator, sluice boxes, etc.

"The bed rock at the mouth of Kildare was very uneven and much broken up. This made washing difficult. In some places cuts several feet deep had to be made through the bed-rock to keep the sluice boxes at a regular grade, and at others the rock would dip several feet below the sluice box grade. All material below grade had to be shoveled into the boxes, but I am glad to say the further up the gulch we go the more even the bed-rock becomes.

"To facilitate washing it was necessary to locate the deep channel. Cuts, with this object in view, were made across the mouth of the gulch. No defined channel was found, but coarse gold was taken out in both cuts. Failing to locate a channel at the mouth, a third or middle cut was started up the gulch, keeping as near the centre as possible. After following this course for about 120 feet, a well-defined rim of what no doubt is a deep channel was struck. In this cut, as in the others, coarse gold was found from the start, and as the cut advanced the pay increased. The last two weeks' work averaged \$1.20 per cubic yard, and the last 5½ days' work averaged \$12.00 per day per man. Nuggets weighing from  $\frac{1}{16}$  oz. to  $1\frac{1}{4}$  oz. were found. The results show that the further up the gulch we go the more confined is the channel, the evenner the bed-rock, and the coarser the gold.

"In early days nuggets worth \$100.00 were found at the head of the gulch, one mile above where we are working, but the ground had to be abandoned by the old timers for want of a dump. The indications are that the mile of the gulch bottom ahead of our workings is rich and will give big returns next season.

"The elevator worked very successfully; all material that eight men could get into the sluice boxes, and that would pass through the throat, was lifted 29 feet without difficulty. During the season 15,625 square feet of bed-rock were cleaned, 4,088 cubic yards excavated, and 2,665 cubic yards stripped. The amount of gravel hydrauliced averaged 30 cents per cubic yard. Mint returns, \$1,183.61, and about 3 oz. gold at Ottawa.

"The Company's bench claims on the north side of Kildare gulch prospect well, coarse gold being found on the bed-rock which was uncovered by a land slide some 30 feet above the

base last season. This claim can be worked from the penstock which supplies the elevator, as soon as sufficient of the bottom of Kildare gulch is worked off to allow a dump.

"When I reached the mine I found that the other companies in the vicinity had considerably increased the rate of wages over what was paid the previous seasons. Out of a party of 17 Chinamen who had worked several seasons for us, only 4 could be had this spring. Two white men employed by us during the winter left soon after Mr. Cotton's arrival, being offered higher wages. These men leaving, and the Chinamen disappointing us, left us short handed.

"Early in the season 400 feet of ditch and flume were built to take the water out of Kildare gulch into the main ditch. This will give sufficient water for washing some two weeks earlier in the spring, before the snow will allow the water to come through the main ditch from the head, as well as providing water in case of an accident to the main ditch above this point.

"During the season 3,740 feet of flume and 840 feet of cribbing were built. This completes the main ditch as far as required for some years. Washing can be started on claim 22 as soon as the season opens next spring. This is a bench claim and the supposed outlet of the back channel of Slate creek, with bed-rock some 30 feet above Manson creek, which gives a good dump and so good returns from this property may be looked for.

"Our ditch commands all the property on the west side of Manson creek, and negotiations are now being carried on between this Company and the owners of the three claims situated between our property at the mouth of Kildare and our claim 22, with a view to the purchase of or working said claims.

"The main ditch also commands the greater portion of the Company's claims on Slate creek. Washing may be started there as soon as the necessary machinery is at hand to do so.

"A serious accident to Mr. Cotton, the breaking of one of the bones of his ankle on July 7th, compelled him to give up work and leave the mine on August 6th for treatment.

"Owing to the elevation of the flume (48 feet) over the second crossing of Black Currant gulch, some time was lost in getting the men accustomed to working at so great a height.

"To get a foundation for the flume over the back channel of Slate creek, it was found necessary to drive piles. Twenty piles were driven from 8 to 16 feet through the marsh matter to the gravel, under an 800 lb. hammer. This work was successfully carried out under the supervision of our old foreman, Keough. The electric light plant was successfully installed by Charles Chitty, our electrician. No night work was carried on during the season, owing to the shortness of labour.

"Drawings of a larger throat for the elevator have been sent to the makers. The throat will be ready for next season's work. With a larger throat the capacity of the machine will be greatly increased.

"Some 56,886 feet of lumber is on hand for future use, as well as 2,000 logs cut in the bush.

"Sufficient provisions are stored at the mine to last a full crew to the end of July.

"It is the intention next season to extend the telephone system over the whole length of the main ditch line, and add a number of phones and call bells.

"A quantity of hay was put up for next season's use.

"The 15 head of cattle taken in with the pack train last spring were a great boon to all. One-half were sold to outsiders.

"Mr. Valleau, the Gold Commissioner, had a new trail cut round Bald mountain. This will allow pack trains to reach Manson some weeks earlier in the spring.

"The officials of the Dominion Government telegraph line to the Yukon hope to have the branch line to Manson creek completed early next season. All material for it is now at Stuarts lake."

#### THE ARCTIC SLOPE COMPANY, OF VICTORIA.

This Company began actual mining this season on one of its claims situated at the mouth of Black Jack gulch, Manson creek, and from the ground worked recovered gold in paying quantities, the claim proving itself to be exceptionally rich. The following is taken from Captain Black's report upon the work performed under his management this season:—

"On Manson creek a good deal of new flume was built, and further improvements to the ditch made. A ditch was also dug from Lost creek to Discovery bar, a distance of about  $2\frac{1}{2}$  miles, connecting Lost and Graham lakes, the intention being to use these lakes as reservoirs. This will supply sufficient water for two monitors for 24 hours per day for two months, and for one monitor for 10 hours per day for the remainder of the season.

"A ditch has also been begun below the intake of that of the 43rd Mining and Milling Company. Considerable work has been done on this ditch, and it will be completed early in the season of 1901.

"The hydraulic plant was placed on the Manson creek property, the water turned on, and the mine thoroughly opened, having a face of between 500 and 600 feet, and showing a pay streak of 10 feet in thickness.

"Some gold was taken out, but, owing to a cold snap coming on the 1st October, we were unable to complete the clean-up.

"We have now at Manson three monitors and the necessary piping.

"In order to reach the Company's property on Germansen creek it was Germansen Creek. necessary to cut 9 miles of trail at our own expense. We also built  $4\frac{1}{2}$  miles of ditch, and turned the water on in August, but, as we have no plant as yet at this point, we did not do any mining, but closed down until the necessary apparatus can be put in. A survey has also been made for a ditch line from the south fork of Germansen creek to Manson creek, a distance of about 8 miles, a good line being found. Work will be commenced on this ditch next season.

"Pete Toy's bar, owned by the Company on Findlay river, has not Findlay River. been developed this past season. As there is no trail to the Findlay river the Company cannot get supplies or provisions to the property."

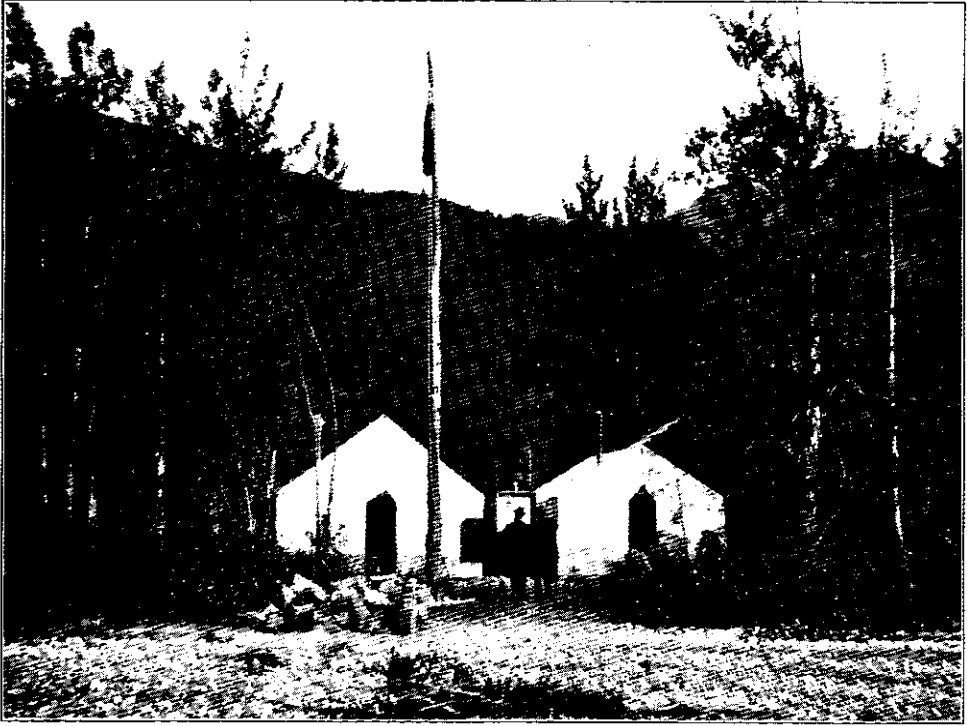
#### THE ST. ANTHONY COMPANY, OF SANTA BARBARA, CALIFORNIA.

This Company has had a force of men at work developing its property on Germansen creek, and hopes to get its ditch and flume completed next season. Up to the present time, some 7 miles of ditch and flume, together with a saw-mill, have been built, logs cut, and pipes and monitors, besides a large amount of provisions and supplies, freighted in.

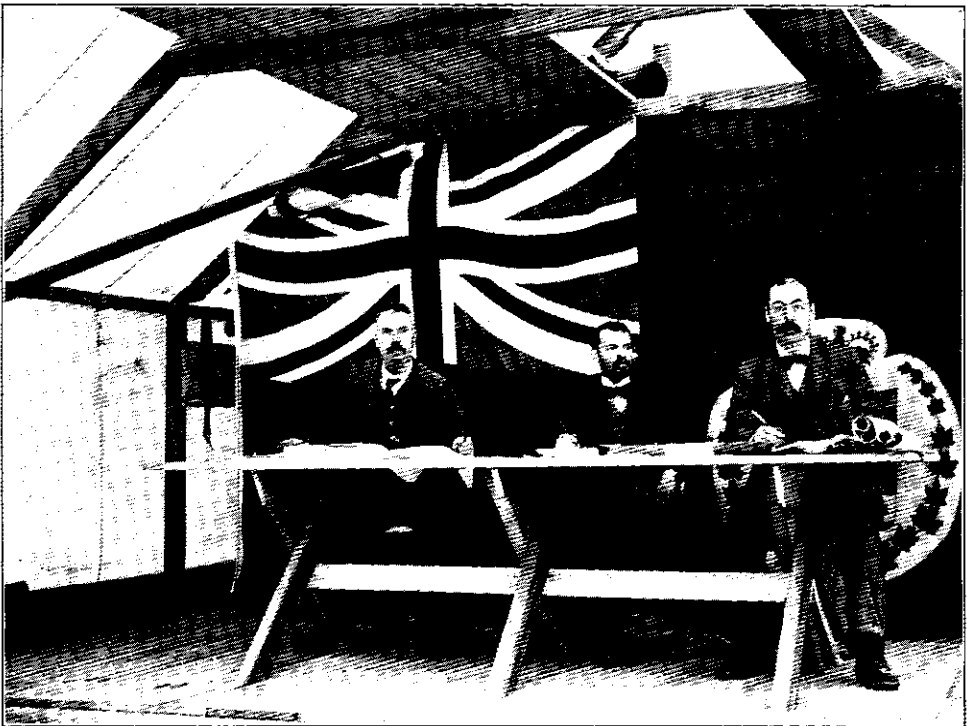
#### THE VITAL CREEK MINING SYNDICATE.

This Company is represented in Victoria by Dr. I. W. Powell, while Mr. George M. Hill is the manager resident on the property. Large amounts of provisions and supplies have been brought in, and a force of men kept at work during the past season running a tunnel to tap bed-rock in the channel of the creek.





COMMISSIONER'S CAMP—CHILKAT DISTRICT—B. C.



PORCUPINE COMMISSION—CHILKAT MINING DIVISION.

The property will be worked by drifting. The ground is deep and is reported to be very rich. The Syndicate has acquired the leaseholds belonging to the Caledonia Mining Company, of Nanaimo, and now has control of the whole of Vital creek.

#### THE TILTON-OTTERSON MINE, MANSON CREEK.

Work was begun on this property on the 15th April, the frost having thawed out of the ground by that time. Mr. Otterson arrived at Manson on the last day of March, unprovided with tools or food, it being impracticable in the early spring to transport the same from the coast to so remote an interior point. Through the courtesy of the mining companies and individual miners located on the creek, he was enabled to supply his men with these deficiencies to a limited extent, and he then constructed a ditch for the purpose of conveying water along the north bank of Manson creek, from a point about half a mile above Slate creek, to Poplar gulch, which is a short distance below, but on the opposite side to, Lost creek. This ditch has an average width of  $4\frac{1}{2}$  feet, a minimum depth of 3 feet, and a total length of about  $2\frac{1}{4}$  miles, gaining in that distance a head of 140 feet. The excavation attains quite a depth in places, in many instances 10 or 12 feet, and occasionally considerably more, and a good deal of solid rock was encountered during the construction.

One thousand feet of fluming was also built, nearly all the lumber for which had to be whip-sawed and carried on men's backs for a distance of three miles.

The work upon the ditch and flume has now been completed, pipes and monitors have been placed, and everything is in readiness to begin operations the first thing in the spring, while supplies sufficient for next season are already stored on the ground.

Besides the ditch just described, another, three-quarters of a mile in length, was constructed from the basin at the head of Skeleton gulch, on the south side of Manson creek, leading water therefrom to Lost Channel gulch, situated a quarter of a mile below Lost creek, on the opposite side of the stream.

A great deal of prospecting was done on this property during the summer, with pan, rocker and sluices, the results being almost invariably satisfactory. In Dry gulch as high as a dollar to the pan was obtained; in Lost Channel gulch 50 cents; and in Poplar gulch 76 cents was the best pan.

In Lost creek channel the results obtained, with one man shovelling into a sluice for a total of 62 hours, was  $5\frac{1}{2}$  oz. of gold, which, at \$16.50 per oz., would be a trifle over \$84.50. This clean-up I witnessed myself.

Messrs. Tilton and Otterson deserve much credit for the way they have pushed their development work this past season, and they have shown their faith in the district by the heavy expenditure they have made this year.

#### LOST CREEK.

This mine, owned and worked by Mr. McKinnon, consists of two leaseholds on Lost creek. It was worked during the past season with canvas hose and nozzle, water being brought on at a head of 85 feet. The property has paid very well this year for the work done. A sale is now pending, I believe, to some Victoria parties, who will operate next season on a large scale.

The Old Brown Company's mine, owned by Mr. Evans, was worked with good results this season until the end of August, when, owing to the scarcity of labour, it had to be closed down. This is a creek claim, and has been worked for the past 22 or 23 years.

### TOM CREEK.

On this property, owned by J. J. May, J. H. Lyon, and the Messrs. The Mayflower. Condito, actual mining has been begun, after three years of development work and a very heavy outlay of labour and expense in blasting out a deep bed-rock flume some 300 feet in length, 16 feet deep and 4 feet wide, which will enable the owners to reach bed-rock and will drain a large portion of the ground. On my visit to the mine on October 3rd, I found they had been shovelling in for but a few days, and had already recovered \$550. They expected to take out fully three times that amount before the close of the season.

### BOULDER CREEK.

Boulder creek rises east of Bald mountain, flows northerly and joins Manson creek at the third lake, below the town. The creek has been prospected this season by a number of men, who report it to be rich in coarse gold, and sixteen placer claims have been located and recorded. The creek is a good-sized one, carrying about 3,500 inches of water. Although reported to be rich, Boulder creek will be hard and expensive to work, as the wash is an exceptional one, containing many boulders 20 to 30 tons in weight and closely packed.

A quartz ledge, carrying galena, cuts across the creek, and has been traced for some distance. One claim has been recorded upon it this season, and some of the rock has been taken out for assay. Boulder creek is about 15 miles from Manson, and no trail has been as yet cut out to it.

### PEACE RIVER.

No information regarding hydraulic or placer mining has been received by me from Peace river this season. Last spring Mr. F. J. H. Bedson, Hudson Bay agent at Fort St. John, Peace River, was appointed a Deputy Mining Recorder, but, up to the present, no returns have been made by him.

Several mineral claims have been recorded on Mount Selwyn, near the junction of the Parsnip river with the Peace river, but no development work has been done, the parties paying \$100 in lieu of work each year, stating that it is not possible to work the claims until means are provided for getting machinery and supplies on to the ground.

### FINDLAY RIVER.

The bars on this river contain very fine gold, but in most cases not in sufficient quantities to pay for working by hand. A number of creeks empty into the Findlay river, none of which have been prospected to any extent. I only know of two men who are mining on this river, Mr. Boyer and his partner. They left Hazelton about 18 months ago, with provisions and supplies for two years, going north over the snow to Lake Thudada, at the head of the Findlay. Word has now been received from them that they are doing very well, and I believe other miners are preparing to join them next spring.

### FALL RIVER.

Ten hydraulic leases have been taken up upon this river by some Vancouver parties, who intend beginning work next spring.

### OFFICE STATISTICS—OMINECA MINING DIVISION.

Free miners' certificates .....	\$ 386 50
Revenue tax .....	282 00
Mining receipts general .....	7,457 29
	\$8,125 79

---

---

## CASSIAR DISTRICT.

---

### ATLIN AND BENNETT LAKE MINING DIVISIONS.

---

On August 15th, 1900, the Provincial Mineralogist left Victoria on the C. P. N. Co's. S.S. *Danube* for the Atlin District, to make a brief inspection of the placer mines in operation and to see to what extent the development work done on the quartz claims gave promise for the future.

The *Danube* left Victoria at midnight, proceeded to Vancouver, where the whole of the day of the 16th was spent taking on additional cargo and passengers, and left again at midnight with every cabin filled, the hold full to the hatchways with cargo and the forward deck occupied by cattle, chiefly destined for Dawson.

The *Danube* can scarcely be called a passenger steamer, as freight is the first consideration; nor does she make very good time, 10 to 12 knots per hour being the average speed obtained; however, she is a most comfortable boat, steady and seaworthy.

The steamer arrived at Skagway at 7 a.m. on the 21st, the journey from Vancouver having occupied some 108 hours, including a stop of 6 hours at Ketchikan, Alaska, waiting for the tide to make favourably through the Wrangel narrows.

The trip is a most delightful one, the course lying almost entirely between the coast range of islands and the mainland. Only twice is the vessel exposed to the ocean swells, when crossing Queen Charlotte sound and at Dixon entrance, and then but for three or four hours. The calm water thus ensured robs the journey of the horror of sea sickness, which might otherwise deter many from taking the voyage as a pleasure trip.

Only occasional glimpses are obtained of the ocean in its solitude and grandeur, but this is amply made up for by the ever-changing kaleidoscope of scenery, narrow, intricate channels seemingly not wide enough for the vessel to pass through, flanked by rocky islands of all sizes and by mountains which tower up abruptly from the water's edge, their peaks, usually rugged against the skyline, snow-capped and often covered with permanent glaciers which, as one proceeds further north, seem to gradually steal nearer and nearer to the sea till, in the latitude of Wrangel, they actually encroach on the domain of old Neptune, who, resenting such intrusion, breaks off huge masses and casts them adrift, helpless and powerless, to be gradually absorbed in the warmer waters of the Pacific.

The rugged coastline is frequently broken, permitting glimpses of fertile valleys extending inland for miles and through which flow large and often navigable rivers, the ceaseless tribute of the mountains to the ocean. These valleys, which are covered with unbroken forest extending up to the summits of the mountains and as far as the eye can see in every direction, wind about the feet of monster peaks, each seemingly grander than that nearer, and appearing like an army of giants, rank upon rank, prepared every one in its turn to stop the gap should still another of its fellows fall into the grasp of the ever-encroaching sea. It seemed, indeed, as though these mountains, in the never-ending strife between sea and land, had been met and halted by the mighty deep and that the steamer took its course through a neutral ground between conflicting armies, a district half ocean, half mountain.

Such is the scene on a fine August day, grand and impressive, and leaving scope to the imagination as to how terrible it must become in winter storms, when the air is a mass of flying snow, and the wind, losing the balminess of the Pacific in summer, takes on its Arctic mood and pierces like a knife through any clothing.

The coast is dotted at long intervals with small settlements, the nucleus of each seemingly being some large salmon cannery where, for a short season, a large number of men are employed, but which in winter is relegated to the care of a few watchmen and permanent employees.

The town of Skagway is situated on the more easterly of the two arms into which the extreme northern end of Lynn canal is divided, and is in territory claimed by both the United States and Canada, but at present under the jurisdiction of the former country.

On the other of these arms is situated Dyea, and it was from these two towns that the trails over the Chilkoot pass and White pass began, the horrors and hardships of which are now, happily, but memories, although matters of only two or three years ago: to-day a journey to Atlin or Dawson is a holiday trip.

The only excuse for the existence of Skagway is that it is the starting place for Atlin and the Yukon, and the point of trans-shipment from the steamer to the railway. There are three or four good wharves, which are connected with the shore by pile-supported approaches, extending for over half a mile across mud-flats which are uncovered at low water, the tide having a rise and fall of some 40 feet. The only one of these wharves at present in use is that in connection with and used by the White Pass railway. The town has fair hotels and good stores with very reasonable prices: these exist entirely on the trade caused by the traffic to and from the Yukon.

From the sea to Bennett is a distance of about 40 miles, but the town lies on the further side of the mountain range which divides the drainage area of the western coast from the drainage area of those streams flowing north. The White Pass and Yukon railway, starting from Skagway, crosses this mountain range by the White pass, following a steep but not very difficult ascent for some 30 miles when the Summit (the provisional boundary established between Alaska and Canada) is reached. From here there is a gradual descent for about 10 miles, through bleak and desolate country, to Bennett, which is at an elevation of 2,150 feet above sea level.

Bennett is situated at the southern end or head of the lake of the same name, the first of a series of great lakes and connecting water-ways, navigable for steamers, the waters of which flow northward into the Yukon river, past Dawson and thence westward through Alaska, finally being discharged into Behring sea. Bennett, also, owes its existence to the Atlin and Yukon trade, for it was here the White pass and Dyea trails came together and from here the second stage of the journey to the Klondike was begun, by boat in summer and over the ice in winter. Here, too, it was that all the scows for carrying freight to the Yukon were at first built, as well as many of the steamers which afterwards largely replaced them, and the saw mills necessary for these enterprises, together with the hotels and stores for the accommodation of travellers, formed the nucleus of the town.

Early during the past summer the White Pass and Yukon railway was extended past Bennett along the eastern shore of the lake, the arm of which it crosses at Caribou Crossing, and was continued northerly across country till it again struck the Yukon river at White Horse, just below Miles canyon, at which point passengers and freight are now transferred to steamers or scows and thence proceed by river to Dawson.

Of course, this arrangement has considerably diminished the importance and prosperity of Bennett, and would have done so still more were it not that the rates charged by the railway and connecting steamers on the Yukon are so exceedingly high that much freight of the bulkier and less valuable sort is still taken down by scows. Live stock for the Yukon is also chiefly driven over the trails and shipped from Bennett by scows, of which, too, many more are needed in the fall, when the water is so low in the Yukon as to interfere with steamer navigation, in order to accommodate the rush at the end of the open season when everyone is getting in the last supplies for the annual hibernation.

Scow-building, therefore, still continues an important industry, but has become more scattered, scows being built at the various saw-mills which have been established along the shores of Bennett lake, Taku arm, and even on Atlin lake. Many of these scows, however, go to White Horse empty. This fall there must have been several hundred scows, varying from 10 to 40 tons capacity, much of the lumber for which came from Victoria or Vancouver built and for sale near Bennett; yet it is said the market was not overstocked. It must be remembered, however, that a scow only makes one trip, being broken up at the end of the journey, for it is unprofitable to tow it up stream.

Bennett was formerly the seat of the Gold Commissioner for what are now the Bennett and Atlin Mining Divisions, but, since the placer discoveries near Atlin became so important, this official has been moved to that town, although Bennett still retains the office of the Mining Recorder of the Bennett Mining Division.

The steamer *Gleaner* leaves Bennett twice a week with freight and passengers for Atlin, proceeding down Bennett lake past Caribou Crossing, then up Taku arm to Taku City, situated on the east arm of the lake of that name. At Taku City a transfer is made to a so-called railway, one of the shortest and most high-priced in the world (it is 2 miles long, the passenger fare is \$2.00, while the coaches are only flat-cars), connecting the east arm of Taku lake with the west shore of Atlin lake, from which point a steamer runs to the town of Atlin on the east side of the lake.

#### ATLIN MINING DIVISION.

Atlin lake is about 60 miles long and 5 miles wide, its length lying nearly north and south, the northern portion being in the Yukon Territory, and the southern in British Columbia. It empties through the Atlin river into Taku arm at Taku City. The lake is at an elevation of 2,200 feet above the sea, and is surrounded by high, bare mountains. It contains some large islands, one of which, Teresa island, rises to a height of 3,000 feet above the lake.

The town of Atlin is situated near the present mouth of Pine creek, on gradually rising land which was evidently formed by the creek mentioned at some remote period when it must have been a stream of considerable size. The situation of the town is ideal; looking across the lake to the towering mountains on the opposite shore the view is beautiful.

Atlin is well laid out and substantially built, although, naturally, of wood. The hotels and stores are good, and the prices not exorbitant considering the freight rates from the "outside."

Atlin is the seat of the Gold Commissioner of the District, of the Mining Recorder of the Atlin Division, and also of the Court of the District.

---

---

PLACER CLAIMS.

The placer discoveries in this Division which have so far proved of any consequence may be said to have been confined to a small area within a short distance of the town of Atlin, comprising the drainage area of Pine, Spruce, and McKee creeks, a description of which has already been given in the Reports of this Department.

From the cursory survey which the time available alone permitted, it would appear as if there had been two distinct "runs" of gold over the area indicated.

The first "run" seems to have been associated with a peculiar yellow gravel, caused by the oxidization of the iron which seems to have penetrated the smaller boulders and pebbles to the very centre. The gold from this run appears to be of higher value than that of the later run, and has a peculiar reddish tinge.

If one may take this yellowish wash as indicative of this particular run, and there are good reasons for so doing, it would appear as though this deposit extended over Spruce creek and probably through Stephendike gulch, as well as over a considerable portion of Pine creek from Stephendike up nearly to Surprise lake, particularly on the southern side of Pine creek.

No indication of this wash is seen either below the rocky barrier which crosses Spruce creek at about "120 Below" or below the mouth of Stephendike gulch on Pine creek, neither is it seen on McKee creek.

An attempt was made to trace a possible flow to this deposit, levels being taken by barometer, but, as the weather was very changeable, the results were not conclusive. However, the indications are that a flow did occur down the general course of Spruce creek and, presumably, down Pine creek to what was then the meeting point of these two creeks at about Stephendike gulch.

This yellow wash is at present being worked by various tunnels, notably Peacey's on Spruce creek, the pay dirt being mined and afterwards sluiced, and the indications are that it extends for some distance into the bench claims of this section.

The first run, which may be said to have travelled westward, was followed by a period of heavy deposits of clay and gravel, accompanied by some denudation and seemingly barren of gold.

The second gold run, which was accompanied by bluish gravel, seems to have come from the direction of Boulder and Birch creeks, and to have also extended to McKee creek, the gold being bright but not as high grade. This run also seems to have been local, as indicated by the deposits.

It seems probable that the lake formerly extended up to the rocky barrier near Stephendike gulch, and that both Spruce and Pine creeks emptied into what is now called Trond gulch, then under the lake.

This theory that the lake extended at one time as far as the rocky reef before referred to is further sustained by the structure of the various terraces and the fact that the whole lower valley of Pine creek, some miles in width, has been proved to carry gold, not necessarily on bed-rock but all through the gravel, often near grass roots. Much of this ground, indeed, may yet prove worth hydraulicizing should the questions of water and dump be solved.

After this second run came a period of general subsidence, followed by another general lowering of the water level, or raising of the land, and accompanied with the wearing down of the present channels of the creeks, which, in places, cut through the previous gold runs and

concentrated the gold in the present channels. At this period, probably, the rocky barriers already referred to, across both Pine and Spruce creeks, were broken and the streams were thus enabled to cut out their present channels.

As has been already said, the examination made of the field was very brief and the preceding theories are advanced with much hesitancy as the result of, possibly, too short an examination; but, be the theories of formation or deposition what they may, the practical fact is that gold in quantity to pay for ordinary placer working has only been found, as indicated, over a limited area and in a few creeks.

The gravel in the greater part of the creek-beds has been deep with numbers of large boulders, and even where found to be fairly rich it could not possibly be worked to a profit with the 100-foot British Columbia claim, the dead work being too great.

Occasionally, adjoining claims have been amalgamated and most of the successful creek claims have been worked in this way, but here again trouble was met with, the owners of amalgamated claims taking longer to clean up one side of the creek than the owners of the single ones and not being ready to switch the stream over when others wanted it.

Placer mining must be carried on on the "give and take" principle, and can not be governed by any set laws. Much must be left to the judgment and sense of fair play of the Gold Commissioner, who should not be tied down too closely and who must be clothed with authority sufficient to enforce his decisions and to put down the "hog."

Enough was seen of the working of the "Placer Act" to show that the Gold Commissioner had not sufficient powers at present and he, knowing how limited his powers were, in many cases refused to make decisions which, could they have been made, would have proved of great benefit to the camps.

As far as the creek claims are concerned, however, the season of 1900 will see the great majority of them either worked out, abandoned, or sold to some hydraulic company which, by the use of water power and suitable appliances, will be able to move the gravel and get the gold much cheaper than could possibly be done by the laborious and costly methods of placer mining in vogue, and thus much unprofitable placer ground will be turned into very profitable properties.

A number of bench claims are still being worked and some of them to a profit, but it is probable that most of these will, in a short time, also be given up to hydraulic methods, for which they are much better suited. This means, not a diminution of the amount of work done or a diminished product, but an increased amount of work and increased output effected by hydraulic means at a fraction of the cost.

Later advices from the District state that, on the right bank of Spruce and the left bank of Pine creeks, shafts have been sunk through the heavy wash on the benches to a depth of 30 to 50 feet, and that the yellow strata of what has been called the "first run" of gold has been struck and proved to be quite rich—which facts very much strengthen the theories of deposition already given. These benches have recently been tested by shafts at Gold Run—a blind gulch on the left bank of Pine creek about 2 miles above "Discovery"—and are stated as proving rich enough for profitable drift mining.

There is one thing to be noticed about Atlin this past season and that is the absence of the "broke" miner. They all had money and apparently had made good wages.

#### HYDRAULIC MINING.

Under the wording of the "Placer Act," hydraulic leases may only be issued for "abandoned or unused" ground, consequently no hydraulic work can be expected on the



creeks until the placer mining is finished. Up to the present time, therefore, very little has been done in this class of work, except that, on the shallow benches of Pine creek, some of the placer claims have been worked for the owners on a royalty basis by hydraulic companies.

Preparations have been made, however, to install several hydraulic plants, some at least of which have a very good prospect of success.

Over 400 hydraulic mining leases have been applied for in the Atlin District during the past year, but it is needless to say that only a fractional number will ever be worked, seeing that, even when there is the requisite amount of gold, many of them lack both water and fall for dumping, requirements which do not seem to have been considered as necessary by the applicants for the leases.

Speaking generally, there is unquestionably a very large area of gravel which, from well-authenticated prospecting, may be classed as profitable hydraulic ground, provided water and dump can be obtained. In addition to the benches and the bottoms of the various creeks, a large portion of the area comprising the valley of the lower Pine creek, which has herein been considered as the wide mouth of the ancient creeks, has been prospected by pits and is reported as carrying gold in quantity to pay for hydraulicing. Water can be had for much of this land under suitable head, but the question of dump will be a serious one unless the matter is approached in a systematic manner from the lake shore, and this will require to be done by a powerful company.

Pine creek, from Surprise lake to the falls at Junction "City," has a  
**Pine Creek.** very slight fall, and consequently only on its lower reaches could water be obtained from Surprise lake with sufficient head to be of service, while, for the same reason, very poor dump is obtainable.

If the ground on the upper reaches of Pine creek bottom is to be worked it will have to be done before that of tributary creeks, otherwise it will be covered with the tailings from these creeks, while the water will have to be brought from some source not now known.

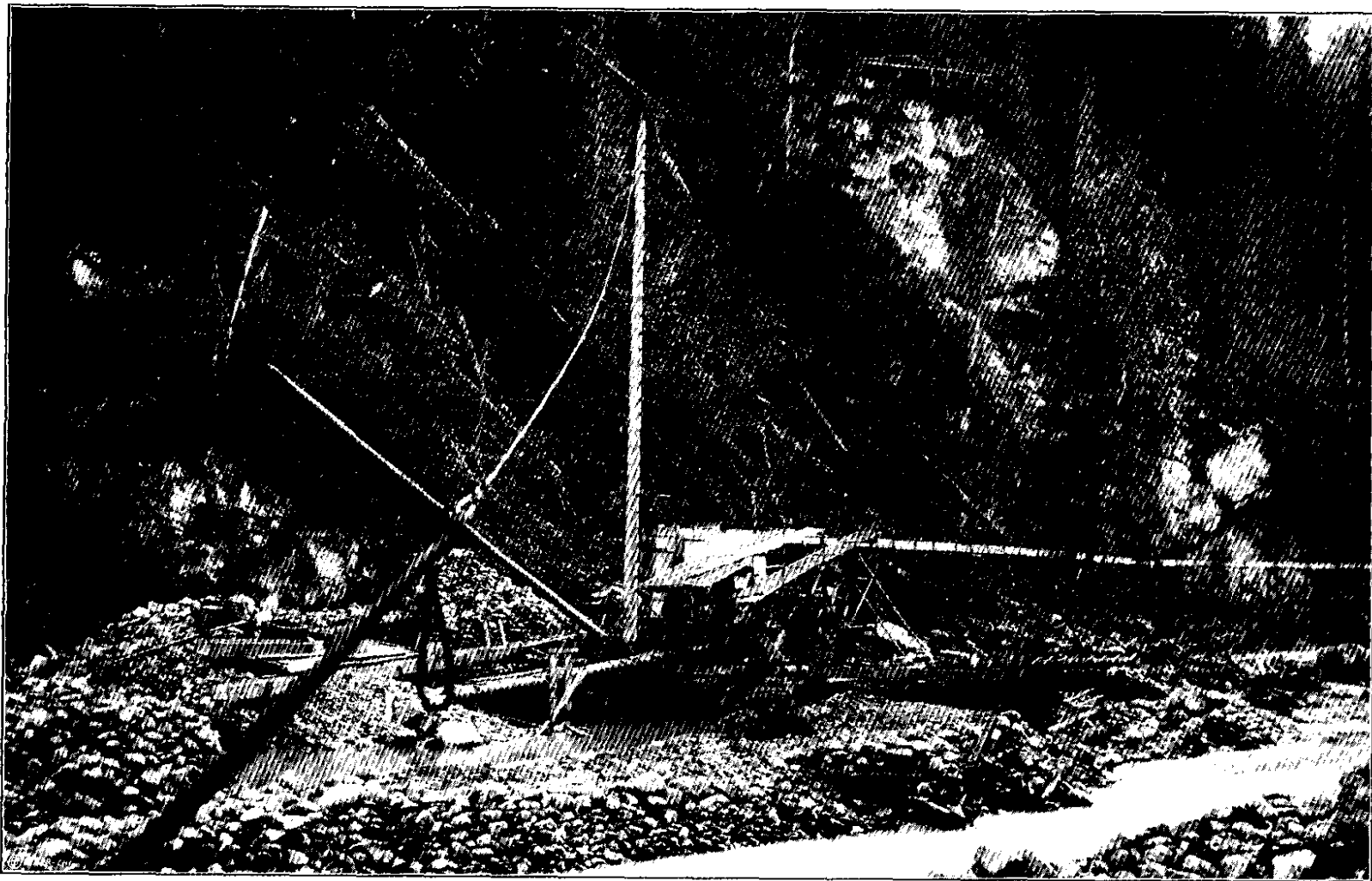
Hydraulic plants have already been established on Pine creek, the Willow Creek Hydraulic Co. doing a little work on the low, shallow benches near "*Discovery*," and the Sunrise Co. working just above this, on the same side of the river. Both these companies ran their tailings into the creek and at once interfered with the flow of the water, so prejudicing the right of certain placer claims which had not yet been completely worked out, with the result that hydraulicing had to be stopped for the season. So far, therefore, no definite idea can be had as to the value of these propositions, or how their dumping arrangements will turn out.

It is to be feared that the only practical solution of the problem is the formation of one large company holding all of Pine creek from the falls up. Such a company could then begin at the lower end and work up the creek.

The Atlin Lake Co., Mostyn Williams, Manager, has bought out  
**Birch Creek.** practically all the placer claims on Birch creek, and has constructed a small dam and flume, through which the water is carried to the lower part of the creek, just above the Pine creek benches. Here two monitors have been placed and a bed-rock flume has been started, in readiness for operations next summer.

The flow of water in the creek is not sufficient for any serious work, but it is understood Mr. Williams contemplates bringing in water from elsewhere.

The question of dumping ground for this property is still rather indefinite, but, as the creek has a good grade, this question will soon solve itself as the work proceeds up stream.



PORCUPINE CREEK -ALASKA---SHOWING WORKING OF LARGE PLACER CLAIMS.

The channel of the creek is comparatively narrow and well-defined, a decided advantage. The wash is largely composed of big boulders, which will require handling, but the whole proposition is quite feasible and if individual placer miners working on 100-foot claims managed to make them pay, then the outlook for the Company should be good.

This creek has been taken up for hydraulic purposes by the Pendugwig  
**Boulder Creek.** Hydraulic Syndicate; C. Christopher, Manager. This Syndicate has leases covering the second tier of bench claims, and is reported to have bought the creek and first bench claims from the mouth of the creek up to about "30 Below."

The Company has established a small hydraulic plant at about "70 Below," and brings water in by a flume on the left bank of the stream to a pressure box giving from 100 to 150 feet head and supplying a 5-inch monitor through a 10-inch pipe.

Placer claims on this creek were working from "23 Below" as far up as "20 Above," the benches also being worked. To judge from royalty paid, the results from several of these claims must have been satisfactory.

On this creek some placers at about "19 Below" had been consolidated,  
**Wright Creek.** and were being worked by a company, and other creek claims and benches here and there were being worked as high up as "48 Above," some of them with satisfactory results.

The Pendugwig Syndicate has a plant near the mouth of the creek, similar to that on Boulder creek, the intake for the flume being situated at about "40 Below. No very definite results have as yet been obtained from this hydraulic plant.

For the greater part, the creek claims on this creek are about worked  
**Spruce Creek.** out or abandoned on account of depth of bed-rock. A few claims in the neighbourhood of "98 Below" were still working, and these should be worked out this coming season. Above "Discovery," one claim, about "18 Above," had been worked, while some 10 miles above "Discovery" about 8 men were still at work.

Except in certain parts, the channel was found to be too deep for profitable placer mining, and the ground is being taken up for hydraulic mining. On the benches a good deal of tunnelling was being done, the dirt being mined and wheeled out to sluices, with, it was reported, satisfactory returns.

The creek has a moderate grade, and probably enough water in the dry months for two monitors.

On this creek, many of the placer claims have been consolidated,  
**McKee Creek.** making it possible to work to better advantage, and very satisfactory results are said to have been obtained; but here, again, deep bed-rock and large boulders have interfered, and it is understood that most of the creek claims have been purchased by a syndicate, and will be worked next season by hydraulics, for which in many ways the creek is very well suited, having a good grade and a very fair water supply.

#### QUARTZ CLAIMS.

As is usual in a placer mining country, quartz mining or prospecting receives little serious consideration until the placers are exhausted, and such has been the case in the Atlin Mining Division. It is only fair to remember this and not to judge the District finally by the prospects which, up to the present, have been developed.

Much of the bed-rock and country rock of the district is porous and soft, seemingly, in some places, a decomposed diorite, and again, in others, a serpentine and magnesian quartz rock.

The whole country would seem to have been subjected to a wash of gold, since almost any of these porous rocks carry gold at the surface. It seems, however, to be merely at the surface, and not to be an original constituent of the rock.

A number of mineral locations were examined which had been unquestionably staked on rock of this sort, and which are, of course, valueless.

The *Anaconda Group*, on the shore of Atlin lake, was one of the most promising, systematic sampling and assaying of the dust from drill holes giving fair promise of success; but a tunnel, which was subsequently run under and in the bluff, showed that the values are largely superficial, though they may have been carried to some depth through cracks and fissures.

These conclusions were made from the assays of the company developing the property, and were confirmed by personal examination.

There are, unquestionably, however, true quartz veins in the district, Imperial Group. the best known and certainly the best developed of which is on the *Munroe Mountain* claims or, more correctly, the *Imperial Group*. This property is under bond to the Nimrod Syndicate, and work is being carried on under the superintendence of Mr. Featherstonhaugh. The claims are situated on the south slope of Munroe mountain, about 5 miles from Atlin and overlooking the valley of Pine creek.

A distinct quartz vein, following the hillside, cuts east and west through a magnesian quartz rock and across a contact into a serpentine; it varies from 1 foot to 8 feet in width, and may be averaged at 30 inches. Some 30 feet below the outcrop of this vein, a cross-cut tunnel had been run to the northward for 20 feet, when the vein was struck, which at this point was about 8 feet wide. From here a drift had been run to the east for about 15 feet, the vein being found to diminish to a width of 2 feet, while another drift had similarly been run to the west for about 80 feet and from this latter, where the vein was 6 feet in width, a raise had been made to the surface, a distance of about 30 feet, and a winze had been sunk to about 20 feet in the vein. At the face of this latter drift the vein was about 18 inches wide.

Some 100 feet lower than the first-mentioned tunnel, and nearly beneath it, a second cross-cut tunnel had been run to intercept the vein, which it did at a distance of about 75 feet in. A drift had then been made to the west for 35 feet, and another to the east for 40 feet, at which point the latter struck the contact of the magnesian rock and the serpentine. Here a slight faulting of the vein had occurred, but it continued into the serpentine and had been followed by the drift some 10 or 15 feet further.

The quartz vein matter was very much shattered, in places so much so as not to require powder. I am informed by the management that at and near the surface it carried gold values of from \$10 to \$15 to the ton, but that these had not been maintained with depth.

Some 270 tons of ore, obtained chiefly from the upper level and from the raise and winze already mentioned, were taken by team to the 5-stamp mill near Atlin, belonging to the company, a distance of 6 miles. This ore is reported to have yielded about \$8 per ton, while another lot of about 25 tons, obtained chiefly from the lower levels, was tested in the same way and is said to have yielded less than \$3 per ton.

The writer sampled the faces of the lower level in company with the management and obtained an average sample, the assays of which did not give much encouragement; indeed, the property was closed down in September last, as a result of assays obtained in the lower level and on account of the narrowing of the vein at each end of the drift.

It was the opinion of the writer that development had not been carried far enough to the eastward, and he so advised the management, who recommenced to push the lower drift in that direction, with what results has not been learned. It is reported, however, that the 5-stamp mill has been removed from Atlin lake to a point near the property, and that further development is now proceeding.

Such gold as is found seems to be free, and there is reason to suspect that the surface enrichment is largely due to infiltration of the fine placer gold which, as already mentioned, has covered the district.

In the quartz some galena was found near the surface, but not in sufficient quantity to be important.

On the same hillside (Munroe mountain) there are outcroppings of a number of other quartz leads which carry gold at the surface, but, as no development has been done, it is impossible to say whether they are likely to prove of value.

On Pine creek, about "*Four Below Discovery*," a mineral claim has Red Jacket M. C. been staked and a shaft sunk at the side of the creek, and from this it is understood a drift has been made under the bed of the stream. The property was in litigation, and was, consequently, shut down, the shaft being full of water, so that it was impossible to inspect it or to obtain definite information with regard to it.

From what material was lying about, it appeared as though the shaft had been sunk on a soft, decomposed quartzose dyke. The probabilities are that in such porous material a certain amount of enrichment would have taken place from the bed of this the richest part of the creek, and that the permanent value of the deposit will only be determined at some depth.

There seems to be no question, however, but that much of the rock matter obtained from the workings did give high gold assay values.

The Nimrod Syndicate was about the only concern doing serious development work in the District. It has erected on the shore of the lake at Atlin the 5-stamp mill already mentioned, driven by steam, and with which mill tests are made of the various properties held under bond by the syndicate, the ores being drawn thither in waggons. The mill is admirably suited for this purpose of testing the ores, and is a valuable acquisition to the District, as it enables a mill test to be made on the spot. It is to be hoped that it will be made use of by the mining men of the District, since it is understood it may be obtained by anyone for a test on very reasonable terms.

The mill is adjacent to the *Anaconda Group*, held under bond by the *Anaconda Group*. same syndicate, and it has been used to test the ores from this property.

The group, already referred to, and a series of other locations, some of which are now in litigation, owing to loose methods of staking and recording, all lie in the old valley of Pine creek, and seem to have been staked on a zone of somewhat porous magnesian rock, containing veinlets of quartz, much shattered and associated with a serpentine, near the contact of which the best gold values were obtained. The writer was unable to find any vein or mineralization of importance, and is of the belief that the values are largely due to infiltration of placer gold.

There have been a number of other mineral locations made in the neighbourhood of Atlin, near the summit at the head of Spruce creek, on the north-west flank of Munroe mountain, and elsewhere, but as little or no development had been done on them and they were not being worked they were not visited.

Appended follows a description, kindly given by Capt. Livingston Thompson, P. L. S., from a personal examination made by him, of a group of claims of the existence of which the writer did not learn in time to enable him to visit them.

“Recorded owner, Mr. Gleason, of Atlin. This group consists of 4 **Big Canyon Group**. claims situated on the east side of Fourth July creek, about 10 miles from Atlin lake.

“The lead is about 10 feet wide, standing nearly vertical and plainly to be seen running along the face of the hill; the strike is about north-east and south-west.

“The work done consists of a tunnel, 6 feet by 8 feet and 150 feet long, driven on the lead. In this tunnel, near the entrance, a chute of galena appears for some 35 feet, while near the face another chute of galena seems to be coming in. At about 75 feet in cross-cuts have been driven each way. The lead has soft talcose matter along the walls, between which and the granite there is a zone of highly mineralized schist. Parallel with the main vein are three others, respectively, 2 feet, 9 inches and 4 feet wide.”

Several claims have been staked at the south end of Atlin lake; these, however, were not personally inspected as at the time only one assessment had been done; they were not being worked and their location was very indefinite.

Samples from this section have shown 15% copper with small silver and gold values, the ore being a bornite.

It is also reported that there exists a deposit carrying metallic copper in small grains, but the writer was not able to obtain particulars or samples at the time.

A sample was later obtained for assay from a gentleman interested in one of these claims. The rock seems to be dark, granular, almost oolitic in structure and evidently of igneous origin.

The assay of the sample showed it to contain  $\frac{3}{4}$ % Cu. with small silver values, while a rough concentration made on clock glass gave a little over  $\frac{1}{10}$ % by weight of metallics—five grains of copper—which were, with difficulty, visible to the eye in the rock sample.

Further samples of iron sulphides in quartz, from claims in this section, were found to contain gold, though not of high values.

Nickel is also reported as having been found, but authentic information and samples could not be obtained.

Owned by the Engineer Mining Company, of Skagway: President, Engineer Group. John Hislop, Skagway; Secretary, Elias Ruud, Skagway.

This group of 13 claims is situated in Atlin Mining Division, on the east side of the Taku arm, a branch of Tagish lake, about 9 miles south of the Golden Gate.

The property lies near the shore of the lake and can be reached by steamer, if arrangements can be made with the steamboat company to run down there from Golden Gate on the bi-weekly trip from Bennett to Atlin. Failing such arrangements the property is reached from Golden Gate by trail, a distance of 9 miles—or by canoe, if such is obtainable. The property was not visited personally, owing to the necessity to start for Chilkat District, but the following information was obtained from the Secretary of the Company, at Skagway:—

“The property was taken up by a locating party of engineers of the White Pass and Yukon Railway—hence the name. The discovery was made on a small stringer of quartz carrying free gold visible to the naked eye. Assays from specimens taken from this stringer gave any results up to \$13,000 per ton.

"Development work was begun on this stringer and continued over the greater part of the property. In following the stringer a large body of quartz was struck, running at an angle of 60° with the strike of the former. Further prospecting disclosed parallel ledges and stringers, and samples of quartz were taken and assayed, but gave little satisfaction. Four tons of ore from the rich stringer were then taken out and were milled at Juneau, some \$23 per ton being saved on the plates and 1% of concentrates, worth \$83 per ton, being obtained.

"A tunnel was then started from the shore of the lake and has been run 250 feet through slate, the formation dipping into the hill. At 215 feet in, and not quite at right angles, this tunnel struck a quartz ledge which was 20 feet in thickness.

"The Company had 9 men at work during the summer."

It is understood the Company has already made arrangements for a mill which will be erected on the property in 1901. The results will be watched with interest, as undoubtedly samples of the ore carry free gold and sampling is unsatisfactory in such cases unless on a large scale.

The Company is a local one and seems to have confidence in its property. Its affairs appear to have been run so far on pretty nearly a cash basis. It is understood that the requirements for a Crown grant have been complied with, but application for the same has not been made.

In a prospectus issued by the Company, a copy of which was obtained from the Secretary, the following table is given.

*"Assays and Cyanide Tests.*

"In every case a general average sample has been tested.

"Fire assay:—

	Gold.	Silver.	Total value per ton.
"Cross-cut 1.	—\$ 9 40	\$2 05	\$11 45
" 2a.	— 7 75	2 79	10 54
" 2b.	— 13 22	0 90	14 12
" 2c.	— 10 74	1 32	12 06
" 3.	— 15 59	1 59	17 09
Average value per ton, \$13.05.			

"Cyanide tests:—

	Gold.	Silver.	Total.
"Cross-cut 2a, 2b, 2c.	—\$23 03	\$7 00	\$30 03
" 2b.	— 32 36	0 83	33 19
" 2c.	— 58 59	1 04	59 63
Average value per ton, \$40.95.			

"The great presence of tellurides in the ore accounts for the small fire assay of the identical samples. All cyanide tests have been made after a preliminary roasting of the ore.

"Assays made by De Roux & Baughman, Assayers, Skagway, Alaska."

I shall make no comments upon the remarkable differences shown above between the fire assays and cyanide tests on identical samples.

A number of selected, not average, samples of the ore were obtained from the Company, certain of which showed free gold, but, although tested repeatedly by the Provincial Assayer, none of the ore could be found to give the reaction for tellurides, although obtained from the Company as samples of the telluride ore and in order that it might be so tested.

### BENNETT LAKE MINING DIVISION.

The Bennett Division at present includes not only that section of country round Bennett lake, but also the Chilkat District, which last is so isolated by impassable glaciers, etc., that the only means of reaching it from Bennett is by way of the Lynn canal and the Chilkat river.

In the Chilkat District, at Wells, there is now a Deputy Mining Recorder, but as there is every promise of a placer rush in the early Spring, and since for placer work it is essential that there be some duly appointed official on the ground to settle disputes promptly, it is hoped and recommended that the Government will make the Chilkat District a separate Mining Division and place it under a qualified official.

#### BENNETT LAKE SECTION OF THE DIVISION.

In the Bennett lake section of the Division, mining, as such, has not as yet begun, but there has been considerable prospecting and some promising finds of mineral are reported, the development on which has not, as yet, advanced sufficiently to give any definite results.

Of the mineral locations, probably the best known is the *Bald Peak Bald Peak Group*. *Group*, more usually spoken of as the *Bennett Lake Properties*. I am indebted to Mr. Chester Lee, M.E., who visited the property in September last, for the following information:—

“This group consists of four claims, situated about  $7\frac{1}{2}$  miles north of Bennett on Bald mountain, on the east side of, and at an elevation of 1,600 feet above, Bennett lake. The country rock is quartzose, probably a quartz porphyry.

“On the *Bald Peak Claim* there are three open cuts, which show up a vein of some 10 to 12 feet wide, much decomposed and not well defined. Samples taken from the lower cuts across 4 feet of quartz gangue gave assays as follows:—Gold, \$2; silver, trace; lead, none; antimony, trace.

“A second sample taken from somewhat higher up gave: gold, \$2; silver, 2 oz.; antimony, 3.1 %.

“About 100 feet further up the gulch, there were exposed some 10 inches of quartz and yellowish material. This was sampled and gave: gold, \$5.25; silver, 7.8 oz.; lead, 3.8 %; antimony, 0.6 %.

“About 300 feet above the first cut, and some 500 feet to the east, in a small cut in what was apparently slide rock, there was exposed some 17 inches of quartz, carrying stibnite, which gave the following assay: gold, \$4; silver, 3.2 oz.; lead, 6.7 %; antimony, 40 %.”

The above assays were made for Mr. Lee at the Government Laboratory.

#### PLACER MINING.

Placer mining in the Bennett lake section of the Division has not, as yet, been productive, although a number of claims and leases have been recorded near Otter lake, Tutshi lake, and on Quartz creek, near Bennett.

It appears, however, that the gravel deposits are too deep and not sufficiently rich to be profitably worked as placer claims, and while they have possibilities as hydraulic propositions, enough investigation has not, as yet, been made to determine what these possibilities are.

#### CHILKAT SECTION OF BENNETT LAKE MINING DIVISION.

The Government of British Columbia having appointed the Hon. Mr. Justice Martin a Commissioner to proceed to the Porcupine District to confirm or settle any disputes as to titles



to property in that section, the Provincial Mineralogist took advantage of the opportunity to accompany him and his party into the District.

Leaving Atlin on the afternoon of September 7th, and crossing to Taku City, where the steamer *Gleaner* was found waiting, the party arrived at Bennett at 11 a.m. on the 8th September, and at Skagway at 4:50 p.m. on the same day.

September 9th and 10th were spent in Skagway waiting for the steamer which calls at Haines' Mission, and which was due to leave Skagway on the morning of the 11th; but on that morning word was received that the steamer had been damaged in the storm of the previous day, and was laid up at Juneau. Through the assistance of Mr. Busby, the Canadian Custom House Officer at Skagway, a naphtha launch was obtained, and the party left Skagway dock at 10:20 p.m., arriving at Haines' Mission at 1 p.m.

The sail down the Lynn canal was grand and the scenery impressive, the mountains rising steeply from the water's edge, while further back on the rocky ranges glaciers glistened in the sunshine and, melting, formed foaming torrents, which plunged over perpendicular precipices into the sea.

Haines' Mission is a small village, with stores and a hotel, situated at the base of a long, narrow strip of land separating the Lynn canal from the Chilkat inlet, into the upper end of which latter the Chilkat river empties, and at the entrance of which is situated Pyramid harbour.

From Haines' Mission across the neck of land to Chilkat inlet is a distance of about a mile by a waggon road. The Chilkat river flows almost due south, emptying, as before stated, into the inlet, the river bed being, on an average, two miles wide for some miles up, and composed of gravel and quicksands. The channel is shallow and shifting, bars being formed one day and removed the next by the swift current.

Leaving Haines' Mission about 3 p. m., the party walked to the inlet and followed the east shore up for a distance of four miles to the Indian village of Henestoche, where "Jack" Dalton and some Indians had in readiness a large canoe, in which the river was crossed to one of Dalton's posts, known locally as Murphy's Flats. Here a stay was made for the night, the party proceeding the next morning on horseback along the Dalton trail, which follows the west or right bank of the river to Long Bridge, another of Dalton's stopping-places, situated near the junction of the Klehini river and almost opposite the Indian village of Kluckwan. The distance from Murphy's Flats to Long Bridge is about 17 miles; the trail is well laid out and is kept in good repair.

The party stayed the night of the 12th at Long Bridge, proceeding next morning on horseback up the valley of the Klehini to the town of Porcupine, a further distance of 18 miles. The baggage of the party was to have been taken in canoes by Indians up the Chilkat river on the 12th to Long Bridge, whence Dalton's team was to have conveyed it to Porcupine by the 13th; but, owing to strong winds prevailing down the river, the canoes could not get up against the current, and the baggage did not arrive till the afternoon of the 16th.

The Dalton trail, which is within the jurisdiction of the United States, was built and is maintained by Dalton and his associates, under authority from the U. S. Government, as a "toll trail," a charge of \$2.50 each being made for all animals, horses or cattle, passing over it. As before stated, the trail is in good shape, the whole of the toll money being spent upon it. It renders the country accessible without expense to the Government, the cost of building and maintaining the road having been borne directly by those using it.

This method of opening up the remote districts has its advantages, and in many instances would be found to work well in the more southerly parts of this Province, where it is no unusual thing to see an enterprising company or individual build a trail or road only to have it cut up and ruined by persons who use it, but who absolutely refuse to contribute, either in time or money, to its maintenance.

The Chilkat District of B. C. may be described as that section of country lying south of the 60th parallel of north latitude, to the westward of the watershed of the Lynn canal, and north of the international boundary between Alaska and British Columbia.

This latter boundary is still in dispute, but, under the terms of a *Modus Vivendi*, it has been provisionally fixed and demarked on the ground by a joint survey made by Canada and the United States. The following are extracts from the *Modus Vivendi* referred to:—

“It is hereby agreed between the Governments of the United States and of Great Britain that the boundary line between Canada and the Territory of Alaska, in the region about the head of Lynn canal, shall be provisionally fixed as follows, without prejudice to the claims of either party in the permanent adjustment of the international boundary:

“In the region of the Dalton trail, a line beginning at the peak west of Porcupine creek, marked on the map No. 10 of the United States Commission, December 31, 1895, and on sheet No. 18 of the British Commission, December, 31, 1895, with the number 6,500; thence running to the Klehini (or Klahela river) in the direction of the peak north of that river, marked 5,020 on the aforesaid United States map, and 5,025 on the aforesaid British map; thence following on the high or right bank of the said Klehini river to the junction thereof with the Chilkat river, a mile and a half, more or less, north of Klukwan; provided that persons proceeding to and from Porcupine creek shall be freely permitted to follow the trail between the said creek and the said junction of the rivers, into and across the territory on the Canadian side of the temporary line wherever the trail crosses to such side, and, subject to such reasonable regulations for the protection of the revenue as the Canadian Government may prescribe, to carry with them over such part or parts of the trail between the said points as may lie on the Canadian side of the temporary line such goods and articles as they desire, without being required to pay any customs duties on such goods and articles; and from said junction to the summit of the point east of the Chilkat river, marked on the aforesaid map No. 10 of the United States Commission with the number 2,410, and on map No. 17 of the aforesaid British Commission with the number 5,490.

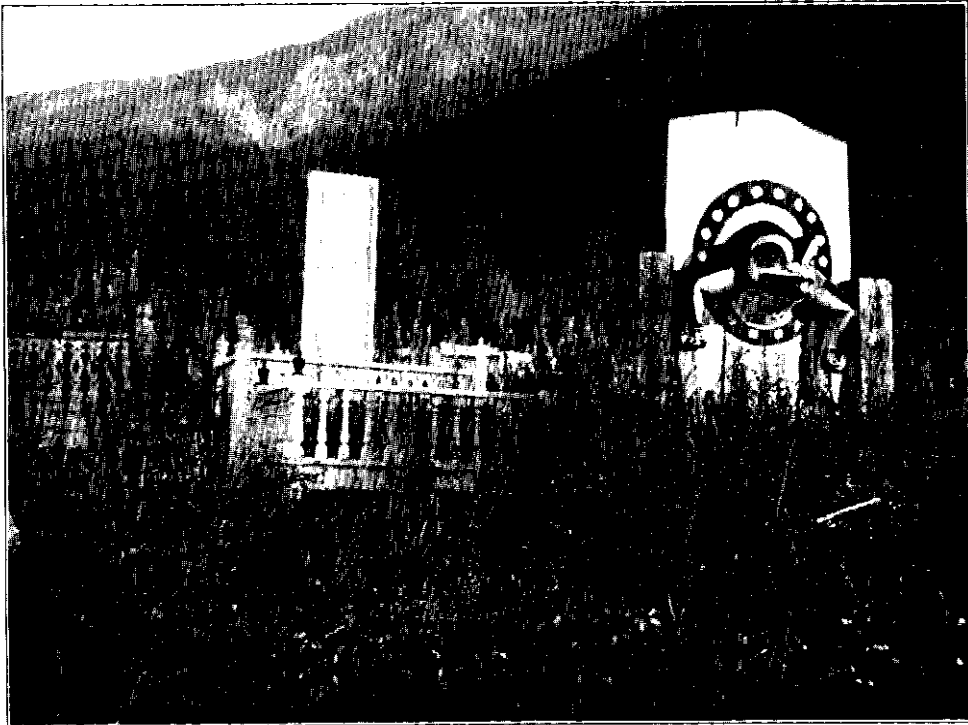
“On the Dyea and Skagway trails, the summits of the Chilkoot and White passes.

“It is understood, as formerly set forth in communications of the Department of State of the United States, that the citizens or subjects of either power, found by this arrangement within the temporary jurisdiction of the other, shall suffer no diminution of the rights and privileges which they now enjoy.”

A list of various claims within the Province, according to the provisional boundary established by *Modus Vivendi*, but recorded with the United States authorities before such agreement was made, will be found in the report of the Gold Commissioner of the District, Mr. Graham. The District referred to is reached by the Chilkat river—approached, as already described, from Haines' Mission overland for a mile; thence either crossing the river and proceeding by Dalton's trail, or proceeding directly up the river by canoe to the junction of the Klehini river. This is the usual route of travel for men and light freight, as a regular steamship line between Juneau and Skagway stops at Haines' Mission, where there is a good dock. For cattle, etc., the usual landing place is, however, at Pyramid Harbour, on the west



MINERAL MOUNTAIN - CHILKAT M. D., B. C.



INDIAN GRAVES - KLUKWAN, CHILKAT RIVER.

side of Chilkat Inlet, from which point a trail along the beach, only available at low tide, leads to Murphy's Flats. Freight is seldom taken over the trail, but is taken up the Chilkat river to Long Bridge by Indians in canoes, and thence by four-horse teams to the town of Porcupine, or to Camp Pleasant of the North-West Mounted Police.

In summer the prevailing wind is up the river, and the Indians, setting large square sails on their canoes, can sail up to the mouth of Bear creek, some 10 miles above the junction of the Klehini and Chilkat rivers. This method of transportation has been found to be sufficient up to the present time, but should the future development of the country demand it, the waters of the Chilkat river can, with a little guidance, be induced to flow through a single channel from the village of Kluckwan down—above this point no alteration is needed—and this would enable a light draught steamer to run as far as the mouth of Bear creek on the Klehini.

Should a railway be necessary, one could be cheaply built along the east bank of the Chilkat river to Wells, thence either continuing up the river or crossing it at this point and proceeding up the north or left bank of the Klehini. This railway would have little difficulty in crossing over the watershed and striking the Yukon river at Fort Selkirk or elsewhere—indeed, over such a route a large number of cattle and horses have been taken in to Dawson, good feed, it is reported, being found all the way.

Last summer, the only white settlement in the whole district, if one may exclude the N. W. M. P. camps, was at Porcupine City, situated on the Klehini river at the mouth of Porcupine creek, some 18 miles above the junction of the former with the Chilkat, and just within the boundary of Alaska according to the Provisional Boundary Line. Porcupine is a very prettily located town, consisting of a saw-mill, blacksmith shop, 2 stores, 2 hotels and the usual accompaniment of three times as many saloons, having a direct population of about 100 and a tributary population of as many more scattered along the creek.

#### PLACER MINING.

Porcupine creek (in Alaska) was the only stream on which any active work was being prosecuted, and here the force at work was small, although the returns were said to have been fair.

Under the Alaskan regulations, placer claims extend 1,500 feet along a creek, quite a difference from the 100-foot claim allowed in British Columbia, and, to judge from the effect on Porcupine creek, these claims are as much too large as ours are too small, for the whole creek is tied up in the hands of a few men with sufficient capital to employ labour, thus limiting the production of the creek to one or two spots on each claim, and entirely removing placers from the category of "poor men's mines."

While these large claims have disadvantages they also have advantages, particularly in deep diggings, for with our claims of 100 feet it is impossible to profitably do the preliminary opening up work and the installation of pumps, etc., for each claim, unless the claim is phenomenally rich, while all the tailings, etc., have to be handled at least twice. The large claims certainly render it possible to work a deep or low-grade claim to a profit which would be absolutely valueless if divided up into smaller parts, unless such small claims were consolidated; but all the advantages and none of the disadvantages of both the large and small claims would be found in a compromise between the two, say 500 feet for deep workings and 250 for shallow workings.

Of the creeks at present within Canadian jurisdiction on the south side of Klehini river, Glacier is the most important, and the only one which has received serious prospecting or given promise of success. This creek had practically all been located under the Alaskan regulations before the Modus Vivendi came into effect and such locations, of course, hold good under that agreement, requiring, however, to be confirmed by the Courts of the Province of British Columbia.

As yet no actual mining has been done on Glacier creek and from such information as could be gathered as to the results of the prospecting, bed-rock is so deep that it will probably have to be worked by hydraulic methods.

On the north side of Klehini river, and opposite Porcupine, is Boulder creek. Here, likewise, a number of claims have been staked under Alaskan regulations, but very little work had been done, and what results had been obtained could not be learned. The reports were somewhat contradictory, but agreed in confirming the occurrence of placer gold in fair but not very great quantity.

From a casual survey, there would appear to be a band of dark slates, which is found on the upper stretches of Glacier and Porcupine creeks, crosses over the Klehini, its margin touching Boulder creek, and thence trends to the north-east in the direction of Bear creek, where the recent gold strike was made. Whether these slates have anything to do with the deposition of the placer gold it is difficult to say, but similar slates appear to occur in association with the placer gold of Cariboo and East Kootenay.

On September 23rd, a party of prospectors (consisting of McLaren, Baker, and others, who had been associated with the discovery of the Atlin placers) arrived at the office of the Deputy Mining Recorder in the Commissioner's tent, Porcupine, to record a "Discovery" and other claims on Bear creek. They reported that they had found a new and rich creek, upon which, of course, they had done no work, but the news created some excitement and immediately a stampede was made for the new district, the prospecting public seeming to place considerable reliance on the information, owing chiefly to confidence in the discoverers personally.

From one of the men who went up to the ground the following description of the location of the creek was obtained:—

"Bear creek empties into the Chilkat river from the west, about 10 miles above the junction of the Klehini and the townsite of Wells, where the Deputy Mining Recorder's office and Customs House are now located. The creek is estimated to be 48 miles long, and 15 miles above the mouth it receives as a tributary from the north a stream known as Clear creek, which has an estimated length of 15 miles. 'Discovery' on Bear creek is about 9 miles from the mouth, but may be reached by a trail which shortens the distance by a mile or more."

#### MINERAL CLAIMS.

As already remarked, quartz prospecting or development does not usually receive much attention while placer gold is being found, and the Chilkat District has consequently not been, as yet, carefully investigated by the prospector. No final estimate can therefore be placed on its ultimate value, all that can be done being to report upon such discoveries as have been made and were examined.

Almost all the mineral claims recorded in this District are located in or about Rainy hollow, which is the name not inappropriately applied to the valley or basin at the head of Klehini river.

The Provincial Mineralogist left Porcupine City for Rainy hollow on September 16th, obtaining from the Porcupine Trading Co. a saddle and pack horses and a guide. As his baggage had not as yet arrived from Haines' Mission, being detained with that of the Commission, Dr. Fraser, of the N. W. M. Police at Camp Pleasant, kindly loaned an overcoat and a fur rug for use as a blanket.

From Porcupine the route is over the waggon road following up the Klehini river to the N. W. M. Police camp, a distance of some 6 miles; thence by trail for about 3 miles, still following the river valley, but gradually ascending through well-wooded country to the "Cache," a large, open glade with good grass. Dalton had a cache here at one time, and another was made by the U. S. Government, a number of reindeer sledges, etc, which are still intact, having been stored in the latter, all that remains of an unsuccessful attempt to introduce Laplanders and their reindeer into Alaska.

The "Cache" is at about 500 feet elevation above Porcupine City, and about 1,000 feet, by barometer, above sea level. From the Cache the trail runs directly north, and rises by a series of zig-zags, ascending in about 2 miles some 1,000 feet, and reaching finally a comparatively level plateau devoid of trees and with little vegetation. The trail leads across this plateau for some 6 miles, when a gradual descent is made for about 2 miles into Rainy hollow.

The plateau mentioned is often covered in the autumn with dense fog and in the winter with blinding snowstorms, to such an extent that men who know the country do not attempt to cross at such times, but wait until the weather clears.

The writer, at about 7 o'clock p.m. on the 16th September, reached a "Police cabin" just on the other side of the plateau, darkness preventing any further progress although he was only 2 miles from his destination.

By noon on the 17th, camp was erected in Rainy hollow, and under the guidance of Harry Lyons, a prospector who had done considerable work in the neighbourhood, an inspection of the mineral locations was begun.

The basin at Rainy hollow is some 4 or 5 miles long and about 3 wide, the surrounding heights rising gradually to rounded, dome-shaped hills, covered on the lower levels with small trees and grass, but on the upper levels almost devoid of vegetation, the surface of the ground being covered with boulders. The country rock appeared to consist of altered schists and shales, much disturbed and cut up by dykes and intrusive masses of igneous origin.

To judge by the locations already made, the chief mineralization seems to be along the line of three or more parallel dykes (the principal of which is locally known as the *Custer lead*) which cut through and across the hills to the south, and are traceable for some miles, giving evidence of their presence by "iron capping" which is found frequently to be underlaid by pyrrhotite. Along the general trend of these dykes there are a number of claims:—*Calgary, Sonora, Wonderful, Custer, Adams, Marguerite, New York, Le Roi*, etc., etc.

This location, owned by Richard Kennedy *et al.*, is situated at an elevation of 2,250 feet on the right bank of Wilson creek, which flows into Klehini river at Rainy hollow.

Calgary Mineral Claim.

The work done consists of a 15-foot tunnel through quartzose schist, having a general strike north and south and following a small quartz vein in broken ground. The face of the tunnel was in a dark banded quartzose rock, carrying pyrrhotite, but not as yet in appreciable quantity.

Some 10 feet to the south of the tunnel there is an iron-stained banded formation, not developed; the whole being in rock which has the appearance of being a slide.

**Sonora Mineral Claim.** This claim, owned by Wm. Burnham *et al.*, is situated at an elevation of 2,350 feet and is just above the *Calgary*, on the opposite side of a small creek. There appears an iron-stained outcropping which has been cut into in two or three places, showing a much decomposed deposit consisting of magnetite and quartz with no evidence of sulphides or of copper stain, although copper assays are reported to have been obtained on samples from this property. Samples from the cuts gave, on assay, strong traces of gold but no copper or silver. About 6 or 8 days' work has been done on the property.

**Wonderful Mineral Claim.** This claim, owned by Wm. Burnham, occurs at a contact of crystalline marble with apparently a diorite and shows along the line of contact a small parting of galena and zinc blende in calcite, but not in sufficient quantity as yet to be worth sampling.

**Custer Mineral Claim.** On this claim, owned by Tim Creeden, a tunnel has been started on what is known as the *Big lead* or *Custer lead* and is now in 5 feet, with limestone on the left and what is probably a diorite on the right. This tunnel shows over the whole face a general mineralization consisting of copper pyrites, galena, zinc blende and iron sulphides.

A general sample over 3 feet gave an assay of—gold, 50 cents; silver, 2 oz.; copper, 1.2%; lead, 3%; zinc, 5.5.

The property has some promise, but development is as yet not sufficient to enable any idea to be formed of its value.

**Adams Mineral Claim.** This claim, of which — O'Connor is the owner, lies above the *Custer*, but has no work done other than a stripping of both the large and small centre leads, of which the latter appeared the most promising.

**Marguerite Mineral Claim.** On this claim, owned by Dr. Fraser *et al.*, some little work has been done on each of two iron caps, which appear to be of considerable extent. In a 3-foot cut along the contact of a shale with a quartzose igneous rock there are exposed some stringers of galena with a little copper pyrites, but the mineralization is not as yet in sufficient quantity to be important.

**Blue Bird Mineral Claim.** This property, known as "*Acklain's N. W. M. P. claim*," is situated on a plateau above Rainy hollow and is supposed to be on what is known as the *New York* ledge.

A pit, which was full of water at the time it was visited, had been sunk some 8 or 10 feet; it apparently cut through an iron capping and was said to be in quartz with copper pyrites at the bottom. A sample of the ore was assayed by Mr. Chester Lee, who reported finding 5.1% copper and 3.6 oz. silver.

The *Tagish* mineral claim is situated near the last-mentioned and seemed to have had no work done on it with the exception of one shot hole which exposed a cross lead about 18 inches wide carrying some galena.

The *Empire State* mineral claim, situated 300 feet above Jarvis creek, shows in a 3-foot tunnel a small quantity of copper and iron pyrites.

**Nero Mineral Claim.** On this claim, owned by Tim Creeden and situated 500 feet above Jarvis creek, a tunnel is in some 5 feet and shows considerable ore. Assays have been obtained as follows:—Gold, 50 cents; silver, 4 oz.; copper, 8%; zinc, 15%.

**Nina Mineral Claim.** On this claim, owned by — O'Connor *et al.*, and situated on the west slope of what is known as "Copper Butte," there shows a large soft iron capping. Two cuts of 10 and 16 feet have been made, showing mineralization accompanied with galena.

**Columbia Mineral Claim.** This property, known as "*Schenck's claim*," is situated at the head of Wilson creek, on the east side of "Copper Butte." A shaft, which was partly filled with water, had been sunk for 8 feet through an iron capping, showing a quartzose gangue about 12 inches wide and carrying copper pyrites. Assays on samples of this ore gave:—Gold, 75 cents; silver, 2.4 oz.; copper, 2.4%.

The *Camille* mineral claim is situated on the north side of Wilson creek, near the head, and has an open cut exposing an iron capping only.

**New York Mineral Claim.** This claim is situated on a bench on the north side of and about one-third mile distant from Wilson creek. There is here a large iron cap in which an 8-foot pit has been sunk, disclosing a large body of pyrrhotite. The extent of the deposit is not shown by the work done, but it is probably of considerable size.

The samples of pyrrhotite obtained from here and from other points in this section all carry gold, but not in sufficient amount to be profitable in so remote a district.

**Soldiers Three.** This claim is said to belong to Major Steele, late N. W. M. P. It is situated at an elevation of 3,100 feet, on the left bank of the Klehini river, near the mouth of Jarvis creek and opposite Mineral mountain. A 9-foot shaft has been sunk in limestone, in the side of which is exposed a seam of galena and zinc with a little copper, 6 to 8 inches wide, probably a replacement of the lime along a line of fissure. Some 100 feet away there is an open cut showing a body of the same class of ore about 15 feet wide. A sample was taken from the clean galena and gave the following assay: Gold, trace; silver, 1.8; copper, 1.3; lead, 24%.

**War Eagle Mineral Claim.** This claim, owned by Richard Kennedy, is situated on the left bank of and about  $\frac{1}{2}$  mile distant from Jarvis creek. There is a large outcropping of "iron cap" some 25 feet across, which appears to be an oxidized pyrrhotite, and, as opened by a small cut, seems to be underlayed by pyrrhotite in a lime country rock.

**Elise Mineral Claim.** This claim, owned by A. N. Guilbault, is situated on Mineral mountain, about 700 feet above the valley bottom. The showing on this property consists of a bedded limestone, with layers of quartz carrying copper pyrites in small bunches, but not in any quantity.

**Carmichael and Pretoria Mineral Claims.** These claims, owned respectively by — Monk and Dr. S. M. Fraser, are situated on the west slope of Mineral mountain, about 700 feet above the valley of the Klehini. It was impossible to define the line between these claims, which adjoin. They were located in 1900 and had no work done on them. A horizontal bed of limestone crops out on the hillside on a little knoll, and in this, overlying a quartzose streak, a layer of the limestone seems to have been replaced by bornite from 4 to 15 inches thick. Samples of the ore as outcropping gave, on assay: Copper, 34%; silver, 44.2 oz.; gold, none. The extent of the deposit is not shown, but the outcrop could be traced for some distance, and the showing may be considered of considerable promise. The knoll appears to have been a slide from the main hill.



This claim, owned by Wm. Freeborn, probably derives its name from the trail leading to it, which is along the face of a steep cliff on the east side of Mineral mountain. Into this cliff a tunnel has just been started in a hard quartz porphyry, and in the face is shown a quantity of copper pyrites scattered in bunches through the rock. There is, seemingly, no defined deposit, and the extent of the mineralization is not shown.

The *Copper King* and *Copper Queen* mineral claims are situated higher up Mineral mountain and further to the north. They were not visited, but are reported as having an iron cap exposed on a little knoll and a small 6-foot tunnel showing pyrrhotite.

This claim is owned by Hy. Lyons, and is situated on a bench below Mineral mountain, on the east side. Two dykes cut through the property parallel with the Klehini river, on one of which a tunnel has been started, showing a little copper, but the development is very slight as yet.

This claim was located by Joe Smith, and has an open cut 5 feet long and 10 feet deep, in an iron cap in limestone, somewhat broken. No mineral of value was to be seen.

This claim is owned by — Smith *et al.*, and is situated on a bench to the east of Granite creek, near, but not on the extension of, the *Custer* lead. A shaft had been sunk some 17 feet, but was nearly filled with water, the only mineralization visible, and, it is reported, the only mineral found in the shaft, occurring at about 2 feet from the surface, where a flat vein of galena, some 2 to 3 feet thick, has been cut through. This galena is very irony, and the deposit is not very well defined, nor has it been exposed other than in the shaft as referred to. The galena assays: Gold, trace; silver, 3.2 oz. per ton.

This claim, owned by Richard Kennedy *et al.*, is situated on a bench above Rainy hollow, and on the east side of Granite creek. A large iron cap is exposed on the hillside, and has been opened up in one place by a small cut, exposing a mass of pyrrhotite, the extent of which is not shown.

NOTE.—A large number of the mineral claims located in this section have been staked by using small cairns of stones into which a slip of paper, bearing the name of the claim, is sometimes placed, no attempt having been made to erect location posts of wood, properly marked, as is definitely called for by section 16 of the "Mineral Act." It is consequently impossible to trace out many of the claims and it is questionable whether such "stakings" can be regarded as legal locations.

## ATLIN LAKE MINING DIVISION.

REPORT BY J. D. GRAHAM, GOLD COMMISSIONER.

## PLACER MINING.

Since my last report conditions have considerably improved, and the various causes of last season's troubles have, to a great extent, been removed by a better feeling amongst the miners, while there has been a good deal of the "give and take" policy in the adjustment of their differences.

Another cause of friction has been removed in the almost entire absence of "jumping" by irresponsible parties. This has been brought about in a great measure by the miners themselves expressing their disapproval of men who made a practice of re-staking another's claim. In the matter of working claims a considerable improvement has also taken place, parties of miners combining and working their claims together, thus both considerably cheapening the work and removing many causes of friction between claim-owners. There are, of course, a few men in every camp who will neither give nor take in the adjustment of differences, but I am pleased to say that this class is getting less.

In many cases claims have been worked by hydraulic companies (which have put in their own ditches), on the percentage plan, and this has proved satisfactory as a rule; it has, however, been surprising how claims increased in value when it was found that hydraulic companies were seeking to purchase such with a view to working them. I regret to state, too, that this year some men have been holding on to their claims for the purpose of selling at a high figure, at the same time doing as little work as possible without violating the law. Matters of this sort will, however, right themselves in time, and the introduction of big hydraulic plants by companies with large capital will speedily cause the Atlin camp to go ahead.

A distinguishing feature of this camp is the enormous beds of gravel on the various creeks. These beds could be worked economically by big companies which, however, would have to construct reservoirs for storing water, while another necessity would be the construction of large ditches and flumes to carry off tailings, either to Atlin lake or to the flats below the big hill, or the adoption of some system of elevating them.

During the year several large mining companies installed their hydraulic plants, which, however, unfortunately arrived here too late to be of much benefit to the owners this year. This delay was due in a great measure to the lakes remaining frozen till so late in the season, and to the shallow water at Caribou Crossing on Bennett lake.

Considerable prospecting has been done by the various mining companies in the way of locating pay gravel, and this will enable them to lay out the next season's work to better advantage.

During the year several stampedes took place in the District, but did not prove of much consequence, with the exception of that to Graham creek on Taku arm, where many claims were located but no great results obtained this season, although the discoverers are sanguine that good returns will be obtained later on when more development work has been done.

The question of water will become a serious problem in the Atlin Division, unless steps are taken to conserve the same by the construction of dams at the headwaters of the creeks, where the supply could be regulated by proper gates.

There has been a noticeable falling off in the records of my office during the present season (1900), but it is rather apparent than real, on account of the indiscriminate staking which took place last year when numbers of claims were located and re-located; this state of affairs did not exist this year, men were not so anxious to throw away their loose cash and, on the whole, more legitimate work has been done. Revenue has also fallen off considerably by reason of the rush to Cape Nome and other discoveries, although judging by letters received by me from former residents, these places are not as good for a poor man as the Atlin diggings, and I expect to see many old Atlin miners return when the season re-opens.

Atlin has the advantage of being easy of access from the Coast, while the cost of getting in and out is reasonable, and this in itself counts for a good deal with most men, who prefer to spend the winter months with their families and friends. At the same time the District suffers by reason of the ready cash being taken out, instead of being circulated in the camp.

On this creek individual placer mining has fallen off considerably this season, as the richest parts of the creek were pretty well worked out last year. This does not mean that there is no good pay gravel left by any means, but merely that more expense is incurred in working the same, while the present size of the claims makes it prohibitory for any man to work ground unless it is fairly rich. In the case of large companies, or where many claim-owners have amalgamated, good wages have been made and there are many cases in which the bench claims have proved very rich, although this has been chiefly in certain spots which are evidently old channels and which have been found during development work.

Extensive operations have been conducted on this creek by a few individual miners, who have either purchased adjoining claims or worked claims in a group, thus being enabled to go in for more extensive operations and, from what I can hear, they have been handsomely rewarded. Messrs. Harrigan & Sabin and Messrs. Lambert & Jackson are amongst the most successful.

The following is a rough estimate of flumes, etc., in use by individual miners:—Wheels and pumps, 6; sluice boxes, 5,113 feet; flumes, 3,000 feet; wing and head dams, 600 feet; average number of men working during season, 600.

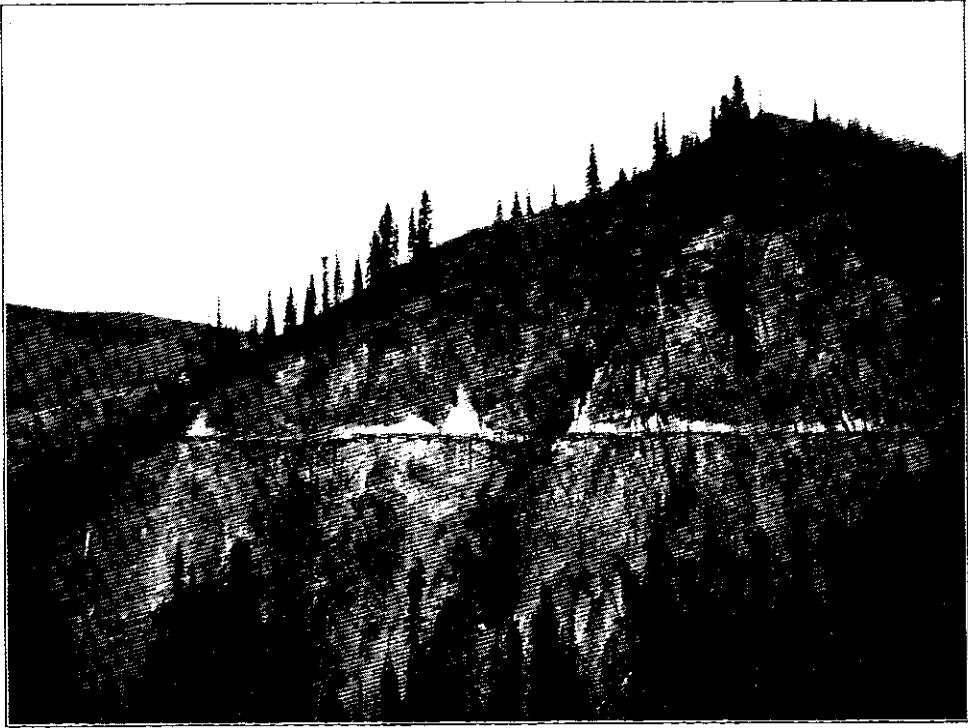
Considerable development work is being done this winter on Pine creek and also on Gold Run creek, a tributary of the former, by drifting and sinking, and from reports miners are well satisfied with their prospects. Seventy-one men are now working, which is a vast increase on last winter.

Many leases have been issued on this creek and arrangements are being made for extensive operations next season.

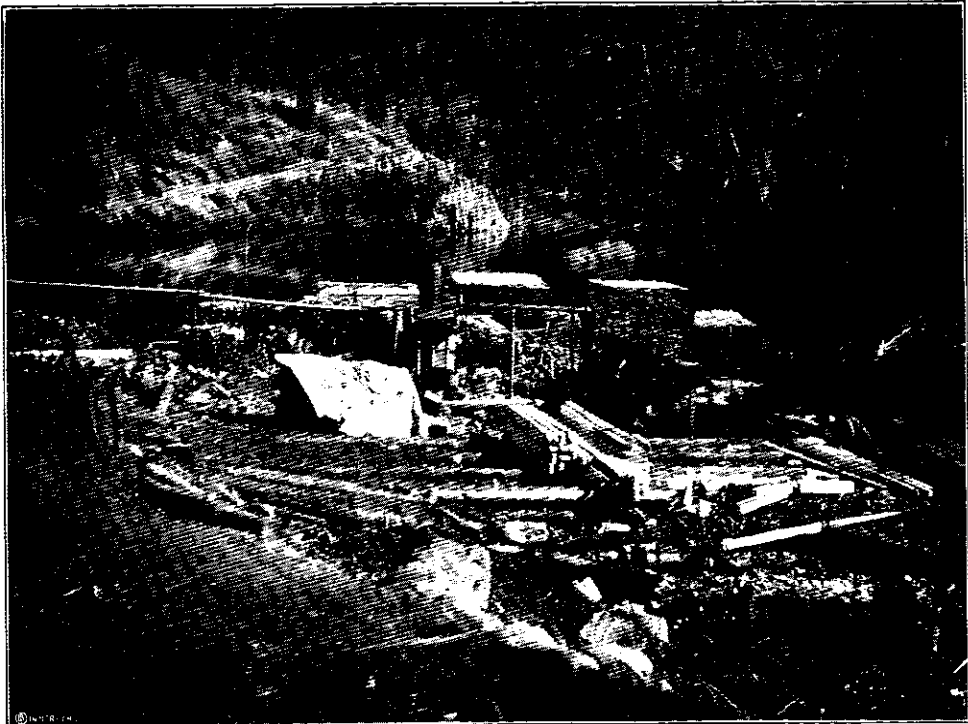
The following Companies have operated on Pine creek and have done fairly well:—

#### ATLIN AND WILLOW CREEK MINING COMPANY.

This Company has been operating on Willow creek, a tributary of Pine creek, on claims it has purchased, and also on the *Caledonia Group* of claims on the south side of Pine creek. Considerable expense has been incurred in putting in flumes and sluice boxes, and for a large portion of the time the Company has used a small hydraulic plant in order to break up the cement gravel, which is very prevalent in this District. The returns have been satis-



THIBERT CREEK MINING Co.'s FLUME--LIARD M. D.



SAW-MILL--THIBERT CREEK MINING CO.,--DEASE LAKE, LIARD M. D.

factory and the following plant, etc., has been installed:—Ditch, improved ditch and head dam, length  $2\frac{1}{2}$  miles; main flume, 1,400 feet long, 3 feet wide, 33 inches deep; piping, 1,400 feet of 16-inch, 14-inch, 10-inch and 8-inch pipe, and 2 monitors; 3 branch flumes, about 1,200 feet, 24 inches wide and 33 inches deep, with an average fall of 4 inches in 12 feet; 2 pressure boxes, one 8 by 8 by 9 feet deep, and one 5 by 4 by 7 feet deep; 6-inch block riffles are used in the flumes. The average number of men employed during the season was 40.

On the *Caledonia Group* a flume was constructed  $\frac{3}{4}$  of a mile long, 24 inches wide and 24 inches deep. The average number of men employed was 6.

#### SUNRISE HYDRAULIC COMPANY.

This Company owns a number of leases on the lower part of Pine creek for which a considerable hydraulic plant was brought in, but, unfortunately, too late to be of much service this season (1900). A portion of the plant, however, was utilised to work some bench claims on Pine creek on a percentage basis and, although the ground was not rich, the hydraulic method proved that ground could be worked and made to pay that could only be worked at a loss by the ordinary placer methods. The following work was done by this Company during the season:—

Excavated 3 miles of ditch, averaging 6 feet wide by 4 feet deep, with a fall of 38 feet to the mile. A large portion of this ditch had to be flumed, and trestles built to carry the same in different places. Crossings were also put in where necessary.

Piping laid, 2,870 feet, from 3 feet to 20 inches diameter; 2 12-inch giant monitors; 300 feet of sluice boxes, with block riffles; pressure box, 14 by 12 by 8 feet deep.

About one mile of ditch was excavated on the south side of Pine creek, 3 feet wide by 3 feet deep.

There is on hand about 2,500 feet of spare piping for future use.

The Company employed during the progress of the work over 200 men, reducing the number as work progressed; the average number employed was about 75.

At Spruce junction, about  $\frac{1}{4}$  mile of wing dam for a bed-rock flume was also constructed.

#### STEPHENDIKE HYDRAULIC MINING PARTNERSHIP.

**Stephendike Creek.** This Company devoted the past season to prospecting and preparatory work. It owns 4 fractional bench leases covering 155 acres, and 3 adjoining 80-acre tracts. The working survey of a line for the construction of ditches and flumes upwards of 3 miles in length has been completed, and the right of way cleared for a mile and a half, for which distance a ditch has been excavated, with a capacity of 500 inches. The work includes 600 feet of fluming and the erection of a trestle, 40 feet in height, over one of three deep gullies crossed by the line. Extensive drain ditching was also found necessary. The Company has met with most encouraging results, and next season a steam driller will be installed.

**Race Horse Group.** This group of hydraulic leases is situated near the mouth of Pine creek, and is worked by a local syndicate, which has already constructed a tunnel about 150 feet in length, properly timbered, and also dwelling-houses and offices. The tunnel commences from bed-rock in the creek, the principal object in this being to obtain natural drainage, thus obviating the necessity of pumping and eventually affording a ready means of working. The intention of the syndicate is to

open up a large alluvial deposit, which has already been tested by shafts sunk some distance back from the creek. This deposit has proved to contain pay in sufficient quantities to be remunerative.

There has been but very little work done on this creek by individual  
**Birch Creek.** miners on account of the great depth to bed-rock, and the cost, not worth incurring on 100-foot claims, of installing pumping plants, etc.

#### THE ATLIN LAKE COMPANY, LIMITED.

This Company acquired a considerable number of placer claims on Birch creek by purchase, and has installed a large hydraulic plant, but, on account of delay in the arrival of the material and failure of the water supply, no returns to speak of were obtained this year. The following work was done by this Company:—

Flume, 3 feet wide by  $1\frac{1}{2}$  feet deep, 2,500 feet long; sluices, 1,100 feet long, being 92 boxes, 12 feet in length by 3 feet wide and  $1\frac{1}{2}$  feet deep; trench, 760 feet long by 18 feet deep and 18 feet average width; about 9,120 cubic yards of dirt removed; 940 riffles in sluice boxes (3 blocks to each riffle); pipe line, 1,100 feet laid, 2,400 feet in hand, 4 monitors; 65,000 feet lumber used; cost of plant \$20,000; additional paid out, \$12,000; drain, 100 feet long by 30 feet deep, constructed in creek—cost, \$2,500; number of men employed, 20.

This Company has also acquired several leases on the same creek, which it intends operating next season in connection with its placer claims.

#### PENDUGWIG SYNDICATE.

This Syndicate has acquired several leases on Birch creek, which it intends to operate next season. Scarcity of water and the necessity of keeping the ordinary placer miner supplied has delayed the development on these properties.

Considerable work has been done on Boulder creek during the season,  
**Boulder Creek.** and, from information received, has paid good returns on the outlay, taking into consideration the expense entailed in the removal of very large boulders, of which this creek has more than its share.

The following is a rough estimate of the number of individual miners working on the creek, and the length of sluice boxes in operation:—Sluice boxes, 3,302 feet; number of men working, 81.

#### ATLIN CONSOLIDATED HYDRAULIC MINING COMPANY.

In addition to the above, the Atlin Consolidated Hydraulic Mining Company, which owns several hydraulic leases on this creek, has done considerable development work on the same, but too late in the season to obtain any paying results. The following are details of the work, plant, etc.:—

Main supply flume, 3,200 feet long, 3 feet wide, 32 inches deep, with a fall of 32 feet to the mile; pressure box, 8 by 14 by 10 feet deep; 2 supply boxes, 8 by 10 by 6 feet deep; bye-wash flume, 800 feet long, partly ditch and partly flume; supply flume below main supply, 2,200 feet long, averaging 30 inches wide by 24 inches deep; riffle flume, 700 feet long, with 8-inch block riffles; piping, 1,200 feet laid, running 16-inch to 14-inch, with 2 monitors; spare piping, 1,500 feet, and 2 giant monitors; average number of men employed, 20.

The leases mentioned have now been acquired by the De Lamare Syndicate, Paris, France.

On this creek there has been a considerable falling off in the number of miners working claims. This can be accounted for by the fact that the supply of water is limited, and also to the distance of timber fit for domestic and mining purposes. The shallow part of the creek has been pretty well worked out, and in the case of the benches the gravel has to be excavated and carried to the creek, thus making it expensive to work. Other drawbacks are the elevation of the upper portion of the creek and the lateness of the season before the ice is out of the ground. Returns this season are not nearly so good as last. The following plant was in use by individual miners:—Sluice boxes, 1,650 feet. Average number of men working, 55.

In addition to the above, the Pendugwig Syndicate has carried on extensive operations on the lower part of the creek, but, on account of delay in getting in its hydraulic plant and the failure of the water supply, no paying results have been obtained. The following work, etc., has been done by this Company:—

Flume,  $1\frac{1}{2}$  miles long, 40 inches wide, 32 inches deep, 32-foot fall to the mile, 8-inch block riffles used; pressure box, 12 by 14 by 8 feet deep; piping, 2,000 feet, 16, 14, and 12-inch, No. 2 giant monitor; buildings, 2 frame and lumber-built houses, 1 frame and lumber-built barn, and 1 large mess tent; 700 feet of riffle flume with block riffles; 2,000 feet of bye-wash flume, 28 inches wide and 2 feet deep. Average number of men at work, 12.

There are also 10 men working this winter prospecting and sinking shafts to ascertain the most suitable locality for operations in the spring.

Many leases have been taken up on the creek this season.

A little work has been done on this creek by individual placer miners only, consequently the results are small. However, many leases have been taken up and considerable prospecting done, with a view to locating pay gravel. It is reported that considerable work will be done on this creek next season by various companies.

This has been the leading creek for development work this year, and from information to hand will be more fully worked next season. Returns have been satisfactory so far, and miners making good wages were in evidence this year. About 76 men are prospecting this winter to locate pay gravel.

The following is a rough estimate of flumes, etc., in operation on this creek by individual miners:—Sluice boxes, 9,679 feet; water wheels and pumps, 17; ditches, 10,830 feet; head and wing dams, 590 feet; flumes, 4,052 feet; derricks, 1; tunnels, 95 feet of 5x4 feet; shafts, 230 feet; trestles, 600 feet. Average number of men at work, 170.

In addition to the above, a great number of leases have been located, and it is fully expected that not less than four hydraulic plants will be installed next season.

A small hydraulic plant has been operating on this creek. It has been recently acquired by Messrs. Lambert and Jackson, who intend to open their property next season.

Considerable work has been done on this creek by individual miners, and from reports received returns have been gratifying to the owners. The Nimrod Syndicate has acquired by purchase about two miles on this creek, and is at present prospecting the ground with a view to installing a large hydraulic plant next season. In addition to the above, several hydraulic leases have been issued, and it is expected that at least three hydraulic plants will be in operation on this creek next season.

Many leases have been granted on this creek and gulch and surveys 4th of July Creek made, and from information received it is possible that two hydraulic and Trond Gulch. plants will be in operation next season.

This creek is situated on the north side of Taku arm, which is a Graham Creek. branch of Tagish lake and about 14 miles from Atlin. During the month of August a stampede was made to the creek and many claims were recorded. Very little work was done by claim-owners, but from reliable information I have reason to think this creek will prove to be a very good one during the coming season.

Throughout the entire Atlin Division hydraulic leases have been pretty generally obtained, but, although a great number have been held, many have been abandoned.

The system adopted in this District of requiring plans of all lease claims for which application is made, prepared from proper surveys, to be deposited with the Gold Commissioner before the lease can be issued, has done much to prevent complications and afford information as to ground taken up, etc., besides establishing the *bona fide* of locators of lease claims, and insuring that the limits of the claims are such as the Act prescribes. These surveys show that the whole of the alluvial gold-bearing ground unsuitable for working by individual miners has not even yet been applied for under lease. Much ground on O'Donnell or Dixie creek and its tributaries, as well as on Pine and Moose creeks, is available for location.

#### MINERAL CLAIMS.

Considerable activity in the Atlin Mining Division has been manifest this year amongst quartz miners, resulting in a marked increase in the number of assessments recorded. There are many enquiries from outside parties, who are looking out for good prospects, for the purpose of developing the same with a view to putting them on the market. One advantage of this section is its accessibility, for, by making connections, travellers arrive here in from five to six days from the Coast cities, and with a reduction in freight rates this District will have many advantages over other parts of British Columbia. At the present time the White Pass Railroad is prepared to make special rates for mining machinery and for the transportation of ore to smelters outside the District, and every effort is being made by its officials to interest capital in this part of the Province. Many of the local officials of the railroad are largely interested in placer and quartz claims, and so far are satisfied with the outlook of the camp. The company is kept well posted on the development of the camp by its mining engineer, who has spent a considerable portion of the season examining the different locations from one end of the Division to the other, and has expressed himself perfectly satisfied with the prospects of the camp.

There is one thing that will require dealing with with a strong hand, and that is the pernicious practice of "jumping" and "overlapping" mineral claims. Whilst the camp is to be congratulated on the almost entire absence of this evil this year in the case of placer claims, I regret to say that it seems to have broken out with renewed vigour in the case of mineral claims. Complaints this season were loud and deep, and in some instances the evil was remedied by parties relinquishing whatever title they had. There should be some more satisfactory means of expeditiously settling titles to mineral claims than at present exists, especially in this northern section of the Province, where a court is held only once a year. The Government might adopt the system in force in the Yukon Territory, where the Gold Commissioner and Mining Recorders are invested with some authority, and are something more than figure-heads in their offices.



The work of the various claim-owners is here set out in detail as far as is possible, and in many cases the information is furnished by the parties themselves. The balance of the information has been collected by the officials of the Government.

On these claims, situated just above the town of Pine, a considerable amount of work has been done, but the property is now tied up by litigation and judgment is still pending in the courts. The rock carries free gold.

**Yellow Jacket et al.**

This group, the property of the Nimrod Syndicate, is situated on Munroe Imperial Group. mountain, about  $4\frac{1}{2}$  miles in a N. E. direction from Atlin. Considerable work has been done this year, and applications for a Crown grant have been made. Assays on the outcrop yield as high as \$8. Levels have been driven cross-cutting vein No. 1 at a depth of about 20 feet, and No. 2 at 125 feet. In No. 1 a drift was run on the vein 125 feet, and a winze sunk from this level. Two hundred and seventy-four tons of ore were put through the company's mill, yielding an average of \$8 per ton, or about 90% of the assay value of the ore, which shows the gold to be absolutely free milling. In No. 2 level the vein was cut at a distance of 105 feet in, and was drifted upon for a distance of 40 feet west and 50 feet east. On this level a good deal of the vein filling consisted of rusty magnesian rock; 25 tons put through the mill yielded \$75, or \$3 per ton. The property is well situated, and the ore can be easily and cheaply mined for a number of years.

About \$10,000 have been expended on this property, and a 5-stamp mill has been erected at the mine. Development will be vigorously pushed throughout the winter, and, if results prove satisfactory, a larger plant will be installed early in the spring.

The above information has been furnished by Mr. R. D. Featherstonhaugh, the company's manager.

This group of claims, also the property of the Nimrod Syndicate and Anaconda Group. including the *Anny* and *Anaconda* mentioned below, is situated south of the townsite of Atlin, and is easy of access. The titles to some of these claims are still in litigation, and this has been the cause of retarding development. A 5-stamp mill was erected at a cost of \$3,800, with buildings costing \$2,500. (This mill is now removed to the *Imperial Group*, Munro mountain, just mentioned.)

On the *Anny mineral claim*, A tunnel was driven on this claim for 75 feet at a cost of \$1,000. The development was then stopped on account of litigation and before the value of the property could be demonstrated.

*Anaconda mineral claim.* The development of this property consists of a tunnel 125 feet long and 150 feet of open cut, costing about \$3,500. Owing to the large area of gold-bearing rock, the amount of development done was not sufficient to accurately gauge the value of the property.

Many claims have been located at the head of Spruce, Wright, Birch and Fourth of July creeks.

Considerable work has been done on the claims on Fourth of July and Spruce creeks, and all show improvement with depth. All of the above claims carry good gold values.

There are also a considerable number of claims staked at the north end of the townsite of Atlin, on Torres straits, and as far south as the boundary line of the District. All those in the south of the District carry values in copper and gold.

The Laverdiere Brothers have done considerable work on their claims at the south end of Atlin lake, and I am given to understand that they have bonded them to a French syndicate for a good round sum.

On Taku arm the *Engineer* and *Gleaner* groups are operating, and the reports received from the owners indicate that the results are satisfactory. The rock shows free gold to the naked eye.

The following is a report of the work done on the *Engineer Group* furnished by the Secretary of the Company:—

“This Company has now completed all the prospecting work desired previous to installation of machinery next spring (1901), and work will be temporarily suspended in January, 1901, one man being left in charge of the camp and outfit.

“The result of the year’s work may be gathered from the following particulars:—

“*Improvements*—Main tunnel, 5 feet by 6 feet, total length 243 feet; drift (south), 52 feet, with same height as main tunnel; two large and several smaller prospecting shafts; a great number of superficial cross-cuts of out-croppings. Camp—Two substantial log houses and 6 framed tents; separate log powder house; trails cuts to various claims; average number of men employed, 6.

“The ore is mainly free milling; the values contained in the ledges vary very much, some extremely high assays having been obtained.”

The following is a report of the work done by the *Gleaner Mining Company* as furnished by the Chairman of the Company:—

“Amount expended in prospecting and development work, \$500; surveys, 400; total, \$900.

“A cabin has been built on the property, and men are now engaged in running a 150-foot tunnel to cross-cut the main lead; average number of men employed, 4.”

Many other mineral claims are located on Taku arm, all of which carry good gold values, and in fact all the claims located in that section give gold assays of various amounts from \$1 upwards, per ton.

There is no doubt that this section of the District will come to the front in a short time as considerable development is being done, the particulars of which only come under my notice as assessment work is certified.

On Fourth of July creek the *Big Canyon Group* of 8 claims has been bonded by a syndicate of Juneau people for a large sum. They have run a tunnel of 150 feet and values average about \$100 and upwards to the ton. This information is furnished by a member of the Syndicate.

#### OFFICE STATISTICS—ATLIN DIVISION.

##### *Placer Claims.*

Records, 1,037, representing .....	1,217 claims.
Re-records, 912     "     .....	1,061     "
Bills of sale, etc. ....	822
Grouping and representation. ....	153
Re-staking .....	22
Abandonments .....	8

Leaves of absence.....	1,076 claims.
Orders issued by Gold Commissioner under Part IX. of the "Placer Act".....	63
Hydraulic leases issued.....	61
" " applied for.....	215
" " in force.....	182
Water records issued.....	34
" " applied for.....	31
" " in force.....	65

*Mineral Claims.*

Mineral records.....	641
Certificates of work.....	320
Notices filed.....	84
Bills of sale, etc.....	110
Re-locations.....	7
Abandonments.....	3
Certificates of improvement issued.....	22
Free miners' certificates issued.....	1,696

Abstract from returns of creeks, showing the number of ounces of gold on which royalty has been paid:—

Pine creek.....	4,918 ounces.
Boulder ".....	1,916 "
Birch ".....	15 "
Spruce ".....	1,699 "
Wright ".....	1,068 "
Graham ".....	19 "
Otter ".....	122 "
McKee ".....	1,733 "
Total.....	11,490 "

*Revenue Collected.*

Free miners' certificates.....	\$ 8,279 00
Mining receipts.....	28,991 00
Total.....	\$37,270 00

## BENNETT LAKE MINING DIVISION.

REPORT BY J. D. GRAHAM, GOLD COMMISSIONER.

During this season the placer deposits in the vicinity of Otter lake did not yield the results anticipated, the depth to bed-rock being a deterrent to prospectors. On Tutshi lake a stampede took place, but very few claims were located, as the ground was not considered sufficiently rich to pay for working as ordinary placer claims.

A few leases have been applied for on Quartz creek, a small stream in the vicinity of Bennett lake, and it will be fully demonstrated next season whether the ground can be profitably worked.

During the month of September, considerable activity prevailed in the Chilkat section of the Division by reason of the reported rich finds of placer ground on Bear creek, a tributary of the Chilkat river, which latter empties into Pyramid harbour, Lynn canal.

The new discoveries are situate on Bear, Buff, and Clear creeks and, as soon as the news was received, miners from Porcupine creek, Alaska, from Haines' Mission, Skagway, and Atlin headed for the section as fast as canoes could convey them up the Chilkat river.

On account of this rush, and not desiring a repetition of the Atlin troubles of 1899, I proceeded thither with Constable Vickers, and opened a temporary office for the convenience of the miners, who were thus saved considerable loss of time in travelling to the sub-record office at the N. W. M. Police camp on the Dalton trail, which cannot be reached in less than three days, and then not without risk in having to cross the Klehini river in several places, at all times a difficult business even when horsed.

Mr. Vickers remained at the temporary office until the heavy snow necessitated his return to a point just above the Indian village of Klukwan, through which the boundary, as laid down by the *Modus Vivendi*, passes.

Acting under my instructions, certain land here was reserved under the name of "Wells," and the temporary record office was established at this point, which will become of importance on account of its being the place of entrance into the Chilkat river section, besides being immediately opposite the junction of the Klehini river, which, under the provisions of the *Modus Vivendi*, is in this Province. There is no doubt, too, that this will be the point where the Customs House will be established, and it will be the most suitable place for the establishment of a Mining Record Office.

On account of the lateness of the season when the discoveries mentioned were made, together with the difficulty of getting into the country, the number of claims located did not come up to expectations, but, considering all things, the financial returns were satisfactory. Everything points to a considerable number of prospectors going into the Chilkat country next year and opening up their claims. The new discoveries have many advantages that are not enjoyed in Atlin, namely, a plentiful supply of water with a good fall and much good timber in the neighbourhood. There is, also, judging from surface indications, an absence of large boulders, but whether this continues down to bed-rock or not only future development will prove.

During the season, a Special Commission, over which the Honourable Mr. Justice Martin presided, proceeded to the Porcupine District to adjudicate on claims located in what was formerly supposed to be U. S. territory and under U. S. laws, but which had since been brought into the jurisdiction of this Province by the action of the *Modus Vivendi*. The results of this Commission will, no doubt, be fully dealt with by others and are not included in this report.

The number of claims staked under the U. S. laws, and which were extracted from the books of the Mining Recorder at Porcupine City, are set out as follows:—

Name of Creek.	Placer Claims.	Quartz Claims.	Water Rights.
Glacier creek . . . . .	84 . . . . .	3 . . . . .	4 . . . . .
Slate " . . . . .	2 . . . . .	— . . . . .	— . . . . .
Klehini river . . . . .	9 . . . . .	4 . . . . .	— . . . . .
Boulder creek . . . . .	27 . . . . .	2 . . . . .	— . . . . .
U. S. " . . . . .	10 . . . . .	— . . . . .	— . . . . .
Solitary " . . . . .	14 . . . . .	— . . . . .	3 . . . . .
Lost " . . . . .	7 . . . . .	— . . . . .	— . . . . .
	153	9	7



VALLEY OF McDAME CREEK - LIARD M. D.



BRITANNIA MINE, HOWE SOUND—VIEW OF CAMP.

I desire to point out that all placer claims located under U. S. laws are 1,500 by 600 feet, which is considerably larger than what is allowed by our Placer Mining Act. The mineral claims, on the other hand, are the same size as the placer claims, which makes them much smaller than mineral claims located under our mining laws, and the fact that they are permitted to follow all dips, spurs, and angles in itself leads to endless litigation, more especially when claims become valuable.

The disadvantage of having a Sub-Mining Recorder's Office has been dealt with in a separate communication to the Department of Mines, and it is to be hoped that the evil may be remedied by giving the Dalton or Chilkat Division a separate Recording Office, thereby saving considerable clerical labour and much trouble, as well as frequent delays to miners and officials. At present, everything has to be forwarded to Bennett for record, etc.\*

During the past season very little prospecting has been done in the Mineral Claims. Bennett Division, on account of its proximity to Atlin and the Yukon. However, from present indications, there will be considerable activity during the next season. Most of the claims in this Division carry gold and copper, and there are, besides, a few galena propositions. The prospects in the vicinity of Otter lake and the west side of Taku arm appear to be the best at present, and on the *White Grouse Group*, in which the White Pass Railway officials are interested, there are exceedingly good showings in a tunnel which has been driven in a considerable distance.

On Quartz creek some claims have been opened up and are at present under bond, while there are other claims, on which development work has been done, scattered throughout the Division.

Considerable development work has been done in the Rainy hollow portion of the Chilkat or Dalton District, which has been made a Sub-Mining Recording Division of the Bennett Mining Division, but I was unable to visit any of the claims until the season was far advanced, having to be in attendance for nearly one month at the sitting of the Porcupine District Commission. Mr. W. F. Robertson, the Provincial Mineralogist, visited this portion of the Division in the course of his examination of the Atlin District.

The Chilkat river section is well spoken of by old quartz miners as being a favourable-looking country for both gold and copper. The formations indicate, and the float picked up proves, that there are good prospects to be found. The season was so far advanced last year when the placer discoveries took place that no prospecting was done for mineral claims, for the fact that placer ground is available is a great deterrent from prospecting for quartz.

On this creek, a tributary of the Klehini river, some very good Boulder Creek. prospects are situate. The *Woodchuck* is spoken of very highly, the ore carrying copper, gold, and silver, and assaying about \$110 per ton. Many other claims are staked near this property.

---

\*NOTE.—Since the above was written that section of British Columbia lying west of the watershed of Chilkoot inlet has been formed into a separate Mining Division—the Chilkat Mining Division—with Record Office at Wells, at the junction of the Chilkat and Klehini rivers.

## OFFICE STATISTICS—BENNETT LAKE MINING DIVISION.

Records of mineral claims .....	81
"    placer    " .....	419
Certificates of work .....	76
Bills of sale, etc .....	32
Leaves of absence granted .....	188
Notices of grouping claims .....	2
Gold Commissioner's permissions .....	5
Papers filed .....	9
Abandonments .....	1
Hydraulic leases issued .....	1
Water records issued .....	1
Free miners' certificates issued .....	1,050

*Revenue Collected*

Free miners' certificates .....	\$3,116 00
Mining receipts .....	2,068 35
	\$5,184 35

## NORTHERN PORTION OF CASSIAR DISTRICT.

(INCLUDING TESLIN, LIARD AND STIKINE MINING DIVISIONS.)

Under date of 14th October, 1900, the Gold Commissioner of the District, Mr. James Porter, reports as follows:—

No new placer ground of importance has been discovered during the past season, but the old locations have been worked and prospected with satisfactory results.

The most promising locality at the present time is Thibert creek, situated in Liard Mining Division and which flows into Dease lake from the west, near the outlet.

## THIBERT CREEK MINING COMPANY.

On this creek the Thibert Creek Mining Company has hydraulic leases  
 Thibert Creek. and the prospecting tests made on its ground are reported as highly satisfactory.

The operations of this Company are under the supervision of Mr. Alexander Hamfield and have been very extensive, entailing the expenditure of a large sum of money during the past season.

Early in the season and before the steamboats were running on the Stikine, a party of surveyors came up that river in canoes and proceeded to Thibert creek, where they were employed in preliminary work and surveying for the Company, while the first trip in the spring of the Hudson's Bay Co's. steamer *Strathcona* brought up a large party of men and a complete modern hydraulic plant for use on the Company's property.

All this heavy and bulky material had to be transported on the backs of pack animals from the headwaters of the Stikine river, across a portage of some 73 miles, to the headwaters of Dease lake.

Here it was transferred to scows and floated down Dease lake to the mouth of Thibert creek, where it was again transferred to pack animals and transported some 7 miles to the mine.

The Company also took in at the same time a saw-mill, which was erected on the property and has cut this summer some 110,000 feet of lumber.

Owing to the shortness of the season in this northern latitude, and the drawbacks incidental to the establishing of a large enterprise in a new country, such as the necessity of widening old trails and building new ones, the season was consumed in getting the plant on to the ground.

However, everything is in readiness for an early start in the spring, when the plant will be installed and actual mining operations commenced.

This is the first hydraulic plant ever taken into this District, and it is expected and hoped that the results obtained will be so satisfactory as to induce others to follow.

The old gold run on Thibert creek can be traced for some distance above the leaseholds of the Thibert Creek Mining Company, and it is expected other leases will shortly be taken up higher up on this old channel, where it is understood very promising prospects have already been obtained.

On McDame creek, also in Liard River Mining Division, several  
**McDame Creek.** hydraulic leases have been granted and applications are in for others, which, if properly worked, seem to have a fair prospect of success.

Dease creek, in the same mining division, has not as yet been shown  
**Dease Creek.** to have any good hydraulic ground, but I am of opinion that it is worthy of investigation, as are several other less known creeks in the Division.

#### METALLIFEROUS MINING.

Heretofore the results obtained from prospecting for quartz or lode properties have not been very encouraging, as the only reliable reported finds were low grade propositions which could not be worked in this remote region.

I am pleased to be able to say now, however, that the Cassiar Central Railway Company's prospectors have found, on McDame creek, ore which gives very fair assay values.

On the *Apple Jack* claim a strong quartz ledge has been proved, having  
**Apple Jack and** a pay streak of from 2 to 3 feet wide. The ore carries, in picked samples,  
**McDame** 20% copper and 150 oz. silver.  
**Mineral Claims.**

On the *McDame*, in cross-cutting at about 40 feet underground, a band of some 10 feet of mixed concentrates and clean ore was encountered—after which the tunnel cut through ledge matter for 21 feet, when more ore was found.

The ore is argentiferous galena with fine iron and copper pyrites—running, on clean ore, about 30% lead and 80 oz. silver.

Some 2 miles up McDame creek from the *Apple Jack* another quartz ledge has been discovered carrying very similar ore.

A number of locations of more or less importance have been made at various other points, among which might be mentioned the *Winona-Vernon Group*, located on the south side of the Stikine river, on the opposite side and about 10 miles distant from the town of Glenora.



This group of claims was located last season and so far only one year's assessment work has been done on it. The work done indicates a well-defined ledge carrying 15% of copper, with small quantities of gold and silver.

The District is badly handicapped by the lack of railway or other transportation facilities, but this I hope will be remedied should the hydraulic propositions already started prove as satisfactory as is anticipated.

#### CASSIAR CENTRAL RAILWAY.

NOTE BY PROV. MINERALOGIST.—The following additional information with respect to the operations of the Cassiar Central Railway Co., together with the accompanying photographs, has been obtained through the courtesy of Mr. A. F. Griffiths, of Victoria, agent of the Company:—

Mining operations have been carried on quietly but unremittingly in this District during the last few years by the Cassiar Central Railway Company. This Company has done a great deal in the way of opening up trails, sending out exploration parties to locate mineral belts, and generally in acquiring information of the district to which its operations are confined. Apart from this, however, it has for the last three years been thoroughly prospecting and developing the property now known as the Thibert Creek Mining Company, Limited. This property consists of seven hydraulic leases, embracing an area of 80 acres each, with a frontage altogether of 10,500 feet on the south side of Thibert creek. Test pits have been sunk at various intervals along the frontage above mentioned, and the exploratory work done has disclosed that the Company possesses a gravel deposit of about 200 feet in width, and of about 60 feet in height, for the whole length of 10,500 feet. The tests made are of a nature that lead the Company to believe that the average yield will not be less than 50 cents per cubic yard.

The Company last year commenced and completed its water race, which has been flumed for the whole distance of very nearly two miles in length and is a very fine piece of work.

A large engine, boiler and saw-mill were transported into the country for the purpose of preparing the timber required for the construction of a flume. The whole plant is perfect in every way, and the Company's operations are sufficiently far advanced to anticipate the commencement of washing operations on the first day of May, 1901, should the water be sufficient in volume at that period for hydraulicing, and it is hoped that at the end of the season a very large output will be the result of the Company's operations. A few photographs are given to show the nature of the very heavy work the Company had to do in the construction of the flume.

The Cassiar Central Railway Company has also opened up three McDame Mineral copper properties. From one, the McDame Creek ledge, the value of the Claim. property is shown by the following assays, on samples which have been taken very carefully in order to ascertain the average value of the ledge:—

No.	Silver, oz.	Copper, %.	Lead, %.
1	69.4	.....	29.12
" 2	47.12	.....	8.73
" 3	80	.....	31.86
" 4	64.16	.....	35.90
" 5	18.04	.....	20.02
" 6	55	11.90	.....

" 7	84	34.72
" 8	33	13.24
" 9	55	21
" 10	75.5	26.31
" 11	25	7.14
" 12	9.6	1.57
" 13	26	0.94
" 14	81	30.53
" 15	37	13.69
" 16	32	10.73
" 17	70	27.38
" 18	32.8	11.88

The *Apple Jack* claim gave the following results, after systematic sampling across the whole body of the vein, where exposed at different points in the working tunnel:—

No.	Silver, oz.	Copper, %.
1	132.16	19.90
" 2	132.12	18.69
" 3	75	7
" 4	34.2	1.47
" 5	16	0.28
" 6	59.4	8.43
" 7	42.4	8.51
" 8	5.8	.....
" 9	158.2	26.65
" 10	39.4	1.05
" 11	17.6	2.08
" 12	120	18.2
" 13	32.6	4.9
" 14	5.8	1.19
" 15	51.4	5.71
" 16	28.8	4.41
" 17	65.60	9.66
" 18	168	33.02

The *Ruby* mineral claim gave results as follows:—

No.	Silver, oz.	Copper, %.
1	48.8	19.04
" 2	54.6	22.75
" 3	84	33.62
" 4	35	11.39

The Cassiar Central Railway Company is confident that these claims are in one of the most promising mineral belts of the Province, and that they will form the nucleus of a big mining camp in the near future. Many other claims have yielded satisfactory and even excellent results from assay returns, but so far the Company has only opened up to any extent the properties above mentioned.

## SKEENA RIVER MINING DIVISION.

(*A Division of Cassiar District under the jurisdiction of the Victoria Gold Commissioner.*)

REPORT BY JNO. FLEWIN, MINING RECORDER.

I have the honour to submit herewith my report on mining matters in the Skeena River Mining Division during the year 1900.

On the first day of January, 1900, the area of this Mining Division was increased by the extension of the southern boundary to Milbank sound, on the coast; from thence, following the divide between the watershed of the streams flowing south into Deans channel and those flowing north into Gardiners inlet, in an easterly direction, to the boundary line of the Omineca Mining Division; thence north-easterly to the old boundary line at the headwaters of the streams flowing into the Bulkley river. The Queen Charlotte group of islands, and all the islands lying off the coast between Milbank sound and the Alaskan boundary line are now included in this Mining Division.

A considerable amount of development work has been done in most of the camps in the Division, and it is anticipated that several properties will commence to ship ore during the ensuing year. The section lying between the mouth of Kitimaat arm and Kitsilas canyon, on the Skeena river, still remains the centre of attraction.

The want of better means of communication continues to be the great drawback in this District, and I cannot too strongly urge upon the Government the desirability of taking some steps, as soon as possible, to build either a waggon road or a railroad from Kitimaat to Kitsilas. The want of such a highway is seriously retarding the development of both the Kitsilas and Kitimaat camps, as enough work has already been done in both to demonstrate the existence of large ore bodies of high values.

## KITSILAS CAMP.

This property is owned by a syndicate of Eastern capitalists, represented by Mr. S. Arden Singlehurst, of New York. Over \$8,000 has been expended on these claims during the season, and there is a considerable amount of ore in sight. The following work has been done on the property:—

Ledge stripped for 1,300 feet; No. 1 shaft sunk 90 feet; drift run at 30-foot level 25 feet north and 32 feet south; cross-cut 6 feet and drift to south 20 feet at 60-foot level; cross-cut 10 feet and drift on ledge 18 feet north and 25 feet south at 90-foot level; winze 6 feet at face of cross-cut; open cut, 14 feet deep, 7 feet long; preliminary work for No. 2 shaft, 20 feet deep and 7 feet long; 12 open cuts, 8 to 15 feet wide and 5 to 10 feet deep; No. 1 tunnel driven 20 feet, and 5 by 7 feet clear on the inside. A blacksmith shop has also been built, together with three cabins, 12 by 16 feet, and one cabin, 14 by 25 feet, while 2 miles of a trail, 4 feet wide, have been graded.

This property is owned by the same syndicate as the preceding group.  
**Ormonde Group.** The work done consists of one and a half miles of trail chopped out and graded, and one cabin built, 12 by 14 feet, of whip-sawn lumber, with shake roof. Total value of improvements, \$500.

Comprising the *McKinley, Laurier, Four Ace, and Golconda* mineral  
**Hickey Group,** claims. The work done on these claims consists of stripping the ledge, putting in five open cuts, sinking a prospect shaft 10 feet, and surface prospecting of the property. Total amount expended, \$500.

The *Toulon*, *Bull Dog*, and *Montezuma* mineral claims are owned by Messrs. Kendall and Schwarz. The owners have cut a good trail from Skeena river to the claims, have run an open cut on the *Bull Dog*, 10 by 8 by 6 feet, in solid rock, and an open cut on the *Montezuma*, 10 by 8 by 6 feet, as well as a 5 by 7 tunnel, 40 feet long. Amount expended, \$1,000.

Fifteen of last year's records have lapsed in this camp, and fourteen new locations have been recorded during the season.

#### KITAMAAT ARM.

On this group Messrs. Steele & Dunn have recorded the following work:—One open cut, 9 by 6 by 5½ feet, in solid rock; one open cut, 11 by 5 by 5 feet, in rock and earth; one open cut, 14 by 8 by 4 feet, in earth; one stripping, 14 by 12 by 3 feet, in earth; one cut, 6 by 6 by 5 feet, in solid rock; one stripping, 30 by 24 by 3 feet, in earth.

The owners are well pleased with the appearance of the ledge, and they have recorded two additional claims in the same neighbourhood, the *Paragon* and *Porcupine*.

#### GRIBBEL ISLAND.

Great activity has been manifested in development work in this new camp. The Gribbel Island Copper Company, incorporated under the laws of the State of Washington, owns the *Bellingham*, *Tyee*, *Copper Cliff*, *Copper Queen*, *Aloha*, *Caledonia*, *Blue Bell*, *Island*, *Viking*, *Fairhaven*, and *White Bear* mineral claims, all of which were located last year. Almost continuous development work has been prosecuted during the entire season, and a body of bornite ore exposed. Following is a detailed statement of the work:—One open cut, 5 by 8 by 22 feet, followed by a tunnel, 5 by 8 by 22 feet; one open cut, 5 by 5 by 8 feet, followed by a tunnel, 5 by 7 by 10 feet; one tunnel, 5 by 6½ by 12 feet; one gang-plank of hewn timber, 4 by 18 inches by 50 feet long; one log cabin, 12 by 18 feet by 11 feet high; one shake cabin, 12 by 16 feet, and shed, 10 by 16 feet. A good trail has been made from salt water to the mine, the total amount expended being \$1,200.

#### NEW WHATCOM MINING COMPANY.

In March last the New Whatcom Mining Company, under the management of Mr. W. B. Morse, of San Francisco, located the following twenty-two claims on Gribbell island, on a ledge carrying bornite, viz.: the *Empress*, *North Star*, *Mabel*, *Grace*, *Estelle*, *Rainier*, *Success*, *Lyla*, *Drageland*, *Viva*, *Josey*, *Ruth*, *Rebecca*, *Premier*, *Victoria*, *Whatcom*, *Sonoma*, *Colusa*, *Francis*, *Vita*, *Hope* and *Oshkosh*. The Company has had a gang of men engaged in active development work ever since April, with the following results:—Two store-houses built and a boat-house at landing, all 12 by 16 feet; 4½ miles of trail constructed; one 5 by 7 tunnel, 15 feet; one tunnel 16 feet; one tunnel, 20 feet; one tunnel, 12 feet; one open cut, 13 feet; one cabin on *Francis* mineral claim. The amount expended exceeds \$2,300.

#### PRINCESS ROYAL ISLAND.

The *Princess Royal*, *Sadie* and *Excelsior* mineral claims are owned by Mr. Wm. Wilson and associates, of Victoria. On these claims the following work has been done:—One 4 by 7 tunnel, 21 feet long; lower tunnel, 30 feet; one cut through rock, 25 feet, as an approach to lower tunnel; one open cut, 8 feet wide, across the ledge. Amount expended, \$900.

On the *D. L. S.* and *Uta* fractional mineral claims several open cuts have been run and some surface prospecting done.

Consisting of the *Homestake, Anaconda, Bonanza, Summit,* and *Turner* fractional mineral claims. The owners have performed statutory assessment work on this group as follows:—One tunnel, 6 feet in solid granite; one cut, 10 feet; one cut, 12 feet; one rock cut on side of mountain, 2 by 3 by 18 feet. This property has recently been bonded to a syndicate, and it is proposed to do extensive work next season.

#### QUEEN CHARLOTTE ISLANDS.

On *Skincuttle Entrance* mineral claim, owned by Mr. Abraham Heino, the following work has been done:—Shaft sunk, 5 by 6 by 8 feet; shaft, 6 by 6 by 8 feet; trail cut from harbour to claim.

Mr. W. F. Best, of Victoria, made a trip to Graham island during the summer to prospect for petroleum, which is said to exist on the island. He was, however, unsuccessful, although he reports having found some deposits of asphaltum.

The *Bell-Helen* and *Bluestone* mineral claims, situated on the Uc-stall river, a tributary of the lower Skeena, have recently been purchased by Mr. John Bryden, who intends, shortly, to commence active development work. The ore is sulphide of iron, carrying 51% sulphur and \$1 a ton gold on the surface. The *Red Bluff* and *Red Gulch* have also been recently recorded on the same ledge.

NOTE BY PROV. MINERALOGIST.—The following additional information with regard to this group of claims has been obtained from the owners and other sources:—

The property is situated on Red Gulch creek, which runs into the Uc-stall river about 27 miles from its mouth. The Uc-stall is a tributary of the Skeena river, entering it from the south and about 12 miles from the sea. The rise and fall of the tide in the Uc-stall river is from 18 to 26 feet, and ordinary tides reach to within a few miles of the mouth of Red Gulch.

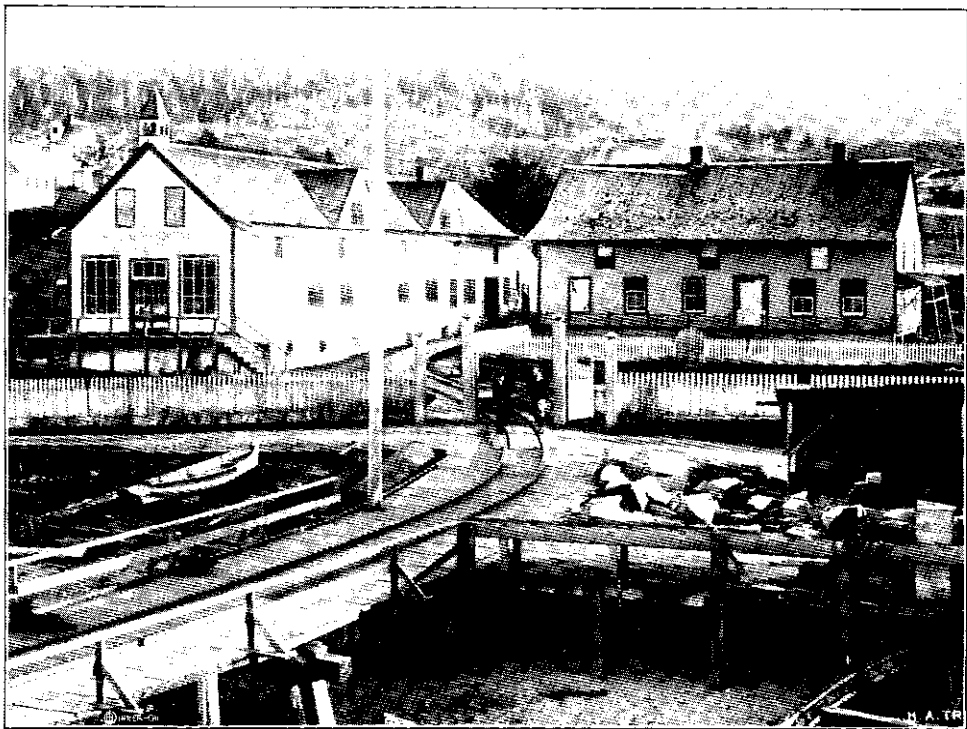
At the mouth of the Uc-stall is situated the Balmoral Cannery, while opposite and fronting on the Skeena river is the town of Port Essington, where are located three canneries, nine stores, a saw-mill, etc., and here the C. P. N. Co.'s boats from Victoria call weekly during the season.

The properties consist of four claims—

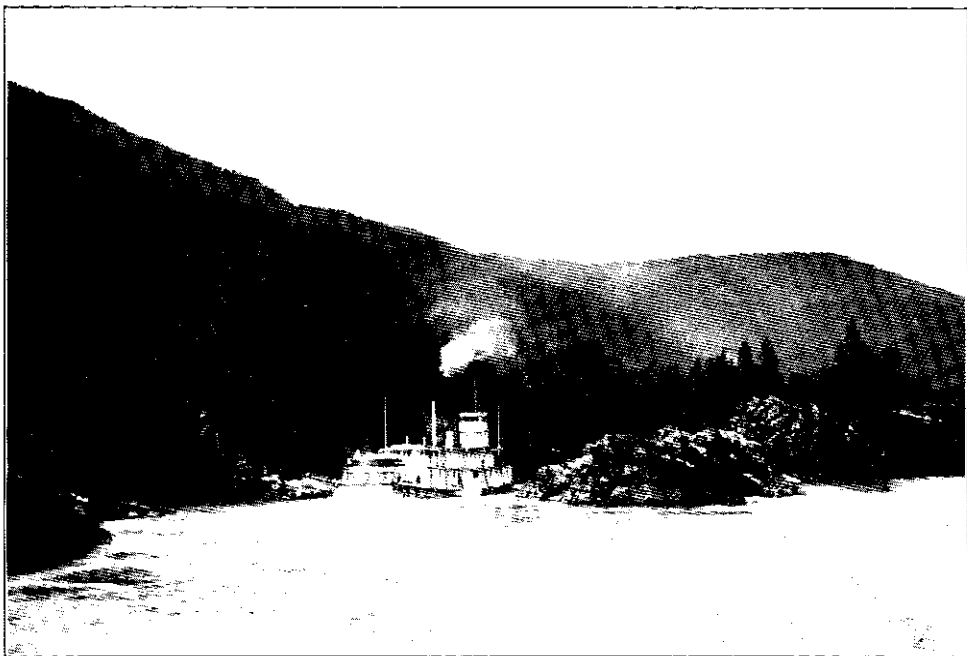
Bell-Helen .....	51.65 acres, surveyed.
Bluestone .....	51.65 " "
Red Bluff.....	51.65 " unsurveyed.
Red Gulch.....	31.00 " "
	185.95 "

The claims are locations, but the necessary work, etc., has been done and Crown grants have been applied for. Application has also been made for a mill-site on deep water, adjoining the Balmoral Cannery.

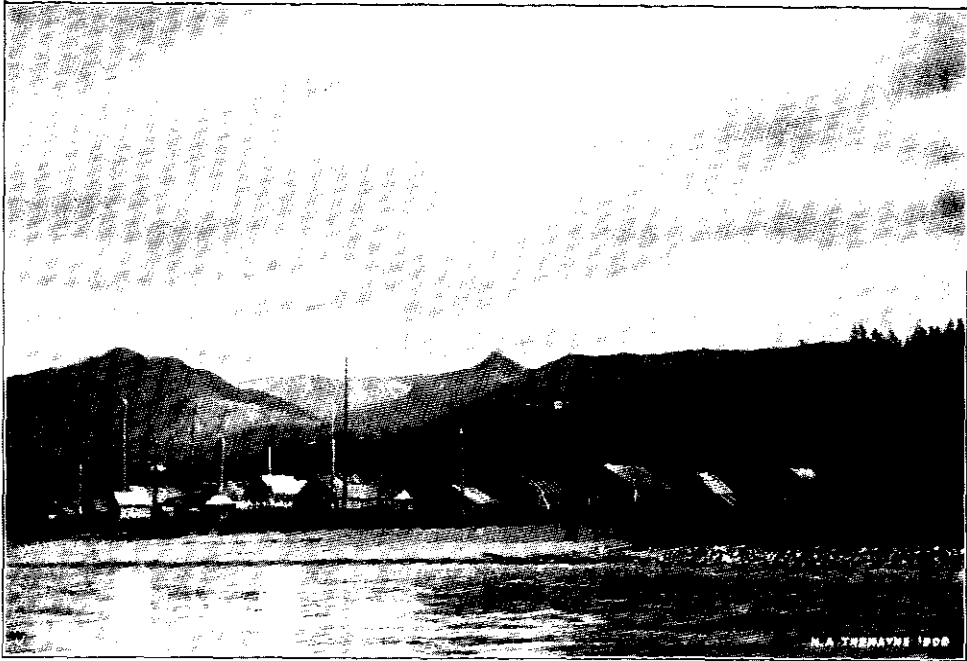
The ore is clean iron pyrites and, in samples brought down, occurs in a rather loose granular state, which would, unless the deposit alters its character with depth, make a considerable amount of fines. The character of the ore will be seen from the following table of assays on samples taken from near the surface:—



TOWN OF PORT SIMPSON - SKEENA M. D. - FROM DOCK.



SKEENA RIVER - STR. "CALEDONIA" ASCENDING.



N.A. THREAVNE '908

TOTEM POLES - INDIAN TOWN, PORT SIMPSON.



TOTEM POLE—PORT SIMPSON—SKEENA M. D.

	A	B	C	D	E	F	G
Silica .....		1.05 %					
Lime .....	None.						
Magnesia .....	None.						
Iron .....	45.00	32.91	34.64				
Alumina .....	None.						
Sulphur .....	51.20	43.57	46.06	52.8	52.44	42.00	51.42
Zinc .....							
Insoluble .....	.20						
Copper .....	2.45	0.40 %	1.3 %	Trace.	Trace.	Trace.	Trace.
Silver .....	0.9 oz.	1.15 oz.	3.14 oz.	1.56 oz.	2.5 oz.	1.47 oz.	1.67 oz.
Gold .....	\$1.12	80 cts.	\$1.20	80 cts.	40 cts.	\$1.00	\$1.00

The ore body occurs along the bed of Red gulch between schist walls, the stream having apparently followed the lead and exposed it for some 2,000 feet, in which distance it cuts across it twice at an interval of 460 feet, showing a more or less continuous ore body of considerable width. The samples showing most copper are said to have been obtained from the lower end of the deposit. The indications point to the probable existence of a very considerable body of ore, but as little development has been done beyond the exposures made by the creek itself, it is, of course, impossible to form any very definite idea of its ultimate size or possible tonnage.

There is ample water-power in the creek—a fall of 115 feet—and abundant timber in the neighbourhood. Lumber is also obtainable at Port Essington, at from \$9 to \$12 per M. The climatic conditions would permit the property to be worked for eight months in the year, but the Uo-stall river is frozen during the remaining months.

The chief interest in this property is that it is the first workable deposit of pyrites, suitable for sulphuric acid making, found in the Province, or on the Pacific Coast, and, taken in connection with the certain growth of the wood-pulp industry within the next few years, it may have some future importance. The ore seems eminently suited for sulphuric acid making, although, to judge from samples seen, a large percentage of ore would have to be burned in shelf-burners of some sort, as it is too friable for ordinary kilns.

The ore would have to come into direct competition with Japanese sulphur, which is obtainable alongside wharf on the Coast at from \$20 to \$25 per ton. The present demand for the ore, supposing it entirely replaced the imported sulphur, would be about 15,000 or 18,000 tons per year.

**Silver King Group.** This group of claims, which is situated on Dundas island, is located on a galena ledge. The owners have this year run one open cut (4 by 3 by 40 feet long) across the ledge, built one log cabin and done certain surface prospecting.

#### OBSERVATORY INLET.

**Bonanza Group,** Consisting of the *Bonanza, Nickel Plate, Emma, Emerald, North Star, Helen Fraction* and *Gertrude Fraction* mineral claims. This is a new discovery which was made by Messrs. Donahue and H. C. Flewin this season, and is situated about half a mile from the inlet. The ledge is said to be



exposed for a width of 100 feet, showing a solid body of ore which, it is said, averages on the surface, \$12 in gold and copper with a 2% nickel value.\* A trail has been made to the claims and a house built, but owing to the discovery having been made late in the season very little work has been done on the ledge. The property is now bonded to an English syndicate, which intends to prosecute active work as soon as the winter is over.

#### PORTLAND INLET.

Upon this group, owned by the Owosso Gold and Copper Company, Grizzly Group. considerable work was done in the early part of the season but, owing to the difficulty of constructing a permanent trail up the Bear river valley, and some other slight difficulties which unexpectedly cropped up, work has been temporarily suspended.

#### TELKWA RIVER.

The following is a detailed statement of the work which has been done Forrest Group. on this group of claims:—Trail cut from Goat river to the *Indian Chief* claim and thence to the *Telkwa* claim; tunnel, 5 by 7 by 40 feet long on *Discovery* claim; cabin, 15 by 18 feet; total expenditure, \$1,000.

There has been no work done on Lorne creek this year except a small clean-up on the *Dry Hill* placer claim.

#### OFFICE STATISTICS—SKEENA MINING DIVISION.

Number of free miners' certificates .....	57
"    mining claims recorded .....	89
"    certificates of work .....	23
"    conveyances .....	31
Revenue from free miners' certificates .....	\$374 50
"    "    other mining sources .....	336 25
Total .....	\$710 75

\*This assay requires confirmation as samples from this property submitted to the Department of Mines gave only 1-10 per cent. cobalt with traces of nickel.

---

---

## SOUTH-EAST KOOTENAY DISTRICT.

---

---

### FORT STEELE MINING DIVISION.

---

---

The Fort Steele Mining Division enjoys the distinction of having made a greater increase in production during the year 1900 than any other individual Mining Division in British Columbia, the value of the mineral output, including that of the Crow's Nest Pass Collieries, having risen from about half a million dollars to almost three million, making this Division the second producer in the Province, the Nanaimo Mining Division being the first on account of its large coal production.

Omitting the coal production, which will be dealt with later under that heading, the value of the output of the metalliferous mines of the Fort Steele Division during the past year (1900) is \$2,210,151, an amount which is only exceeded by the Trail Creek Mining Division with a metal production to the value of \$2,739,300.

The metalliferous output has been obtained almost entirely from the *St. Eugene*, *North Star* and *Sullivan* mines in the order named, each of these producing galena carrying, approximately, half an ounce of silver to the per cent. of lead.

During the latter part of October, 1900, and after his return from Atlin, the Provincial Mineralogist spent a week in the Fort Steele Division inspecting these producing mines and noting the development made.

The advance noted may be said to be directly due to the advent of railway facilities in the completion of the Crow's Nest Pass branch of the Canadian Pacific Railway, for without such connection progress would have been impossible.

During 1900 a branch line was also built from Cranbrook, on the Canadian Pacific Railway, over the St. Mary's river near the mouth of Perry creek, and across St. Mary's prairie to the town of Kimberley on Mark creek, where are situated the *North Star* and *Sullivan* mines.

#### ST. EUGENE CONSOLIDATED MINING COMPANY, LIMITED.

Manager, James Cronin, Moyie, B. C.

This Company has secured and amalgamated under one management all those claims on the hill to the east of the town of Moyie, from the summit of such hill down to Moyie lake, which are situated on what is known as the *St. Eugene* lead. These claims comprise the *St. Eugene*, *Peter*, *Moyie*, *Queen of the Hills*, *Lake Shore* and other properties.

The same lead runs through all these claims and may be said to be continuous from the summit of the hill to the lake level, a vertical distance of about 1,900 feet.

While the whole vein is more or less mineralized, so far as it has yet been proved by the workings, the pay ore is confined to these chutes, leaving two portions of the lead at present unproductive.

The upper or "St. Eugene" workings extend from the surface to the 400-foot level; from the 400-foot level to the 800-foot level is unproductive.

The middle or "Moyie" workings extend from the 800-foot level to the 1,000-foot level; from the 1,000-foot level to the 1500-foot level is unproductive.

The lower or "Lake Shore" workings extend from the 1500-foot level to the 1800-foot level, the latter being approximately 100 feet above the level of Moyie lake.

The levels referred to are in fact tunnels driven in from the face of the hillside on the lead, the tunnels in each set of workings being connected by raises, thus ensuring perfect ventilation.

The lead varies somewhat in width up to 20 or 30 feet, but may be averaged at about 5 or 6 feet; it seems in places to have branches and parallel veins which may yet prove important, more particularly in the "Lake Shore" workings.

The principal development of the mine, prior to the amalgamation of the claims mentioned, was done on the *St. Eugene Group*, the original property of the Company, and was described in the Report of this Department for 1898. This development, known as the upper or "St. Eugene" workings, consists of:—

*Tunnel A, or 100-foot tunnel*: Total workings about 700 feet, comprising tunnel, 190 feet; cross-cut to left, 134 feet; cross-cut to right on parallel vein, 118 feet; raise on parallel vein, 90 feet; raise on parallel vein, 40 feet, etc., etc.

*Two hundred-foot level*: Total workings about 1,600 feet.

*Three hundred-foot level*: Tunnel, 446 feet; two raises (50 and 110 feet), 160 feet; cross-cuts, about 40 feet.

*Four hundred-foot level*: Tunnel, 700 feet long; six cross-cuts, 120 feet long.

The greater amount of the ore stoped has been taken from between the 300 and 400-foot levels.

Near the face of the 300 and 400-foot levels a dyke has cut the lead and slightly faulted it, having somewhat affected the nature and amount of the deposit, but to what extent will not be known until the development has been pushed further ahead.

The ore from these workings is conveyed from the lower tunnel to the concentrator, situated on the lake shore, by an aerial tramway which is worthy of further notice.

This tramway is one built by a Nelson firm, and is understood to have been designed by Mr. Riblet, C. E., of that place. The tramway is 3,300 feet long, and has a fall of about 1,400 feet. There are two standing ropes, upon which the buckets run as in the Otto & Bleichart Systems, the difference being that in this case the buckets are attached to the hauling ropes by an arm bolted to the rope, instead of being held by a grip.

Each bucket holds 900 lbs. of ore and is self-dumping, being emptied as it passes over the bin by an automatic device without the necessity of being stopped, while the loading at the top bins is also done by an automatic loader as the buckets pass.

The arrangement is cheaper to construct and cheaper to operate than any "grip" tram, and was giving great satisfaction. The cost of transporting ore from the bins at the mine into bins at the concentrator is stated by the manager to be 7 cents per ton.

Between the upper and middle workings is the 500-foot tunnel, which is in some 160 feet, the work being chiefly exploratory.

The Moyie or middle workings comprise the 800-foot tunnel, 550 feet long, with a drift of 76 feet on a parallel vein; the 900-foot tunnel, with 2 cross-cuts to right for a total distance of 223 feet, and a raise of 110 feet; the 1000-foot tunnel, 488 feet long, with upraise of 128 feet; and the 1100-foot tunnel, 115 feet long.

The ore extracted from these workings is dropped through raises to the lowest of the levels or tunnels and trammed out to bins, from whence it is lowered by a surface-gravity tram to the top of a shaft situated at about the 1500-foot level. Through this shaft the ore descends to the 1800-foot level, where it is loaded from a chute into cars, and a train of 6 or 8 of these is hauled by a mule along a slightly down-grade surface track to the concentrator bins, a distance of, approximately, a quarter of a mile.

The Lake Shore or lower workings comprise the tunnel levels at 1,500 feet, 1,700 feet, and 1,800 feet.

*The 1500-foot level* is 504 feet long, with 2 cross-cuts of 48 feet, a raise to the 1400-foot level of 100 feet, a drift on cross vein to a parallel vein of 155 feet, a drift of 75 feet, and a tunnel on the south parallel vein of 65 feet.

*The 1700-foot level*, or more properly the 1665-foot level is 893 feet long, with a raise to the 1500-foot level of 165 feet, a cross-cut to the right of 220 feet to the south vein, and a drift following a cross vein for 113 feet.

*The 1800-foot level* comprises the main tunnel, 900 feet, with drift in cross vein of 135 feet; parallel drift on south vein; raise to 1700-foot level, 110 feet; raise to 1750-foot level, 60 feet; drift on parallel vein, 150 feet; and drift parallel to cross vein, 80 feet. Besides this, a short intermediate tunnel has been run in at the 1750-foot level.

The ore from these workings has been chiefly from between the 1700- and 1800-foot levels, and is taken to the mill with that derived from the Moyie workings by a surface tram drawn by a mule.

The force of men employed at the mine amounted to about 250 at the time of my visit, and was made up as follows:—Machine miners, 61; hand miners, 75; trimmers and labourers, 56; foremen, mechanics, etc., 53.

The mine works two shifts, 15 machine drills being employed, and compressed air being supplied from the mill. At the mill, the operating force amounted to 10, and the carpenters and labourers employed on construction and repairs to about 30, making a total pay roll of about 300 men.

#### CONCENTRATING MILL.

##### *Power.*

Water power is used to operate the mill, but provision is made for the use of steam in very dry weather or in case of emergency. Water has been brought to the property by two flumes, that from the south being 5 miles long and delivering its water under a head of 550 feet, while that from the north is 3 miles long and gives a head of 420 feet.

##### *Mill.*

The following is a brief description of the crushing plant:—From the bins the ore is fed to two 9 by 15 crushers, and thence to coarse rolls fed by automatic feeders; discharging into

the sump, it is elevated by a bucket elevator and fed to trommels, the largest size screened being 25<sup>mm</sup>, the over size being re-crushed.

The concentrating plant consists of 14 jigs, 5 single Wilfley tables, 2 double-decked Wilfley tables, and 6 Frue vanners, while preparations were being made to install, in addition, 8 Frue vanners and 2 double-decked Wilfleys.

About 20 % of the product is recovered from the tables. The rate of concentration is about 4½ to 1, and the mill has a daily capacity of 400 tons of ore.

The *Compressor Plant* consists of one 10-drill Rand compressor and one 7-drill Ingersoll compressor. Power is supplied for these from a 36-inch Pelton wheel, under a head of 465 feet, while a smaller wheel provides power for the electric light plant.

The steam plant is held in reserve or used as an auxiliary, and is provided with three 80 horse-power boilers.

The *St. Eugene* mine produced more lead this year (1900) than any other single producer in the Province, or nearly as much as the combined output of the Slocan District.

The tonnage of ore treated amounted to between 65,000 and 70,000 tons, which concentrated about 4½ to 1, producing a concentrate running from 65 to 70 % lead.

The silver contents of the ore vary somewhat, but may be stated to be about ¾ of an oz. silver to the per cent. of lead on the upper levels or *St. Eugene* workings, while in the lower workings the silver ratio is about ½ oz. silver to 1 % lead.

This property has already been described in previous Reports of this North Star Mine. Department, and no further general description need be given now.

Within the past year, however, the property has come under the management of Mr. Frank Robbins, M. E., and seems to have taken on new life. The mine is being systematically exploited, and development is being pushed forward and is meeting with an amount of success greater than was even hoped for.

As already mentioned, a branch railway has been run from Cranbrook, on the Canadian Pacific Railway, up the valley of Mark creek, to a point directly below the mine and about a mile above the town of Kimberley. A wire rope tramway (two standing ropes and a traction rope) has been run from the mine to bins alongside the railway, and by this means the ore is conveyed to the bins very cheaply. These improved methods of transportation, combined with direct railway connection at Cranbrook, have rendered much ore of a low grade profitable which previously could not be shipped on account of the heavy expense of transportation by waggon for 20 miles to the Kootenay river, in addition to the further steamer freight charges to Jennings, Montana.

The limits of the original ore body have been pretty well defined and known for some years, and no great additional tonnage has been developed in it during the past year, save that, as already indicated, much is now classed as ore which could not previously be so considered. Chiefly from this ore body there has been shipped during this past year about 16,000 tons, averaging from 50 to 55 % lead and from 20 oz. to 25 oz. silver, and the Company has been enabled to pay a dividend of \$117,000, as well as push exploratory work. This output is only about one-quarter that of the *St. Eugene* in tonnage of ore mined, yet the lead produced is nearly as great an amount.

As has been said, the limits of the original ore body have been known; at the same time, the existence of other ore bodies has been believed in, although not until this past year have these beliefs received any very conclusive demonstrations. Shafts and other development

had been made to the north of the main ore body, but with no very satisfactory results. The management then sunk a pit to the east, and in October last had succeeded in striking what had the appearance of being another body of ore. What the dimensions of this may be has yet to be learned, as it had not then been proved, but the indications were certainly hopeful.

The surface improvements have been confined to those absolutely necessary, and as the mine is so far a tunnel proposition, not very many have been needed. A small steam hoist and pump have been erected for the trial shaft already referred to, and will be replaced by a more permanent structure when required.

The number of men employed averaged about 50 to 55, and of these only 10 were miners and 6 machine drill men—the latter chiefly occupied on exploratory work. The amount of ore which this force was able to mine and ship during the year indicates a very low mining cost, which is partly accounted for by a large amount of the ore being what is locally known as "carbonates," and the fact that a large amount of development work had been done in previous years.

The hanging wall or roof in this mine may be said to be the surface gravel and soil, more especially in the old workings, and the consequence is that the timbering has to be kept within 4 or 5 feet of the work, and requires the greatest care.

This group, consisting of the *Hamlet*, *Shylock* and *Hope* claims, is Sullivan Group. situated on Sullivan hill, on the left side of Mark creek, and is about  $1\frac{1}{2}$  miles north of the *North Star* mine and about 2 miles by waggon-road from the town of Kimberley, already mentioned.

The property is owned by the Sullivan Group Mining Company, of Spokane, J. C. Williams, Secretary-Treasurer, and is under the management of C. W. Burdsal.

The *Sullivan Group* has been under development for some years and is referred to in the Reports of this Department for 1897 and 1898; but only within the last year has the development been conducted with such system and to such an extent as to prove what the property is worth.

In 1898 an inclined shaft had been run through an ore body and into country rock, but no development of this ore body had been made and the shaft was allowed to fill with water. The present development has, however, shown the original ore body to be of considerable extent, the limits not having yet been reached.

The ore body seems to be of a bedded character rather than a vein, and would appear to consist of an overlying deposit of iron sulphides, something of the nature of pyrrhotite, the iron, with depth, being gradually replaced by lead, passing through an iron-galena to a fairly pure fine-grained galena having an average assay of about 40% lead and 20 oz. silver.

The property has not as yet been developed sufficiently to show its possibilities, but certainly an ore body of considerable size may be said to be proved and the indications are that it will be found much greater than it is definitely known to be at present.

The work so far has been chiefly conducted from a tunnel, but connection has been made with a shaft through which the ore is hoisted. Sufficient ore was in sight to justify a systematic exploitation, preparations for which were being made at the time of my visit, a suitable shaft-house having been erected in which boilers and engine had just been installed.

The ore bodies evidently occur in comparatively flat basins, an occurrence which lends itself to the use of the diamond drill for prospecting purposes. The Company has a steam-

driven drill of this description and is making a thorough exploration of the property, with what results could not be learned.

As has been said, the work has been chiefly development, but this has produced during the year some 5,000 tons of ore which will average about 16 to 17 oz. silver and 33 to 35% lead, an assay value which is probably lower than the average of the galena proper, as an unusual amount of the iron had to be mined.

The number of men employed in connection with the mine proper was about 25 underground and 15 above, although at the time the property was visited considerable construction was under way and consequently the number of men employed on the surface had been temporarily increased.

The ore at present has to be hauled by waggons to Kimberley, but arrangements were being made for extending the railway to within a short distance of the mine.

The work done about the mine has been conservative, no needless expense having been incurred until a body of ore had been proved, when an efficient and sufficient plant was arranged for and was being erected. The work done was good and it was a pleasure to note that no money had been wasted on "fancy" buildings, etc.

From present indications the property may be looked to next year as a large producer of low grade lead ore, provided the exceedingly small price obtainable from the smelters does not temporarily discourage mining.

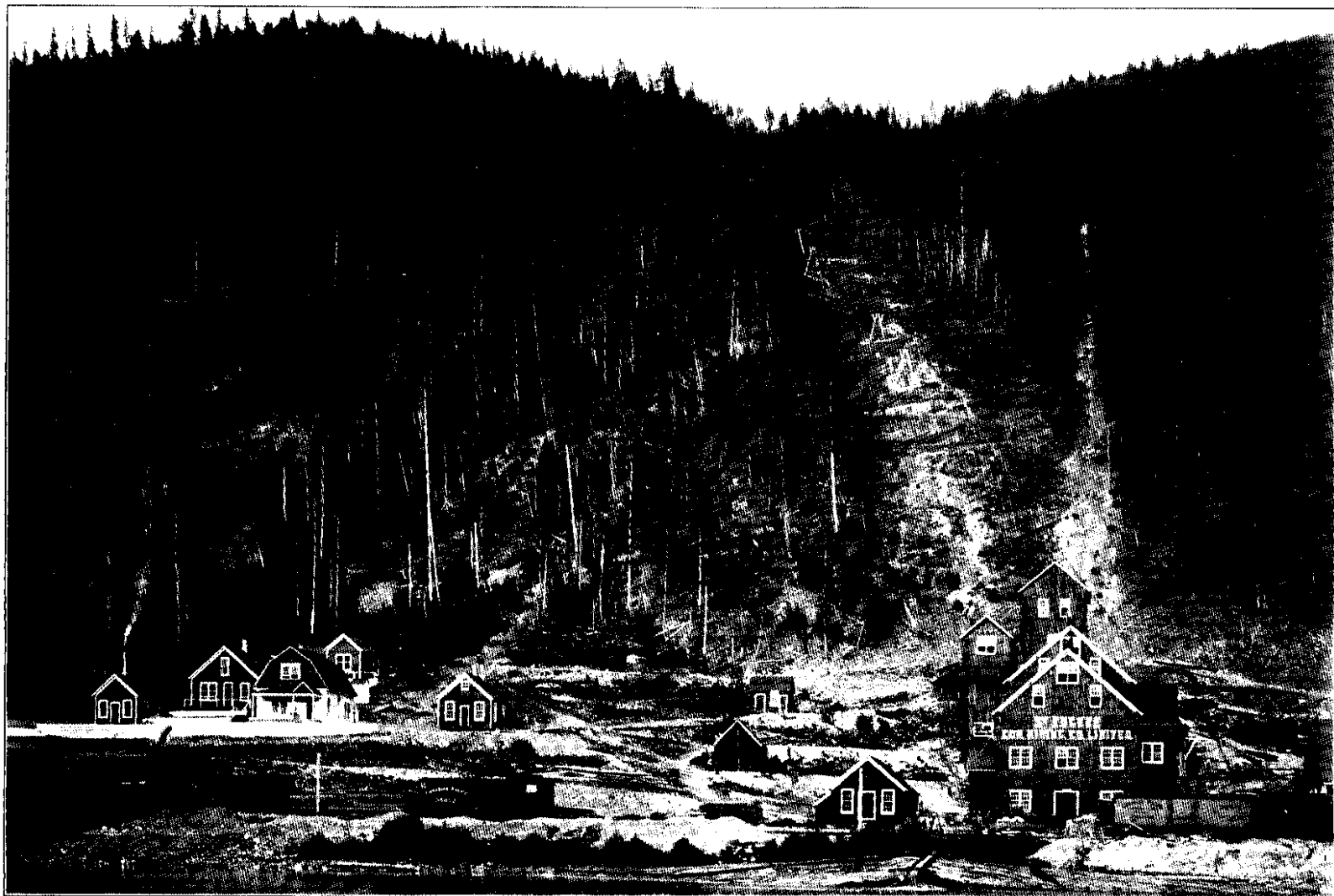
### FORT STEELE MINING DIVISION.

REPORT BY J. F. ARMSTRONG, GOLD COMMISSIONER.

I have the honour to report as follows on the progress in mining made in this Division during the year ending December 31st, 1900:—

The following table shows that there are 1,279 mineral claims in the District, 105 of which are held under Crown grants or certificates of improvements, 704 under certificates of work, while 470 are new locations on which no work has been recorded as yet. In this statement, I have subdivided the Division into six sections, three on each side of the Kootenoy river.

Sections.	Held under Crown grant or Certificate of Improvements.	Certificate of Work.	New Locations.	Total.
North-east .....		1	10	11
North Centre .....	13	199	94	306
South-east .....	4	31	50	85
South-west .....	23	155	103	281
West Centre .....	65	292	194	551
North-west .....		26	19	45
Total for 1900 .....	105	704	470	1,279
Total for 1899 .....	68	718	729	1,515



ST. EUGENE MINE AND MILL—MOYIE FORT STEELE M. D.



## NORTH-EAST SECTION

The only claims in force in this section are a few at the headwaters of Sheep creek, reached by a trail constructed along the north fork of Wild Horse creek. Only one certificate of work has been issued, and the claims located last year have been allowed to lapse, being located anew by other parties. I have been informed of the following development work :—

*John Bull Group*: Incline shaft of 45 feet.

*Carbonate Group*: 4 tunnels, amounting to 230 feet. A quantity of high-grade ore is said to be on the dump awaiting transportation facilities.

Only a small portion of this section has been prospected, as it is difficult of access at present and has only been visited by trappers. Five miles of trail were constructed during the past year.

## EAST CENTRAL SECTION.

This section includes the drainage area of all streams emptying into the Kootenay river between and inclusive of Wolf creek and Bull river.

On Wolf and Wasa creeks, 18 certificates of work have been granted, and 3 new locations have been recorded. I have been informed of the following development work :—

*Canby Group*: 70 feet of tunnels and shafts.

*Dubal*: 25 feet of inclined shaft.

On Lewis, Diorite, and Tracy creeks and on Grundy basin, 2 claims are held under certificates of improvements, 44 certificates of work have been issued, and 22 new locations have been made. I have been informed of the following development work :—

*Golden Fleece and Stanley*: Tunnel, 100 feet.

*St. Lawrence*: Tunnel, 100 feet.

*St. Patrick Group*: Tunnel, 40 feet; shaft, 10 feet.

*Sunday*: Tunnel, 40 feet.

*Montana*: Tunnel, 120 feet; shaft, 100 feet.

*John L. Group*: Tunnel, 30 feet; shaft, 56 feet.

*Crescent and Viking*: Tunnel, 20 feet.

On the *Estella Group* much development work has been done during the past summer, the measurement of which I have not obtained. The total development work to date is said to consist of 1,292 feet of tunnels and 195 feet of shafts.

On Four-Mile and Six-Mile creeks, 3 certificates of work have been granted, and 5 new locations have been recorded. I have been informed of the following development work :—

*Quien Sabe*: Tunnel, 20 feet.

All the above creeks are reached by short trails and waggon roads, and the claims mentioned are but a short distance from the Kootenay river.

On Wild Horse creek and its tributaries, 1 claim is held under Crown grant, 89 certificates of work have been granted, and 28 new locations have been recorded. I have been informed of the following development work :—

*Bill Nye*: Tunnels, 100 feet; open rock cuts, 30 feet.

*Dupont Group*: Tunnel, 110 feet.

*Big Chief Group*: Tunnels, 60 feet.

*Curly*: Tunnel, 90 feet.

*Dougherty*: Inclined shaft extended 45 feet.

*Grace Dore* : Tunnel, 60 feet.

*Golden Five* : Tunnel, 170 feet, shaft, 70 feet.

A waggon road extends from Wild Horse creek to Victoria gulch, and good trails connect the latter with the head of the east fork and extend some distance up the north fork. There is also a trail from Fort Steele, on the south side of Wild Horse, to Boulder creek, Tanglefoot pass, and some of the tributaries of Bull river. The waggon road between Fort Steele and the placer mines was built 30 years ago and is badly located, but a diversion on an improved location has been commenced, which will materially shorten the length and greatly decrease the gradients.

On the small streams between Wild Horse creek and Bull river there are 6 claims held under Crown grant, 8 certificates of work were issued, and 10 new locations recorded. The only development work I can report is:—

*Dibble Group* : Shaft, 50 feet. This is a continuation of very extensive development in former years.

On Bull river there are 4 claims held under Crown grant, 30 certificates of work were issued, and 22 new locations recorded. I am informed of the following development work:—

*Star Group* : Tunnels, 100 feet ; rock cuts, 32 feet.

*Old Abe Group* : Tunnel, 400 feet.

#### SOUTH-EASTERN SECTION.

This includes the drainage area of all streams entering the Kootenay river from the west, below Bull river.

On Sand and Rock creeks, 1 claim is held under a Crown grant, 18 certificates of work were issued, and 25 new locations recorded. I am informed of the following development work:—

*Empire* : Tunnel, 200 feet.

*Blue Grouse* : Tunnel, 45 feet.

*Waterfall* : Tunnel, 80 feet.

*Bishop Group* : No information.

*McBean Group* : No information.

Several discoveries have been made at the head of Sand creek, and a trail is being constructed from Fernie, which will make this locality easy of access.

Near Tobacco plains there were 7 certificates of work issued and 3 new locations recorded.

On Elk river there were 6 certificates of work issued and 22 new locations were recorded. I am informed of the following development work on Sheep mountain, near Elko:—

*Happy Frank Group* : Tunnel, 26 feet ; rock cut, 14 feet.

A sulphur bed has been discovered on Elk river, 17 miles north of Michel station. The development work consists of drains and shafts, the measurements of which I have not ascertained.

#### SOUTH-WESTERN SECTION.

This includes the drainage area of Moyie river, Yahk river, and Gold creek.

On Moyie lake, 22 claims are held under Crown grant, 99 certificates of work have been issued, and 60 new locations have been recorded.

I am informed that, during the year, the St. Eugene Consolidated St. Eugene Mine. Mining Company, Limited, has driven 7,600 feet of tunnels and drifts and 925 feet of upraising, that the concentrator has been at work during most of the year, and that the plant has been largely increased. The ore from the *Lake Shore* claim is brought to the concentrator by a horse-power tramway, and from the *St. Eugene* claim by an aerial wire tramway. Ore has also been shipped from the *Society Girl*, lying east of the *St. Eugene*, and development work has been continued, but I have no details thereof.

*Dixy, Mayflower, and Collingwood*: Surface work has chiefly been performed, consisting of 600 feet of earth cuts and 65 feet of rock cuts.

On the west side of Moyie lake, I am informed of the following development work:—

*Aurora Group*: Tunnels, 167 feet; open cut, 75 feet. Ore has been found which is supposed to be a continuation of the *St. Eugene* lead.

On the Upper Moyie river there is 1 claim held under Crown grant, 22 certificates of work have been issued, and 27 new locations have been recorded.

In the vicinity of Palmer's Bar creek, 34 certificates of work have been granted and 16 new locations have been recorded.

#### WEST CENTRAL SECTION.

This section consists of the drainage area of the St. Mary's river.

In the vicinity of Cranbrook, 9 certificates of work have been issued and 17 new locations recorded.

On Perry and Six-Mile creeks, 10 claims are held under Crown grants or certificates of improvements, 57 certificates of work have been issued, and 41 new locations recorded.

The Kootenay (Perry Creek) Gold Mines, Limited, has reported the following work:—Tunnels, 800 feet; cross-cuts, 70 feet; drifts on veins, 400 feet; shafts, 50 feet, besides surface work.

*Sherwood Group*: Work to a considerable extent has been done.

On Hell Roaring and White Fish creeks and on White Grouse mountain, 34 certificates of work have been issued and 29 new locations recorded. I am informed of the following development work:—

*Faller Group*, on White Fish creek: Tunnel in wash, 170 feet; cross-cut in rock, 130 feet.

On Flat Car and Baker creeks, 4 certificates of work have been issued and 6 new locations recorded. I am informed of the following development work:—

*Lilly May*: Tunnel, 30 feet.

*Francois A.*: Tunnel, 30 feet.

On the west fork of the St. Mary's river two claims are held under Crown grant or certificate of improvement, 34 certificates of work have been issued and 16 new locations recorded.

On the north fork or middle fork 6 new locations have been recorded.

On the east fork and Pyramid creek 14 claims are held under Crown grant, 4 certificates of work have been issued and 5 new locations recorded.

On St. Mary's lake and Matthew creek 5 claims are held under Crown grant, 57 certificates of work have been issued and 26 new locations recorded. I am informed of the following development work:—

*John Bull Group*: Tunnels, 174 feet.

On Mark creek 34 claims are held under Crown grant or certificates of improvement, 78 certificates of work have been issued and 31 new locations have been recorded.

More development has been done on this creek than in any other part of the section.

The North Star Mining Company has extensively developed its properties, and has been steadily shipping since the construction of the aerial tramway. This tramway, which is a double-rope Bleichert system, has an hourly capacity of 10 tons and, I am informed, was erected at a cost of \$25,000, exclusive of ore bins. Besides the old ore bins erected some years ago, there is a bin at the upper terminal of the tramway with a capacity of 250 tons, and one at the lower terminal with a capacity of 350 tons. Numerous buildings have been erected during the year.

I am informed of other development work on North Star hill, as follows:—

*Greenhorn Fraction*: Shaft, 45 feet.

*Selkirk*: Shaft, 93 feet.

*Dean and Allover*: Shaft, 40 feet. Diamond drill boring on these properties has been in operation for some months.

*Quantrell Group*: Tunnel, 110 feet. In connection with this group a flume, 500 feet in length and giving a fall of 50 feet, has been constructed for power purposes.

The following information regarding the development on Sullivan hill, for the past year, has been furnished me:—

*Sullivan mine*: 980 feet of tunnel and drift; 175 feet of shaft. A great deal of ore has been shipped after being hauled by teams from the mine to the town of Kimberley, a distance of 3 miles. A 4-drill compressor plant has been installed and numerous buildings have been erected. An ore bin with a capacity of 100 tons has been built at the shaft.

*Jew Fraction*: Tunnel, 175 feet.

*Big Dipper Group*: 70 feet of shafting.

*Vermont Boy and Eureka*: Tunnel, 180 feet.

*Owen Sound Boy Fraction*: Shaft, 27 feet.

*Black Bear Group*, situate on Mark creek: An engine and shaft house has been erected, containing boiler, engine and hoist. An incline shaft has been sunk 100 feet and 110 feet of drifting done.

On St. Mary's prairie and Luke creek 15 certificates of work have been issued and 17 new locations recorded. I have been informed of the following development work:—

*Carbnot Group*: 5 prospect shafts have been sunk on the lead, exposing galena ore in each.

*Dominion*: 155 feet of tunnels and cross-cuts.

*Carrie Lee Group*: Shaft, 23 feet.

#### NORTH-WESTERN SECTION.

The section comprises the drainage area of Cherry and Skookumchuck creeks, and has not been prospected very thoroughly. Twenty-six certificates of work have been issued and 19 new locations recorded. I have been informed of the following development work:—

*Carbonate Group*: 100 feet of tunnels and shafts.

*War Eagle*: 50 feet of tunnels and shafts.

*Dead Fall Group*: Tunnel, 100 feet; shaft, 20 feet.

*Butte and Philadelphia*: Tunnel, 100 feet.

OFFICE STATISTICS—FORT STEELE DIVISION.

Mining claims recorded . . . . .	470
Partnership mining claims recorded . . . . .	2
Placer claims recorded or re-recorded . . . . .	1
Partnership placer claims recorded or re-recorded . . . . .	4
Certificates of work recorded . . . . .	704
Payments in lieu of assessment work . . . . .	5
Certificates of improvements recorded . . . . .	37
Conveyances and other documents of title recorded . . . . .	320
Partnership agreements recorded . . . . .	12
Abandonments recorded . . . . .	3
Gold Commissioners' permits recorded . . . . .	2
Documents filed . . . . .	91
Affidavits filed . . . . .	1,048
Record of water grants and permits . . . . .	16
Mining leases issued . . . . .	1
Mining leases in force . . . . .	6
Free miners' certificates, ordinary . . . . .	688
"    "    companies . . . . .	10
"    "    substituted . . . . .	1
"    "    special (individuals) . . . . .	9
"    "    special (companies) . . . . .	1
Revenue from free miners' certificates . . . . .	\$ 4,336 95
"    mining receipts, general . . . . .	5,036 75
"    mineral tax . . . . .	13,570 16

The revenue from the tax on coal and coke and the royalty on coal is unknown to me.

---

---

## NORTH-EAST KOOTENAY DISTRICT.

---

— 0 —

REPORT OF J. E. GRIFFITH, GOLD COMMISSIONER.

---

I have the honour to submit my report of mining operations in the North-East Kootenay District during the year 1900.

The advancement made is, on the whole, satisfactory; although fewer claims have been recorded than in the previous year, yet more assessment work and actual development has been done on the various properties throughout the District. The lack of transportation facilities no doubt retards progress to a very large extent. It is, however, obviously impossible for the Government to build waggon roads in every direction through so large a tract of country, and the making of such must necessarily depend upon sufficient development being done on the claims in any particular section to warrant their construction.

---

### GOLDEN MINING DIVISION.

On the *Certainty*, *Porphyry* and *Iron Hill Groups*, owned by the Certainty Gold and Mining Co., a considerable amount of development work has been done, comprising 800 or 900 feet of tunnelling and cross-cutting. A large force of men has been employed all the summer, but operations have been suspended for the present. The surface showing was encouraging, but as depth was attained the results have not proved so satisfactory.

#### McMURDO CREEK CAMP.

Apart from assessment work, little has been done in this section, although there are several good properties upon which a considerable amount of capital has been expended in the past. The following claims may be briefly mentioned:—

*Iron Mask*: 100-foot tunnel driven, exposing 2 feet of copper ore.

*Sunrise*: Tunnel 176 feet driven, the ledge, however, not having been yet encountered.

*Challenger*: Development work has shown a pay streak of 12 inches of clean galena.

#### QUARTZ CREEK CAMP.

A new trail is under construction from Beaver Station, on the C. P. R., to the head of this creek, where are situated several promising claims.

On the *Klondyke*, *Lexington* and *Boston* claims there is a ledge nearly 25 feet in width, occurring at a contact between porphyry and slate, and showing at the surface 2 feet of high grade copper ore.

On the *Zulu* a 50-foot tunnel has been driven on the ore body, which carries good values in gold and copper. Had the trail mentioned been completed, a car-load of ore would have been shipped this autumn.

## BALD MOUNTAIN.

A 60-foot tunnel was driven on the *Bald Mountain Group* during the summer, but with what result is not known.

The *Monarch* mine was again re-opened, after the lapse of several years, and about 16 carloads of silver-lead ore shipped to Trail and San Francisco. The ore is low grade, and from information received it is doubtful whether the returns have shown that the property is a paying proposition.

On McLean creek there are some promising claims, which have lately been acquired by a New York company. A 50-foot tunnel was driven on the *Good Luck*, showing up some good copper ore.

On Fifteen-Mile creek the same company just mentioned has taken an option on the *Tangier*, *Blue Fox* and *Red Fox* claims. On these properties a tunnel was driven for 25 feet, work being then suspended until the spring.

## CANYON CREEK PLACER MINING.

The shaft being sunk at the mouth of this creek has now reached a depth of 75 feet. It was, however, found that the pump in use was insufficient to cope with the inflow of water, and work had to be suspended before bed-rock was reached.

## BUGABOO CREEK SECTION.

Several new locations have been made in this section during the summer, notably on Rocky Point creek, but little more than assessment work has been done on them so far. The surface showings are very good, the ledges being well mineralized throughout and assaying well in gold and copper.

On the *Bugaboo Group*, recently located and consisting of 11 claims, there are 5 distinct ledges, mineralized throughout with chalcopyrite, and traceable for about 2,000 feet.

## OFFICE STATISTICS—GOLDEN MINING DIVISION.

Free miners' certificates .....	216
"    "    special .....	7
"    "    substituted .....	1
"    "    company .....	4
Mineral claims recorded .....	156
Placer " " .....	1
Certificates of work .....	151
Certificates of improvement .....	12
Records—Conveyances .....	45
"    Water grants .....	2
"    Abandonments .....	1
Affidavits filed .....	313
Placer leases in force .....	3
Crown grants issued .....	9

## WINDERMERE MINING DIVISION.

## TOBY CREEK.

This property is situated on Spring creek, a tributary of Toby creek, Paradise Group. and consists of the *Paradise*, *Royal Stag* and *Comstock* mineral claims, located in August, 1899, and bonded to Messrs. Hammond and Bruce in June, 1900 for \$30,000. The vein occurs at a contact between lime and slate, and is found outcropping as sand carbonate of lead about 600 feet above Spring creek basin.

A shaft has been sunk on the ore body for some 40 feet, and a new incline shaft is now being sunk on the slate wall in  $4\frac{1}{2}$  feet of shipping ore, while 125 feet lower a cross-cut tunnel is being run to the slate, and is now in some 110 feet. Two hundred and fifty feet below this again, a tunnel has been driven in 300 feet on the lead, showing the existence of a large body of spathic iron some 40 feet in width, and carrying about 6% lead and 6 oz. silver per ton. The big ledge is oxidised more or less throughout, and carries bunches of galena. The incline shaft is now down 100 feet, and when the raise from the lowest tunnel is completed, this will give a total depth on the ore body of 375 feet.

One thousand tons of ore is now being rawhided to the mouth of Spring creek, a distance of  $4\frac{1}{2}$  miles, from whence it will be taken by sleighs to the Peterborough landing on the Columbia river. Here a large shed has been constructed to hold the ore until navigation opens. The distance from Spring creek to Peterborough landing is  $12\frac{1}{2}$  miles over the newly constructed Toby creek waggon road, which has just been completed by the Government, and, with the exception of a mile and a half of two per cent. grade, it is a down-hill pull for the ore all the way. The ore, which averages about 50 oz. silver and 50% lead, is being moved by contract at \$7.85 per ton from the shaft mouth to f. o. b. cars at Golden, and later advices say that 500 tons have now been delivered on the banks of the Columbia river, awaiting the opening of navigation. The work is being carried on in a systematic manner, and the low figure, under the circumstances, at which it is possible to deliver the ore at the railroad, a distance of nearly 100 miles, is encouraging. About 20 men have been employed continuously since June, and 50 horses are engaged in hauling the ore.

This group, situated at the head of Spring creek, in Paradise basin, Silver Belt Group. consists of the following claims:—*Silver Belt*, *Silver Belt Fraction*, *Carbonate* and *Sunshine*. The property has but recently been acquired by the Silver Belt Mining Co., and up to the present time little work has been done. The surface showings are encouraging, however, and at a depth of 10 feet there are exposed 2 feet of clean ore, assaying 60 oz. to 90 oz. silver per ton, and 30 to 70 per cent. lead. As this group is adjacent to the *Paradise*, the ore, presumably, can be transported at the same figure.

The *Silver Crown* claim adjoins the above property, and has, perhaps, a better surface showing than the adjacent locations.

Situated on the east side of Spring creek, about two miles from the The Diamond C Group, waggon road, consists of the following claims:—*Diamond*, *A. B. C.* and *S.* A cross-cut tunnel has been driven 172 feet to tap the ledge, giving a depth of 80 feet. A shaft has also been sunk 12 feet on the vein, which is of quartz, carrying gold and copper values and having a width of about 6 feet at depth. A shaft 15 feet deep has been sunk on the lead where it outcrops about half a mile west of the present workings. Good values were obtained here in gold and copper. A comfortable house has been erected on the property, and work will be resumed in the spring.



The tunnel on this property has been extended 80 feet, attaining a  
**Mineral King.** vertical depth of 60 feet and cutting the ledge; the showings, which were good on the surface, have improved with depth.

This group consists of the following claims:—*Kootenay Queen, Princess and Maud*, and is situated on the north fork of Toby creek. The ore  
**Kootenay Queen Group.** carries values of 70 oz. silver per ton, and 70% lead. A tunnel has been driven for 33 feet on the lead, during the year, and a few tons of ore extracted. The property, which is owned by Messrs. Bruce and Hammond, is a very promising one, and it is the intention to do extensive development work in the spring.

This group was bonded to H. C. Hammond in October, 1899, and was  
**Delphine Group.** worked all last winter until March, 1900, since when nothing has been done. It is, however, understood that work will be resumed as soon as the waggon road is extended to the mouth of the north fork of Toby creek, where it will connect with a sleigh road from the mine. There are about 80 tons of ore in the bins at present. A carload shipped to Trail gave returns of 209.8 oz. of silver, 5.4% copper and 39.2 lead.

The *Tilbury* and *B. C.* claims are situated above the *Delphine*, and in character are somewhat similar, but no work of any consequence has been done as yet. There is a surface showing of rich ore about 9 inches in width.

#### COPPER CREEK.

There are several promising claims in this neighbourhood on the south side of Toby creek. The owners have, to a certain extent, been handicapped for the want of a bridge across the latter stream, but it is proposed to provide this requirement in the spring.

The *Charlemont* is situated opposite Jumbo fork on Toby creek. What little development work has been done shows from 11 to 14 inches of clean high-grade ore.

On the *Bimetallist* claim considerable work has been done, showing five different ledges from which good values in gold, silver, copper and lead have been obtained.

On the *Royal Crown* a 25-foot tunnel has been driven. There is a surface showing of 6 inches of clean ore.

The *Bryan and Free Silver*, situated at the head of Mineral creek, has a ledge 4 feet wide, giving values of \$34 per ton. Development work consists of several open cuts.

These claims are situated on Copper creek, 1½ miles from the waggon  
**Morning Glory** road and considerable work has been done on the property. The ledge is  
 and 4½ feet wide and consists of three pay-streaks of 3, 4 and 8 inches, from  
**Mountain Goat.** which values of 21% copper and 6 oz. silver have been obtained.

The *Surprise Group* is situated on Copper creek and consists of the *Bank of England, Our Bobs* and *Union Jack* claims. The vein, which occurs at a contact between granite and slate, is about 14 feet wide, and from it good gold assays have been obtained.

The *Montana* adjoins the *Silver Tip*. Development work has met with success and shows a ledge carrying good values in copper and gold.

#### HORSE THIEF CREEK CAMP.

The *White Cat* claim is situated on the south side of Boulder creek. Considerable work has been done on this property and some ore has been shipped. The ledge has increased in width to 5 feet; on each wall there are 3 inches of gray copper and galena with carbonates in the centre.

This property, situated near the head of McDonald creek, consists of the *Tecumseh*, *Tuscumby* and *Dundee* claims and adjoins the *Red Line Group* on the south. The ledge is about 6 feet wide and the work done during the summer shows 2 feet of clean galena. It is expected that extensive development work will be begun early in the spring.

This property is being developed by driving a cross-cut, which is now in about 160 feet, and is expected to tap the ledge in another 40 feet. Five men have been employed during the year and development work will proceed throughout the winter. The property is situated near the head of Horse Thief creek and is a very promising one. The ledge is about 30 feet wide and can be traced over two claims, the hanging wall being slate and the foot wall dolomite. The ore consists of galena and gray copper, from which assays have been obtained running from 80 to 100 oz. in silver and 15% copper. Development has been carried on under very adverse circumstances, supplies having to be packed over a rough trail; latterly, however, a good trail has been built and will be completed to the head of the creek as soon as possible, the work being temporarily abandoned on account of the snow.

This property is situated on Boulder creek, opposite the *Delos*, and has a very good surface showing. Development work consists of two tunnels, one of 40 feet on the vein with a short shaft and another which has been driven 48 feet to cross-cut the vein.

This group, situated on Boulder creek, consists of three claims, the *Pet*, *Alps No. 1* and *Alps No. 2*.

There are two distinct leads, on the first of which a shaft has been sunk 11 feet, at which depth the vein is 10 feet wide and of concentrating ore.

On the second lead a tunnel has been driven for 10 feet, exposing to view a ledge 4 feet wide, well mineralized; this has been further developed by open cuts for a length of 75 feet.

This property, situated on McDonald creek and originally known as the *Red Line Group*, has had more development work done upon it than probably any other in the District. The principal work performed last winter was on the *Red Line* claim, but, during the past summer, development was begun on the adjoining location, the *Iron Cap*. About a dozen men have been employed during the year, and the same number will be kept at work during the winter.

The surface showing is good, and at the time of writing it is rumoured that solid galena, 6 feet in width, has been encountered in the lower tunnel. This report is not confirmed, but, if true, will doubtless result in active operations during the ensuing year.

There are several excellent claims in the same vicinity, which cannot be advantageously worked until better transportation facilities are obtained. Should the alleged strike on the last-mentioned property prove true, however, a waggon road will be built from Peterborough, a distance of about 28 miles, and this will materially reduce the cost of working the claims, not only on McDonald creek but on all the tributaries of Horse Thief creek. This road has been already surveyed, and the grades will be fairly easy.

#### DUTCH CREEK.

There are several good claims on this creek, but no work of any account, other than assessments, has been done this summer. They are principally copper propositions, and, in time, with better facilities, will doubtless come to the front.

---



---

 NOS. 2 AND 3 CREEKS.

The *Steele* claim is situated on No. 3 creek. The ore is a steel galena, of which some beautiful specimens have been obtained. The development done consists of a 55-foot tunnel.

This claim, situated on Isaac creek, has not had very much development work done upon it so far, but in one place, where a few feet of Isaac. sinking was done, 3 feet of galena are exposed. There does not, however, Mineral Claim. appear to be any defined lead, as far as can be seen on the surface, but it is expected that active operations will commence in the spring, and the property will then be thoroughly prospected.

The portion of the District between Horse Thief creek and Bugaboo creek, comprising Nos. 2 and 3 creeks and the Salmon river, is but little known. During the past year, however, new trails will be built, which will give better access to this section. It is reported that the claims which have been located in this vicinity of late are very promising, and there is still a large extent of country which is practically "virgin ground."

## OFFICE STATISTICS—WINDERMERE MINING DIVISION.

Free miners' certificates . . . . .	199
"    special . . . . .	3
"    company . . . . .	1
Mineral claims recorded . . . . .	188
Certificates of work . . . . .	285
Conveyances . . . . .	107
Crown grants issued . . . . .	10

---

---

---

## NORTH-WEST KOOTENAY DISTRICT.

— o —

REPORT BY F. G. FAUQUIER, GOLD COMMISSIONER.

---

I have the honour to transmit herewith the annual report on the mining industry in this District. Owing to the late date in the year at which I took office, I have not been able to prepare statistics, as I should have wished.

The work done in the Revelstoke, Illecillewaet and Arrow Lake Mining Divisions has principally been development, but the results have been very satisfactory and quite in accordance with the faith placed in the different properties by the owners, as the appended reports of the Mining Recorders of each Division will show.

In the Trout Lake and Lardeau Mining Divisions a large amount of work has been done, proving conclusively the richness of these sections. The large bodies of ore found and the high values obtained therefrom will, with the advent of transportation facilities which we hope speedily to see, place these among the leading producing districts of the Province. With the prospect of the Canadian Pacific Railway Company building a line (part of which is now graded) into the country, owners of claims are preparing to push work forward as early in the spring as possible. At present all available teams and horses are engaged in rawhiding and hauling ore, principally from the *Silver Cup* and *Nettie L.* properties, to Thomson's landing, for shipment to the smelters. Unfortunately, the north-east arm of Upper Arrow lake is frozen, and progress is impossible beyond that point, so that the ore will have to remain there until the arrival of C. P. R. steamers in the spring.

---

## REVELSTOKE MINING DIVISION.

REPORT OF FRED. FRASER, MINING RECORDER.

I have the honour to submit herewith my annual report on the progress of mining in the Revelstoke Mining Division for the year ending 31st December, 1900.

While the immediate results of the work done (principally assessment) are not very apparent, the belief of mining men that the Division, especially the Northern or Big Bend portion, will rapidly go ahead upon the advent of transportation facilities, has been considerably strengthened.

The waggon road now under construction by the Government may be of some temporary benefit to the District, but for the future development of this promising section a cheaper means of transportation than can be given by a waggon road 40 miles in length must be assured. The Columbia river, Nature's highway, is navigable from beyond the International Boundary to Laporte, Big Bend, a distance of some 250 miles, and will doubtless be found, in the future as in the past, the cheapest route in and out of the Big Bend portion of this Division.

## LAFORME CREEK.

This creek is situate some 20 miles north of Revelstoke, on the Big Bend trail. Considerable development has been carried on during the year by the owners of the *Adair*, *Noble Three* and *McCallum* claims, all of whom express the greatest satisfaction with the results already attained.

## CARNES CREEK.

The *Rosebery Group* is situated some 28 miles north of Revelstoke on Rosebery Group. Look-out mountain, between the North and South forks of Carnes creek.

It is owned by the Carnes Creek Consolidated Gold Mines, Limited, and consists of eight adjoining Crown-granted claims. Work was commenced on this group in the year 1897, and since that time the owners have expended more than \$20,000, chiefly upon the *Rosebery* claim. Here there is a mineral zone upwards of 50 feet in width, carrying gold values throughout, together with 8% to 10% of copper. Good buildings have been erected and provision made for carrying on the work both in summer and winter. Although the greatest amount of work has been done on the *Rosebery*, there is a good showing of ore on all the other claims.

The distance from the *Rosebery Group* to the Columbia river is six miles, and the situation of the property is favourable for both working and transportation. The work done during the year consisted of 284 feet of tunnelling.

## KEYSTONE MOUNTAIN CAMP.

This camp is situated 40 miles from Revelstoke. Considerable assessment work has been done during the year. The *Silver Shield* made a shipment of 600 pounds of ore, merely as a mill test, with the most gratifying results to the owners, who intend during the coming summer to ship a car-load or two to the smelter.

## STANDARD BASIN.

Standard Basin is situated immediately north of Carnes creek, and Standard Group. adjoins the Keystone Camp on the east. Extensive development has been done on the *Standard Group* of copper properties, owned by a local syndicate, the Prince Mining and Development Company. The property consists of nine full claims, and is distant six miles from the Columbia river.

The general formation of this district is graphitic schist, interspersed with narrow bands of limestone and running north-east by south-west. The country is traversed by dioritic dykes, which cut the formation at right angles and dip to the north-east at an angle of 45°. The mineralization is found along the contact of and in these dykes, which vary from 50 to 200 feet in width, and are traceable with unusual regularity for miles.

The *Standard Group* has been worked for the past three years, and some \$15,000 expended in its development. A shaft has been sunk on the ore, giving excellent results, and the development is now being carried on entirely by tunnels, of which there are four on the property. A force of men is at present working, and will continue to do so all the winter. Ore has lately been encountered in one of the lower tunnels, thus showing up the lead in three out of the four mentioned. The average assay gives 13% copper, \$2.25 in gold, and some 2 oz. of silver per ton.

The property is well equipped with cabins, bunk-houses, store-houses, blacksmith shops, etc., etc. It has been favourably reported upon, and the management appear to be pursuing a systematic course of development.

#### GROUND HOG BASIN.

This camp lies at the head of McCulloch creek, and many promising claims of free-milling gold ore are located here, although, owing to the want of transportation, nothing other than assessment work has been done. I may mention the *Mammoth Group*, which sent one of the finest samples of free-milling rock from this Division to the Paris Exhibition.

#### FRENCH CREEK.

This creek, which has yielded varying returns in placer gold for years past, has practically lain idle during the past year, although signs are in evidence that the year 1901 will witness considerable mining activity on some of the old claims.

#### MCCULLOCH CREEK.

During the year the Ophir Bed-rock Flume Co., a hydraulic syndicate, has done a large amount of work, although an unfortunate accident to the manager, Mr. Cæsar, somewhat delayed operations.

#### SMITH CREEK.

On this creek some 400 or 500 feet of various shafts and tunnels have been worked during last summer, mainly on the *Revelstoke* placer claim, now owned by Mr. McCarty, of Revelstoke, who has expended over \$5,000 with very gratifying results. I am informed by this gentleman that he intends pushing the work on his claim during the next season.

The *Blue Jay* placer claim, with other claims on this creek, is now under bond to parties outside of the Province, and there is every prospect of work going ahead early in the season.

#### ISAAC CREEK CAMP.

This camp gives every promise of going ahead in the near future, but here, as elsewhere, nothing more than assessment work is recorded.

#### OFFICE STATISTICS—REVELSTOKE DIVISION.

Number of mineral claims recorded . . . . .	88
Number of certificates of work issued . . . . .	112
Number of bills of sale recorded . . . . .	30
Free miners' certificates issued . . . . .	279
Certificates of improvements issued . . . . .	6
Payments in lieu of work . . . . .	2
Placer leases granted . . . . .	5
Placer transfers . . . . .	10

## ILLECILLEWAET MINING DIVISION.

## REPORT OF A. L. STEWART, MINING RECORDER.

I have the honour to submit my report of mining operations in the Illecillewaet Mining Division during the year 1900.

The work carried on in this Division during the past year has been somewhat limited, the most important being that performed by the Lillooet, Fraser River and Cariboo Gold Fields Co. This Company has done about 1,000 feet of tunnelling and cross-cutting on its property, and has erected a 200-ton concentrator and other plant. At present, however, work is suspended.

On the *Donald* mineral claim, situate about 5 miles east of Illecillewaet, and owned by David Woolsey, some 900 feet of tunnelling has been driven and an 80-foot shaft has been sunk. The ore is of the same class as that of the first-mentioned property, namely, a silver-lead, having an assay value of about \$75 per ton. The claim has easy access to the railway.

To the west of the *Donald* is the *Laurier and Silver Bell Group*, owned by O. R. Dahl *et al.* On this property, about 100 feet of tunnelling has been done, and the vein has been cross-cut in several places, exposing a good contact lead.

Adjoining the last mentioned is the *Josephine* claim, another promising silver-lead property, on which a considerable amount of development work has been done.

The *Bendigo* mineral claim is situated on the Canadian Pacific Railway; indeed, the track passes through the property. The ore carries good values in silver and lead, and the vein appears to be a true fissure.

The *L. D.* claim is situated 4 miles west of Illecillewaet, and not more than 600 feet from the railway. A considerable amount of development has been done.

On the *Gladstone and Jumbo*, which adjoin, a good deal of work has been done, including 200 feet of tunnelling on the latter. The ore from the *Jumbo* is a silver-lead, and carries good values in gold.

There are a number of other claims in the immediate neighbourhood, on some of which development has been done.

## LARDEAU MINING DIVISION.

## REPORT BY G. SUMNER, MINING RECORDER.

I have the honour to submit herewith my report of progress in the Lardeau Mining Division for the year 1900.

I am glad to say the future of this Division is looking very bright indeed. A large amount of development work was done during the past season, and several of the foremost properties are working this winter.

This group, the most important property in the Fish Creek Camp, **Eva Group.** consists of the *Eva*, *Iron Dollar*, *Last Chance*, and certain fractional claims, and is situate within 2 miles of the town of Camborne. It was discovered in July, 1899, since when it has changed hands several times, and is now in possession of the Imperial Development Syndicate, of Nelson, B. C. Fifteen men are at work continuously, and a large amount of good, free-milling, pay ore is in sight.

There are 3 tunnels: No. 1, 156 feet in length, with a cross-cut 20 feet on the vein, which I am informed has an average value of \$18 per ton; No. 2, 85 feet in length and cutting the vein, the average value of which is said to be \$100 per ton; No. 3, 50 feet in length and exposing very good ore. In No. 2 tunnel some of the quartz is very rich, giving assays as high as \$3,000 per ton.

On the surface, which is covered with heavy timber and underbrush, a considerable amount of cross-trenching has been done, exposing the vein in a number of places, and wherever so exposed auriferous quartz has been found, which may be crushed in a hand mortar and the gold panned out. Three cabins, an office, and a blacksmith shop have been erected on the *Eva*.

The conditions for working the property are ideal, the steep mountain side giving good tunnel sites, while there is no lack of timber, and Pool creek will afford all the water power needed.

In the immediate vicinity of the *Eva*, there are several properties of the same character, on every one of which gold has been found, the surface showings in some instances rivalling those of the *Eva*. Sufficient work has not yet been done, however, to test the downward permanency of the ore-bodies, and here is a good opportunity for the capitalist to step in, since some of the properties can be bonded on very reasonable terms. In this connection, I might mention the *Oyster*, *Mascotte*, *Mascotte Fractional*, *Criterion*, *Everett*, *Gold Bug*, and *Alliance* mineral claims.

This group consists of the *Imperial*, *Balfour*, and *Rosslund* claims, and **Imperial Group.** adjoins the *Eva Group* on the south-east. The quartz on this group is also auriferous, but sufficient work has not yet been done to determine its permanency. The Imperial Development Syndicate has also taken over this property, and a gang of 6 men is at work. The vein is said to be very wide, about 100 feet.

**Brunswick.** This Crown-granted claim adjoins the *Eva* on the north-west. Four men are at work driving a tunnel.

This group comprises the *Eclipse* and *Ettie* mineral claims, situate on **Eclipse Group.** Pool creek, about 3 miles from Camborne. The vein on this property is reported to be a true fissure. It is 12 feet wide between the walls, and largely impregnated with iron pyrites and galena, with, in some places, 14 inches of solid shipping ore, which is said to assay as high as 95 ounces silver and 60 % lead. Six men are working on the property driving a tunnel along the hanging wall, and at last accounts were in 65 feet. There is a cabin, 14 by 20 feet, a blacksmith shop, and, near the mouth of the tunnel, an ore shed. An abundance of good timber is on the property for all mining purposes, and Pool creek, which runs past one of the claims, is capable of furnishing ample water power.

The *Eclipse* is somewhat of an object lesson to the old miners in this camp. Situated close to a well-travelled trail, it was not discovered until August, 1899, having been walked over by half of the prospectors in the District for the past seven years.



The *Eclipse* vein differs from others in this District inasmuch as, although most of the leads in the camp so far traced have been found to have a north-west strike (or following the general trend of the country), that of the *Eclipse* is due east, cutting the formation.

This claim is situated near the summit of Mohawk creek and owned by Frank F. Fullmer and the Boucher Bros. The property is, however, unfortunately lying idle, owing to litigation. It was bonded in the summer of 1898, and was worked in a desultory manner until last spring. The conditions of the bond were not complied with, wages of workmen and other debts were left unpaid, and everything at the mine was in a deplorable condition. I am informed, however, that the original owners have now taken the property in their own hands again, and that a new state of affairs will soon be inaugurated.

There is a continuous body of ore in the tunnel, consisting of a fairly good grade of galena and gray copper, and having an average width of 18 inches. Smelter returns from the last shipment made were over \$50 per ton. In the past, the ore has been taken out by the holders of the option wherever it happened to be easily available, and no systematic attempt was made to develop the property with a view to continuous shipping. There are two tunnels and a shaft on the claim, making about 400 feet of underground workings.

During the past season, some 70 tons of ore were shipped to the smelter at Trail, and a good deal still lies on the dump, while 50 tons or more are scattered along the raw-hide trail between the mine and Camborne.

On this claim, situated on Pool creek, about 4 feet of argentiferous galena is reported as outcropping. The property is very difficult of access, being above the timber line on the rugged slope of Lexington mountain, and, but for its situation, would have been taken in hand long ago. A company, however, has just been formed in Eastern Canada to work it.

This claim is situated at the extreme head of Pool creek, about 18 miles from Comaplix, and is one of the oldest locations in the District. Nothing in the way of work has been done, however, excepting the annual assessments. The location was made on a lime "dyke," striking north-westerly with a dip of about 80° to the north, and the vein, which can be traced for about 500 feet, carries galena, gray copper, and iron pyrites. As the mineralization is very much scattered, the ore will have to be concentrated, by which method, I have been informed, a rich grade of concentrates could be obtained, since the ore, wherever found solid, assays highly. The property is owned by the Canada Mutual Mining and Development Company.

This group consists of the *Black Bear* and *Kangaroo* mineral claims and is situated on Bear creek, a tributary of Pool creek. A gang of 12 men worked on this property during the past summer putting up buildings, surface trenching and prospecting the vein, which is said to average 18 feet in width and to be composed of concentrating ore. A tunnel has been driven, under contract, a distance of 100 feet. There are two cabins capable of housing 30 men.

Owing to some misunderstanding this property has been shut down for the winter.

This claim, on Pool creek, is said to be on a continuation of the *Eclipse* vein; the ore on both is certainly of the same character, but insufficient work has as yet been done to justify conclusions. Two men are at work driving a tunnel. The property is owned by Harvey Bros., of Thomson's Landing.

This property comprises the *Lardeau King*, *Lardeau Queen* and *Lardeau Prince* mineral claims, situate on Lexington creek, about 20 miles from Comaplix, and belongs to the Lardeau Mines Limited, of Rossland. A tunnel has been driven on the *Lardeau Queen* for a distance of 60 feet, exposing a body of sulphide ore 2 feet wide, carrying low values in gold and silver. Further down the mountain side on which the group is situated, another vein out-crops and is traceable for a considerable distance, having a width of 9 feet and carrying in places "kidneys" of galena ore. No work has been done to test this lead.

Owing to financial difficulties this property also has not been worked for over a year.

**The Daffodil Group.** Consists of the *Daffodil*, *Primrose* and *Blue Bell* claims. The character of the ore and the nature of the leads on this property are almost identical with those of the *Royal Group*, but nothing more than assessment work has been done.

**Kootenay Chief Group.** The *Kootenay Chief*, *Winnipeg* and *Tarmacan* are the property of A. T. R. Blackwood, of Winnipeg. These claims are located on the extreme head of Boyd creek, about 30 miles from Comaplix, and a Crown grant has been applied for. There is a good showing of argentiferous galena on the property, but nothing can be done at present owing to the lack of transportation facilities.

**Kitsap Mineral Claim.** On this claim, situated on Lexington creek, a very good showing of low-grade argentiferous galena is reported. Nothing more than the annual assessment work was done during the past season.

**Banner.** Also on Lexington creek. Considerable work was done on this claim during the summer, 9 men being employed in building cabins and prospecting the lead. A tunnel has been driven a distance of 104 feet with the object of cutting the vein at depth. The property belongs to the Banner Gold Mining Company. The lead is remarkably strong, there being no less than 20 locations on it, a few of which are the *Lexington*, *Lone Star*, *Black Diamond*, *Jumbo*, *Ironsides* and *Index*.

**Wild West.** On Lexington creek, at the extreme head, is situated the *Wild West* claim. At present a gang of 6 men are driving a tunnel, and are in over 100 feet. Systematic prospecting was carried out on this property during the past summer under the superintendence of Mr. E. C. Wood, and cabins were constructed capable of accommodating 30 men. The present manager is W. H. Jackson, of Rossland, B. C.

#### OFFICE STATISTICS—LARDEAU MINING DIVISION.

December 31st, 1900.

Recorded mineral claims (locations).....	199
Issued certificates of work .....	320
Recorded transfers, etc .....	292
Issued free miners' certificates .....	136
Certificates of improvement .....	4

## TROUT LAKE MINING DIVISION.

After returning from the Atlin-Bennett District in the first part of October, 1900, the Provincial Mineralogist was requested to inspect certain of the producing mines in the Kootenays. As the season was then far advanced snow was found on all the mountains, thus confining his examination to those properties on which sufficient underground development had been done to give indications.

The following properties were inspected :—

The Sunshine Limited Company owns and operates the *Silver Cup* Sunshine Ltd. and *Sunshine* mineral claims, commonly known as the *Silver Cup mine*.

The Company, a subsidiary one formed from the Lillooet, Fraser River and Cariboo Gold Fields, Limited, is under the management of Mr. Louis Didisheim, with Provincial head office at Revelstoke, while the mine is under the superintendence of D. G. McNeil.

The property, which is situated near the south fork of Lardeau creek, is some 7 miles distant from the town of Ferguson and about 9 miles from Trout Lake, the Mining Record Office of the Division.

From Ferguson a Government waggon road extends up the south fork of Lardeau creek to "5-Mile." This road has an easy grade and is well laid out but, as are most such roads through the woods, it is so soft in wet weather as to be of little use for heavy teaming; when winter sets in, however, it forms an excellent sleigh road.

From "5-Mile" the Company has built a very good but steep trail, zig-zagging up the hillside for some 4 miles to the mine. Here are suitable Superintendent's office, and cook and bunk houses built of logs, while at the mouth of the tunnel there is a cheap but sufficient ore-sorting shed and blacksmith shop.

*Geology.*—The country rock consists of graphitic and magnesian schists and shales, having a general strike of about north-west and dipping to the north-east, while there occurs, seemingly interbedded, a band of limestone locally known as the "smaller lime dyke." This "dyke" appears to have stood erosion better than the surrounding rocks and outcrops as a rocky barrier which can be traced for miles.

Along the line of this "lime dyke," as exposed at the *Silver Cup* mine, the schists for a distance of some 200 feet seem to have been shattered in the tilting of the measures. In this shattered zone and between the strata of the schist, there are distributed a series of lenses of ore, sometimes in line and sometimes between parallel strata.

So far two rather well-defined lines of these lenses have been shown to exist, one of which is known as the "*Silver Cup lead*" and the other as the "*Big lead*." The separate lenses are more or less connected by minute stringers of quartz. In no sense can there be said to be any veins discovered, nor are such likely to exist, indeed the laminated structure of the country rock and its very flexibility would render more probable the occurrence of lenses such as already described.

*Development.*—The original discovery and first development was on a lens of ore in the *Silver Cup lead* outcropping some 100 feet from the "lime dyke." On this a shaft has been sunk for 175 feet, and connecting with the bottom of this shaft there is a cross-cut tunnel from the surface of about 350 feet long. This tunnel cut, in its course, the *Big lead*, which was "blind" on the surface.

On the *Silver Cup lead*, from the foot of the shaft and the tunnel intersection mentioned, drifts Nos. 3 and 4 had been set off to right and left, amounting in all to some 300 feet in length. Short drifts (Nos. 1 and 2) had also been run from the shaft, at about the 50-foot level, on a chute of ore, but they were not continued any distance for exploration.

Below the 175-foot level and connected thereto by a winze, drifts had been set off to the right and left for a total distance of about 120 feet, but these had not developed any important body of ore.

Drifts Nos. 3 and 4 had, in their length, encountered several lenses of high-grade ore, all of which had been stoped out and for the last number of feet the work had been in barren ground.

On the *Big lead* at this level (175-foot), No. 5 drift had been driven to the right from the tunnel intersection for about 225 feet, and No. 6 to the left for 165 feet, a comparatively large ore lens having been encountered, extending more or less continuously for 211 feet and having been stoped out for 45 feet above the level. Above the top of this stope five raises had been put up, averaging about 30 feet each and still showing some good ore.

From the No. 6 drift, 50 feet from the tunnel, a winze was sunk for 50 feet, from the bottom of which No. 8 drift was run to the left for 32 feet, and No. 7 drift was driven to the right for 76 feet, developing a very fair ore body which had been stoped out pretty well up to the main level.

In 1898 a lower cross-cut tunnel was started 100 feet vertically below the 175-foot level, and this, at a point 234 feet in from the mouth, cut the *Big lead*, and was produced until it met the "dyke" at 100 feet further in, without, however, encountering at that depth any second or *Silver Cup lead* with ore.

From this lower tunnel a drift was made to the right along the *Big lead* for about 620 feet. In driving this drift ore was encountered in four or five places, but not of sufficient value to be considered "pay," until, in October, 1899, an ore body was struck at about 500 feet in from the cross-cut tunnel and directly below the body already mentioned as encountered in Nos. 7 and 8 drifts. At this point a raise was made on the edge of the ore body thus met with to the No. 7 drift, through which upraise the ore stoped in Nos. 7 and 8 drifts was extracted.

Following the mineral zone, from the *Silver Cup* outcroppings north-westerly and down the hill on to the *Sunshine* claim, another outcropping of galena was found just on the contact of the schists with the "lime dyke." On this a tunnel was started and driven for about 300 feet.

In the course of this drift 2 lenses were discovered running with the drift and, as measured in the roof, 10 feet and 25 feet long, respectively. The ore from these lenses had been stoped out and amounted to about 65 tons.

The ore found is an argentiferous galena with small quantities of gray copper, which latter seems to carry a very large amount of silver, and its occurrence in association with the galena assures good values. A certain amount of iron pyrites also occurs in association, but this does not appear to carry anything. As before stated, the ore occurs in lenses which are clearly defined in the shales and schists, tapering out at the edges to nothing. The ore in these lenses is, however, clean and can be hand-cobbed and sorted very easily and with little waste.

The second-class dump at the mine is chiefly made up of ore from the edges of the lenses and of the cobbings; it amounts to about 700 tons and is estimated to contain in gross values about \$25 to the ton.

Previous owners of the property are reported to have shipped 20 tons of ore, and under the present Company mining was done on a very small scale prior to 1897, only some 63 tons being brought to the surface. During 1897 some 283 tons were mined, but shipments did not begin till 1898 when 650 tons were sacked, rawhided to the waggon road and thence taken by teams to Thompson's Landing.

In 1899 some 160 tons were also so shipped, and in 1900 it is reported that 265 tons were shipped, bringing the total shipments to date up to about 1,095 tons.

The ore as shipped will average about 35% lead, 145 to 150 oz. silver and about \$4 in gold. It gives in net returns, delivered at Thompson's Landing, an average value of about \$105 per ton or, deducting the transportation to this point of about \$15 per ton, it leaves the sacked ore at the mine worth about \$90 per ton.

The force employed at the mine in October, 1900, was 6 miners, 1 timber-man, 1 blacksmith, 1 cook, etc.; the total number, together with the superintendent, being about 12 or 14 men.

The *Triune* is a new discovery and is situated to the south-east of the *Triune*. *Silver Cup*. The property is said to belong to Mr. Ferguson *et al.*, and is under lease to Messrs. Lade & Gunn, of Ferguson.

The claim is situated on a bluff difficult of access and directly adjacent to a glacier. An attempt to reach the property was contemplated, but the owners stated that work had been closed down for the winter, that the rope used to assist in climbing the face of the bluff had been removed and that, in consequence, the property was inaccessible while the snow was on the ground. The claim was, therefore, not personally inspected.

From what could be learned from miners and others there is a very fair lead of galena and zinc blende, the upper part next the glacier being much weathered. From the portion referred to a considerable amount of ore, said to be 100 tons, had been taken. These carbonates gave high values and the management state that the shipment assays run over 300 oz. in silver, over \$10 in gold and about 25% lead.

There seems to be no question but that very high values were obtained and the further development of the property will be watched with interest.

#### GREAT NORTHERN HILL.

On the hills lying north-east of Ferguson there are a number of claims which have received a great deal of attention, and on which much work has been done.

The principal group of claims here is known as the *Alpha Group*, and *Alpha Group*. belongs to the Lillooet, Fraser River and Cariboo Gold Fields, Limited.

The superintendent of this company said that no work had been done on these claims since 1896, in which year the writer had examined the property in detail, and, consequently, did not visit it again this year. The following, however, is a description of the properties, taken from a report by a well-known engineer and made at that time:—

"The *Alpha Group* is situated some 7 miles from Trout Lake City in a northerly direction, and some 10 miles north-westerly from the *Sunshine Group*. It comprises the *Broadview*, *Old Sonoma*, *Phillipsburg* and *Alpha* claims, and the *Cutter*, *Skiff* and *Clipper* fractions. The main *Broadview* vein is covered by the property for some 3,000 feet in length.

"*Geology*.—The metalliferous deposits occur in a large belt of graphitic and magnesian schists, which dip to the east at some 70° or 80° and have a general direction N. 55° W. Over a large area some 150 feet in width the schist has been shattered and then submitted to

mineralizing action. The result of this is that on this whole width the geological formation consists of irregular alternative and discontinuous bands of quartz and schist. There is, probably, no one vein, but a series of bedded veins which dwindle into one another or occasionally completely disappear, so that a drift started in one of them on quartz will suddenly be found to be in the schist, whereas a cross-cut would find alternating masses of quartz and schist for 150 feet or 200 feet in length.

"In places the quartz has been mineralized and occasional ore bodies are found. Some of the slips are more mineralized than others, and will show a more frequent occurrence of these bodies of ore. They have, however, no regularity and are of small dimensions.

"*Developments.*—This mineral zone has been developed mostly on its western edge by a series of workings scattered all along the strike of the vein.

"Starting from the main shaft, sunk on a galena outcrop on the highest croppings on the top of the *Broadview* hill, the workings consist, to the north of the shaft, of four tunnels driven on the vein below one another. These tunnels are, respectively, 50, 100, 200 and 300 feet vertically below the mouth of the main shaft, and have, therefore, been respectively called the 50-foot tunnel north, the 100-foot tunnel north, the 200-foot tunnel north, and the 300-foot tunnel north. The longest of these tunnels is 190 feet in length.

"South of the shaft the vein is similarly developed by two tunnels, respectively called the 50-foot tunnel south and the 100-foot tunnel south.

"At a depth of 50 feet in the main shaft, a drift has been run to the north to connect with the 50-foot tunnel north.

"On account of previous reports mentioning high grades of ore, we have made it a point to take in this property numerous samples, and we regret to say that the results have failed to corroborate previous assertions. We will now take each of these workings individually, starting at the 100-foot tunnel south and, moving north, give the result of our observations:—

"*100-foot tunnel south.*—This tunnel is 168 feet in length. It is run entirely in the schist without any sign of quartz or mineralization. Evidences have been found of considerable contortion in the leaves of schist, which varies in places as much as 40° from its general trend. No samples were taken, as no ore was exposed.

"*50-foot tunnel south.*—This tunnel, from the bottom of the shaft 20 feet in depth, runs to the north for 60 feet. It follows a vein of quartz occasionally intermingled with schist. One chute of ore has been detected showing some grey copper, which we had at first expected to be very rich. This ore body is of small dimensions; we have noted its beginning and its end. It is 25 feet in length and 2 feet wide. It first appears in the bottom of the tunnel, slowly rising until it disappears in the top. Three samples were taken, with the following results:—

	Silver, oz.	Gold.
No. 1, showing iron pyrites . . . . .	4.6	<i>Nil.</i>
No. 2, showing gray copper (slight traces) . . . . .	7.3	"
No. 3, showing heavy impregnations of gray copper . . . . .	58.5	"

"The gray copper does not carry high values in silver, and all other samples have confirmed the fact that the gray copper here is not of high grade.

"*Main shaft.*—This shaft is 118 feet in depth. It has been started on an important outcrop of galena, which was expected to continue below. At a depth of 20 feet, however,

the galena completely disappeared. On the strike the chute cannot be traced any distance, and it finally appears there has been only local concentration of galena of unimportant contents.

"Below this first body of ore the shaft continues in quartz, occasionally showing a mineralization of iron pyrites. Between the 60-foot and 118-foot level (bottom of the shaft) a streak of oxidized iron ore from 6 to 18 inches wide was observed and samples taken therefrom. In former reports, this streak was considered to carry high values, which, however, we have failed to detect. At the 50-foot level a drift was run to the north in intermingling quartz and schist. It occasionally shows traces of galena and iron pyrites of no value. The samples taken gave the following results:—

	Silver, oz.	Gold.
No. 1, taken from the streak of oxidized iron below the 60-foot level . . . . .	5.25	Trace.
No. 2, from same streak at the 90-foot level . . . . .	3.2	Nil.
No. 3, from bottom of shaft . . . . .	2.9	"
No. 4, average across bottom of shaft . . . . .	2.5	"
No. 5, from streak of iron pyrites in 50-foot drift . . . . .	5.25	"

"On the surface some 15 tons of ore extracted from the upper body of galena had been sacked and were ready for shipment. A sample taken from this ore gave a value of 43.75 oz. silver and 44.9% lead. At the present time such ore would hardly pay to ship.

"50-foot tunnel north.—This tunnel was first run as a drift, then as a cross-cut in the formation. It is 188 feet long, nearly entirely in quartz, with occasional intermingled schist. A winze has been sunk, from which some 40 tons of ore, which are now piled in the tunnel, have been extracted. This ore carries lead, silver, and a great proportion of zinc. A sample taken showed only 6.4 oz. silver and no gold. It is, consequently, worthless.

"100-foot tunnel north.—There are two tunnels at this level, within 50 feet of one another. The most easterly is run on a quartz vein occasionally showing streaks of iron pyrites and copper pyrites, in places 2 feet in width. This drift is 175 feet long. We have taken three samples in it, with the following results:—

	Silver, oz.	Gold.	Copper, %.
No. 1, S.E. face of tunnel . . . . .	7.87	Nil.	7.3
No. 2, 30 feet back of face, 12-in. streak of pyrites . . . . .	1.75	Nil.	Not assayed.
No. 3, sample from sorted ore sacked on dump . . . . .	18.08	Trace.	8.22

"The ore shows no continuity and low values.

"200-foot tunnel north.—This tunnel is 25 feet long, entirely in schist showing little mineralization.

"300-foot tunnel north.—This tunnel has been started somewhat east of the vertical plane that would contain all the other workings. It follows for some distance a slip in the formation that slightly quarters the schists. It is 175 feet long, and some 50 feet in it cuts across a bedded vein of quartz showing some gray copper, which was sampled. This went, silver, 25.3 oz.; gold, nil. This sample was picked and did not represent the average of the vein. Further in the tunnel is in schist, with occasional intermingling of quartz with no values.

"Conclusions.—The surface indications of the *Broadview* property at first suggest the possibility of large deposits, and such a showing was well worth investigation. It is to be regretted that the workings undertaken, far from realizing this hope, all confirm one another

and point to the absence of any important ore bodies. Along the shattered zone of schists and quartz which form the *Broadview* vein, the mineral has been found to be disseminated in small masses, generally of a low grade. The plates of ore found in the 50-foot level (tunnel) south, at the mouth of the main shaft, and in the 100-foot tunnel north, are striking illustrations of the absolute unreliability of such streaks or pockets. The gray copper carries relatively small values here.

"The prospecting work done on the property has been complete and more than enough to demonstrate that the ores are deficient both in quantity and in grade. In no place have we been able to detect anything like the values mentioned in previous reports.

"In purchase and development, the Lillooet, Fraser River and Cariboo Gold Fields, Limited, have expended on the Alpha Group \$60,000."

The *Nettie L.*, *I. X. L.*, *May B.*, and *Ajax* form a group of claims owned by the Great Western Mines Co., of Revelstoke; W. B. Pool, Mineral Claim. President; A. H. Holdich, Secretary. These claims, together with a number of others, including the *Brow*, *Raven*, *Glosscup Group*, *Kootenay Group*, *Black Eagle*, etc., are all supposed to be located on the same lead, which runs along the hills lying some three or four miles, as the trail goes, behind Ferguson. The outcrop of this lead runs about N. 45° W., with and near the summit of the range of hills referred to. It can be traced with considerable accuracy through most of the claims mentioned.

At the time the writer visited the property, there was so much underbrush, together with some snow, that the tracing of the lead had to be taken as proved from the developments seen, and from the reports of findings in test pits, now caved in. There is, however, little room to doubt that it does extend as indicated.

The chief development has been made on the *Nettie L. Group*, and represents a considerable amount of work.

The discovery on this group consisted of a highly-mineralized zone in the schists, about 60 feet wide, and outcropping on the hillside. The mineralization consists chiefly of sulphides of iron, with a little copper and some lead, carrying values in gold and silver. On the surface these sulphides had been oxidized, forming an "iron cap," and making a considerable showing.

To cut this showing at a depth of about 100 feet, a cross-cut tunnel was run, and at 130 feet in it reached the lead, cutting through it for 60 feet. After cutting through the lead, the tunnel ran through a fractured zone, some 6 feet across, which seemed to lie on the smooth hanging wall of the lead.

This "fractured zone" was composed of much fractured quartzose material, highly charged with iron oxide, and reported by the management to carry such amounts in gold, silver, and lead, with some copper, as to render it of shipping value.

Apparently, this fractured zone in the tunnel was mistaken for the continuation of the surface showing, a raise having been made on it to the surface. This raise was found to come out a few feet above such showing and in contact therewith.

Below the level of this (No. 1) tunnel, a winze had been sunk for some 60 feet and, from the bottom of this, drifts had been made to the right and left, proving that the fractured zone continued, while, it is reported, the values were also maintained.

On the tunnel level, a drift had been set off to the left for about 100 feet and another to the right for about 150 feet. Towards the end of this latter the zone seemed to have considerably increased in width.





BAD SHOT MINE--TROUT LAKE M. D.



VIEW FROM BAD SHOT MINE--TROUT LAKE M. D.

At the end of this right-hand drift, a cross fissure was noted, cutting back into the main lead, and this had been followed by a cross-cut tunnel, then in some 40 feet and exposing a stringer of galena in quartz, the galena averaging from 12 to 18 inches in width, but in places widening out to 3 or 4 feet.

At the time of inspection, all the work being done in this tunnel level was confined to the particular cross-cut last mentioned, and a quantity of very nice clean galena, running high in silver, was being taken out. Smelter returns from some 120 tons of ore, said to have been taken chiefly from this cross-vein, show an average net return of about \$76 per ton.

The writer understood that it was the intention of the management to make a similar cross-cut from the lower drift, which starts from the winze, in order to test this cross-vein at that level.

In order to tap the lead at a level some 300 feet lower, it was found advisable to run a cross-cut tunnel from the other side of the hill. This, it was calculated, would strike the ore in a distance of about 700 feet, and the work was in progress at the time the property was visited, but had not been completed to a point below the older workings.

From the mouth of this lower tunnel it is quite possible to run an aerial tramway to the vicinity of Ferguson, from which point the ore would be taken by the railway, which, it is expected, will soon be built.

At the No. 1 tunnel there are suitable log bunk-houses, cook-house, foreman's cabin, and an ore-sorting shed.

The following statement of assays was obtained from the management:—

"Red carbonates" (so-called locally) . . . . .	140 oz. silver ;	\$3.40 in gold.
"Yellow carbonates" . . . . .	90 "	
" with galena . . . . .	190 "	
Galena and zinc ore . . . . .	390 "	\$7.50 in gold.

This property, owned by Messrs. Campbell & Johnson, of Trout lake, **Badshot** is situated at an elevation of about 7,200 feet, on the divide between the **Mineral Claim.** head-waters of Gainer creek in the Ainsworth Mining Division, and the little west fork of Duncan river in Trout Lake Mining Division. It is approached to within 10 miles by a waggon road from Ferguson and from the end of this road by a trail which follows up the right bank of the creek and then climbs by a series of steep zig-zags to the plateau forming the divide mentioned. The total distance from Ferguson is about 15 miles.

On the plateau referred to an immense ridge of limestone, commonly called the "big lime dyke," rises up for nearly 1,000 feet, almost perpendicularly, and is visible for miles cutting in a general north-west direction across the country.

In this "lime dyke" there is what appears to be a regular vein of quartz, dipping north 30° east into the bluff at an angle of from 35° to 45°, and outcropping on the face of the bluff in a nearly horizontal line, which has been traced for some distance.

This quartz vein was first developed by an incline which followed the lead for 75 feet, dipping at an angle of 35°. From the foot of this incline a drift was made to the left for, approximately, 100 feet. Subsequently a tunnel 80 feet long was run through the lime so as to reach the vein at a point at the end of this drift, being connected with the latter.

From the point of junction of the tunnel and drift, and following the line of the tunnel, an incline winze was sunk for 50 feet on the vein, here dipping at 45°.

From the foot of this inclined winze drifts were run, that to the right being 45 feet long and that to the left 35 feet.

The vein at the surface was about 4 feet wide, and, although pinching in places, keeps up its width and regularity fairly well.

In the lower drifts the vein is somewhat narrower, but the walls seem to be better defined.

The vein matter is nearly all whitish quartz with lenses and bands of galena, occurring with more or less frequency.

Samples of the straight galena are said by the owners to run from 150 to 250 oz. of silver to the ton and about 70% lead.

### TROUT LAKE MINING DIVISION.

REPORT BY 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 Mining Division for the year ending 31st December, 1900.

The boundaries of this Division were altered at the commencement of the current year (1900), all that portion of the old Division known as the Upper Duncan District and comprising the watershed of that part of the Duncan river lying north of Hall creek on the west, and East river on the east, having been transferred from this Division to the Ainsworth Mining Division.

The cutting off of this large mineralized area, containing many important groups of claims at present under development, such as the *Old Gold*, *Primrose*, *Lade*, *Empire*, *Wagner*, and *Bannockburn*, has, of course, affected the office returns, and must be considered when comparing the office statistics of 1900 with the statistics of previous years.

While the expected railway referred to in the last annual report has not yet materialized, survey parties have revised and cross-sectioned the original line during the past summer and the belief is general that construction will be started in the early spring.

Owing, no doubt, to the transportation question being in abeyance, the progress of the Division has not been as marked as we might wish; still, considerable development work has been done and in almost all cases with good results, while a few properties have rapidly come into prominence, notably the *Triune*, which shipped about 100 tons of high-grade silver-lead ore, taken virtually from the grass roots, and the *Cromwell*, which sent a trial shipment of about 7 tons to the Trail smelter, from which the encouraging return of \$123 per ton in free gold was received. Altogether, a feeling of confidence prevails among practical men that augurs well for the future prosperity of the Division.

#### SOUTH FORK OF LARDEAU CREEK.

The *Silver Cup* is situated on Silver Cup creek, about 8 miles from  
Silver Cup. Ferguson, with which it is connected by waggon road and pack trail.  
During the year about 600 feet of development work has been done, consisting of drifts, cross-cuts and raises, the upper and lower workings having been connected. Something over 260 tons of ore have been produced. The total shipments to date from the

property are about 1,100 tons, of which 265 tons have been shipped during the current year. Ore values average about 140 oz. silver, \$4 gold and 30% lead. Seven men are at present employed.

The property is owned by the Sunshine Limited, an English company.

Adjoining the *Silver Cup* on the south-east is the *Free Coinage*, on **Free Coinage.** which considerable work has been done in previous years. This property has lately been leased by local people, who have made a cross-cut about 60 feet from the old workings in the hope of encountering the *Silver Cup* vein, which is supposed to pass through this claim. So far as I have been able to learn success has not yet been met with. Two men are at present working on the property.

Situated a little farther to the south-east of the last mentioned is the **Triune Mineral Claim.** *Triune*, which has been under lease during the summer to Messrs. Lade Bros. and Gunn Bros., of Ferguson, who employed about eight men for three months on the claim. During this time, 60 feet of tunnel were driven, when the ore chute was encountered at a depth of about 70 feet below the surface. The tunnel was then continued for 35 feet into the ore chute, which at this point is 3½ feet wide, consisting of 6 inches of galena carrying antimonial silver on the hanging wall, then 2 feet of honeycombed quartz, the large cavities of which contain a rich carbonate ore, while on the foot-wall there is found 1 foot of ore similar to that on the hanging wall. The ore-body has been stoped for 20 feet above the level, about 130 tons of ore being produced, of which 100 tons have been shipped to the Trail smelter. Considerable surface work has also been done. The ore values are about 325 oz. silver, \$12 gold, and 25 % lead. The property is owned by Messrs. Ferguson Bros., of Ferguson.

In the same vicinity are the *Morning Star* and *Copper Glance*, both of which have been surveyed during the summer; also the *Triune Fraction* and *Triune No. 2*. All these have very promising surface showings, but nothing beyond assessment work has been done.

The *Cromwell* is situated at the head of Brown creek, and is a late **Cromwell Mineral Claim.** discovery. The ledge, which lies in a slate formation, consists of quartz, carrying free gold. A sample of about 7 tons of this ore was shipped to the Trail smelter in October, and gave returns of \$123 in gold per ton. Surface work only has been done.

On the *I. X. L.* and *Jubilee*, situated in this locality, work of a prospecting nature has been done, uncovering a very promising ledge.

On the south fork of the south fork of Lardeau creek, several very encouraging locations have been made during the summer, among which I may mention the *Lost Tunnel* and *Copper Mountain*. Nothing in the way of development has yet been done, however, on these claims.

Returning to Silver Cup creek, we have the *Towser*, lying to the **Towser Mineral Claim.** north-west of the *Silver Cup* claim. On this property, which is in the hands of Mr. J. M. Skeaff, representing Chicago capital, about 150 feet of tunnel has been driven, an upraise of 25 feet made, and a winze sunk for a short distance. Ore has been encountered in the workings carrying a mixture of galena and iron pyrites. There are at present only 3 or 4 men employed on this property, but I understand that the force will be increased very soon.

Close to the above-mentioned claim is the *Sharon*, on which a tunnel **Sharon Mineral Claim.** has been driven, following the vein for a distance of about 125 feet. Several stringers of high-grade ore are visible in the face of this drift, but not yet in paying quantities.

On the *Gold Bug*, which is situated at Seven-Mile creek, a cross-cut tunnel has been driven for 140 feet to intercept the ledge. It is the intention of the owners to continue this work.

In the same vicinity is the *Union Jack*. The cross-cut tunnel on this claim has been continued for about 40 feet, but the ledge has not yet been cut.

To the north-west of the last is the *Glosscap*, which is in the hands of a Toronto syndicate. Buildings have been erected and considerable work of a prospecting nature has been done.

On the *Brow* claim, a cross-cut tunnel has been driven for 100 feet, and it is expected that the ledge will soon be encountered.

The *Nettie L.* is situated between the north and south forks of Lardeau creek, about 2 miles from Ferguson, with which it is connected by a Mineral Claim. waggon road and pack trail. During the year, the lower cross-cut has been extended until it is now in about 700 feet, and from the end of this a drift of 100 feet has been made, while in the old workings 250 feet of drifts and cross-cuts and 140 feet of upraises have been run. About 200 tons of ore were taken out, and a large shipment will be made during the winter. The ore values average close to \$60 per ton in silver, lead and gold. New buildings have been constructed and other improvements made. About 20 men are at present employed. The property is owned by the Great Western Mines, Limited, a local company, of which Mr. W. B. Pool is manager.

The *I. X. L.*, located on the same lead, is under lease. About 40 feet of cross-cut tunnel have been driven, and it is estimated that a continuation of this tunnel for another 50 feet will cut the diorite dyke along which the *Nettie L.* vein lies.

#### GAINER CREEK.

On this creek are some of the most promising claims in the Division. The *Bad Shot*, situated near the headwaters, has been developed to a considerable extent in previous years, and is now Crown-granted.

Other encouraging claims in this section are the *Black Prince*, *Mohecan*, *Silver Chief*, and *Molly Mack*, but I regret to say that but little has been done during the year beyond assessment.

#### NORTH FORK OF LARDEAU CREEK.

The *St. Lewis*, situated near the head of this creek, is owned by the Galena Creek Mining Company. About 100 feet of development work has been done, with moderate results.

On the *Rob Roy*, owned by the Scottish Canadian Mining and Development Company, 325 feet of cross-cutting has been done, and I understand concentrating ore has been encountered in the workings.

The *I. X. L.* and *Ellsmere*, situated in this vicinity, are very promising prospects.

On the *Spokane Group*, the property of the Canadian Lardo Mining and Development Company, a cross-cut tunnel was driven about 100 feet, when the ledge was met with, and drifts were then run 200 feet. The ledge was found to be considerably broken and a new tunnel has been commenced to cut the lead at a greater depth. This tunnel is now in about 100 feet.

The *Metropolitan* is a recent location and has been purchased by Mr. Chas. F. McCrossan, of Chatham, Ontario, who has formed a company to operate the property. Buildings have been erected and preparations made to start work in the early spring. The ore consists of galena and gray copper, carrying very high silver values.

The *Sunset Group*, consisting of four claims, has lately been acquired by the Golden Link Mining Company, of Duluth. A trail has been built to the property, buildings erected and a small force is at present employed. The ledge, which is about 5 feet wide, is composed of quartz mineralized throughout with iron pyrites and galena.

The *Comstock* and *Silver Bullion* claims, adjoining the latter group, are in the hands of Mr. A. E. Welch, acting for a Cleveland company.

On the *Monitor* about 50 feet of tunnel has been driven with good results.

On the *Gem* and *Jewel* claims about 50 feet of work has also been done.

#### GREAT NORTHERN MOUNTAIN.

In this section, in which considerable work has been done in previous years, are situated what are probably some of the largest bodies of ore in the Division, although, owing to the values being slightly lower than can be handled at a profit with present transportation facilities, but little beyond the annual assessment has been done.

On the *St. Elmo* a cross-cut tunnel has been driven for about 70 feet, and a small force is at present continuing the work.

On the *Silver Queen* a drift has been extended on the vein for 50 feet, showing a continuous ore body 18 inches wide.

On Glacier, 5-Mile, Canyon, Tenderfoot and Poplar creeks there are some very promising locations, but I regret to report that but little has been done in this section beyond assessment work.

The *Pedro*, on Canyon creek, is an exceptionally high-grade proposition. A short tunnel has been run with good results.

Situated on the lower Lardeau river, about 3 miles from the foot of Trout lake, are the *Silver Foot* and *Tenderfoot* claims on which about 70 feet of tunnelling has been run.

On the *J. C.*, at the head of Lake creek, a property possessing an excellent surface showing, some work of a prospecting nature has been done. There are, also, other very promising claims in this vicinity.

Good prospects are located on Hope and Haley creeks, but development has not yet been carried to any extent in this section.

Near the head of Haskins creek is situated the *Arallu*, on which the owners have been working during the winter. About 60 feet of tunnelling has been driven and I am informed that the property is improving with development.

In this vicinity are the *American*, *Silverton Boy* and *Silver Crown*, all of which have good surface showings.

Following along the "divide" to the north-west, we next come to the *Bonanza*, which has been prospected to some extent during the year. The iron pyrites in the ore from this claim has been found to contain good gold values.

On the *Mable and Virginia Group* a shaft has been sunk for 50 feet, and a cross-cut started from the bottom of the shaft to cut the vein. This property has an excellent surface showing.

The *Lucky Jim*, adjoining the *Virginia*, is in a slate formation, and has a quartz ledge about 5 feet wide, mineralized throughout with iron pyrites and carrying very high gold values. Considerable surface work has been done on this property during the year.

OFFICE STATISTICS—TROUT LAKE MINING DIVISION.

Free miners' certificates issued to individuals .....	276
"          "          "      companies .....	3
Special free miners' certificates issued to individuals .....	4
"          "          "          "      companies .....	1
Mineral claims recorded .....	299
Certificates of work issued .....	458
Money paid in lieu of assessment .....	3
Certificates of improvements recorded .....	5
Bills of sale, agreements, etc., recorded .....	162

---

---

## SLOCAN DISTRICT.

—o—

### SLOCAN MINING DIVISION.

---

#### REPORT BY ANGUS McINNES, MINING RECORDER.

In sending you my report of the mining industry in the Slocan Mining Division for the year ending December 31st, 1900, I regret that I have not been able to make it more complete, but the Division is large, the claims are much scattered, and as I am alone I have been kept busy with office work.

The season has been one of the best the Division has seen, as far as development and ore shipments are concerned. No less than 16 prospects have become shipping mines, including the *Sweet Grass*, *Turris*, and *Pinto*, which are situate on Goat mountain, about one mile to the north-east of New Denver, and the *Dolly Varden* and *Rolett*, situate on the north fork of Carpenter creek. These two last run very high in silver values, with about \$8 in gold per ton.

The *Hewett*, situated on Four-Mile creek, has been a constant shipper for the last 6 months. The ore is galena.

The *Trade Dollar*, situate above Sandon, is another galena property, operated by the Scottish Colonial Gold Fields Co. and by Geo. W. Hughes.

The *Hartney Group*, consisting of 5 claims situate on Silver mountain, has a large amount of development work done, with plenty of ore in sight.

The *California* is another Silver mountain property that is being extensively developed. The ore chute has been tapped at a depth of about 300 feet, and a big body of ore is exposed.

The *Marion* lies between the *California* and the *Hartney Groups*. This property has been well developed, and has now over 100 tons of ore sacked. The Government has, during the year, built a waggon road up Silver mountain, which greatly benefited the properties thereon.

The *Mountain Con.*, situated above Sandon, is now being extensively developed by an English syndicate which has it under bond.

The *Old Tom Moore*, situate near Bear lake, has also shown up well under the large amount of work done during the last year.

The *Monitor* and *Reco*, both of which have been idle for the last few years, have commenced work again, with very good results.

The *Condor* and *Southern Girl Groups*, situate on Four-Mile creek, are both being developed, and there are good showings of ore on each; in fact, all the properties in this Division are being more extensively operated than ever before, and all show great improvement as development proceeds.

There are, approximately speaking, about 800 men employed in the mines of the Division. The mine-owners and the miners are again working harmoniously together, and thus the best results are obtained, as can be readily believed when it is said that there have been about 20,000 tons of ore shipped since the labour troubles were settled last spring.



Two large concentrating mills have been built this year, both capable of handling over 100 tons per day. One of these, on the property of the Ivanhoe Mining Co., of Sandon, has been running at its full capacity for some time. The other mill was built at the *Wakefield* mine, but, owing to some disagreement between the owners, this property has been closed down for the last 6 months.

There is a prospect of two more big mills being built in the coming summer; indeed, preparations have already begun. One will be on the well-known and extensively operated property known as the *Emily Edith Group*, on Four-Mile creek, managed by Mr. Rammelmeier. The other will be erected on the *Galena Farm* to treat the ores of the *Currie* mines, now owned by the Payne Mining Co.

The Bosun Mines, Limited, is a consolidation of the North-West Bosun Mines. Mining Syndicate and the Fidelity Mining Co. The property owned by this Syndicate consists of the *Bosun Group* and the *Fidelity Group*, both situated near New Denver, at the foot of Silver mountain. Under the management of W. H. Sandiford about 90 tons per month of high-grade ore are being shipped all the year round.

There are in this Division now about 30 shipping properties, and if no trouble arises to impede progress, the year 1901 will be a "record breaker" in ore shipments.

The *Ivanhoe* is likely to be one of the heaviest shippers in the Division. Large quantities of ore have been blocked out for some time awaiting the completion of the mill and tramway, which are now running.

The *American Boy* is another new mine that is coming to the front rapidly. It is now a regular shipper.

The *Ruth* has been working very extensively, the recent strike in Ruth Mine. No. 5 tunnel, one of the lowest workings in the camp, having proved that the mine has a great wealth of ore still untouched. It has been decided to start a sixth tunnel, still lower down the hill; this will require to be a length of 1,500 feet in order to tap the ore body.

The *Slocan Star* has been putting in new machinery. The recent strike in the shaft, between tunnels 5 and 6, is likely to result in a large increase in shipments.

This well-known mine is working 100 men constantly and is keeping up its usual regular shipments and dividends, as is also the *Last Chance*, situate on the same slope of Payne mountain.

The *Idaho* and *Queen Bess* mines, both situate in the Idaho basin, are connected by a waggon road and tramway with the C. P. R. at Alamo, where the Idaho and Alamo concentrator is built. The ore from these properties is taken down in bulk to the concentrator, where it is treated and shipped *via* the C. P. R.

The Gold Commissioner of Nelson District reports as follows on the *Queen Bess* mine:—

"At the *Queen Bess* mine, operated by the Queen Bess Proprietary Company, Limited, the following work has been done:—Tunnels driven, 1,856 feet; raises, 692 feet; shafts sunk, 152 feet; total, 2,700 feet. About 1,234 tons of silver-lead ore were shipped to the Hall Mines Smelter, consisting of galena and carbonates, the former netting \$65 per ton and the latter \$25.

"About 45 men were employed, the chief work carried out during the year being the driving of a deep tunnel to cut the lode 400 feet below the lowest tunnel of the present work-

ings. This tunnel has been driven 1,650 feet and is being connected with the upper tunnels by shafts and raises, while intermediate levels are also being driven.

"A 3-drill, steam-driven Rand compressor was erected during the year for operating the hoist and machine drills used in connection with the above work."

The *Vancouver*, situated on 4-Mile creek, is owned by the Vancouver Mining Company, of Vancouver. It has been largely developed during the past year by a system of long cross-cut tunnels, raises and drifts, to block out the ore bodies in readiness for stoping.

The *Ajax* and *Red Fox* are doing a great deal of development work and both have good showings of ore.

There are a number of other properties working in this Division from which I have been unable to secure any information.

#### OFFICE STATISTICS—SLOCAN MINING DIVISION.

Locations recorded .....	251
Certificates of work recorded .....	756
Certificates of improvements granted .....	100
Documents recorded in Transfer Book .....	275
Free miners' certificates issued .....	690
"          "          special .....	10
"          "          companies .....	27
"          "          "      special .....	1
Abandonments recorded .....	1
Water rights granted .....	5
Amount of cash paid in lieu of work .....	\$1,200

#### SLOCAN CITY MINING DIVISION.

REPORTED BY H. P. CHRISTIE, MINING RECORDER.

I have the honour to submit to you my annual report of the mining development, etc., done in this Division during the past year.

There has been altogether a most marked improvement in the prospects of the Division since 1899, particularly at the heads of Springer and Ten-Mile creeks, while in general the development has been larger than usual and in most cases very satisfactory.

The *Arlington* mine at present employs between 60 and 80 men, and lately has been shipping at the rate of 150 tons a week, the shipments for the year amounting to about 1,400 tons.

The *Speculator Group*, on the same lead as the *Arlington*, is now under bond, and is showing up well as development progresses. There are about 30 men employed.

The *Two Friends* mine is now under lease. Mr. McVicar is in charge, and about seven men have been employed continuously for six months. Sixty tons of high grade galena ore have been shipped, and there is every prospect of the property becoming a regular producer.

The *Black Prince*, adjoining the *Two Friends*, is also under lease and has been worked more or less continuously for the past year. Eighty tons of ore have been shipped, and about five men are working on the property.

The *Hampton* employed two or three men last summer and made a small shipment of high grade ore running over 600 oz. to the ton in silver.

The *Aztec No. 1* and *No. 2* are being steadily developed by the owners. About 300 feet of cross-cuts and drifts have been driven.

The *Lilly B.*, in the Arlington basin, is being developed by the owners.

The *Bondholder* is under a lease and six men have been at work with satisfactory results. Forty tons of ore, running over 220 oz. in silver to the ton, have been shipped during the last two months.

The *Tamarac* is under bond and is being actively developed by a small force of men.

The *Ottawa* is also being developed by the owners.

The *Viking*, about two miles from Slocan City, is under bond and is being worked continuously by six men. The values of this property are chiefly in gold, which is not the case with other adjacent properties.

The *Evening Star* has been closed down for the past year, but work will be recommenced almost immediately.

The *Republic*, *Rainbow* and several other claims have been worked on a small scale.

Little has been done on Twelve-Mile creek during the past year. The *Bachelor* is under bond and contracts have been let for development work, while on the *V. & M.*, which has been under development most of the summer and is showing marked improvement, the vein has been stripped for over 1,500 feet. The ore on this latter property carries gold and silver values, and is characteristic of the locality.

#### TEN-MILE CREEK.

The *Enterprise* has been working since last spring, principally on development. One thousand and forty tons of ore have been shipped in the year.

The *Neepawa* is under bond and contracts have been let. Two or three hundred feet of development has been done, and a small shipment of ore made.

The *Iron Horse* has been continuously worked for the past year, and the owners are going to thoroughly develop this property next spring.

The *Mahon* and *Ohio* and numerous other claims have been worked on a small scale.

#### LEMON CREEK.

The Chapleau Consolidated Gold Mining Company completed its purchase of this mine and has had a force of 30 or 40 men actively developing the property for the past year. A tramway and 10-stamp mill have also been built, and as this is the first mill on Lemon creek, the result will be watched with interest.

On the *Kilo Group*, owned by the Warner Miller Syndicate, a small force has been at work all the year and has made one shipment of 20 tons for a milling test. Further development is now being prosecuted.

The *Clyde*, adjoining the *Chapleau*, has been acquired by the owners of the latter property.

The *Legal*, adjoining the *Kilo*, had a tunnel 150 feet long driven last year, opening up a good body of ore.

The *Alberta*, *Tail Holt*, *Howard Fraction*, *Slocan Chief* and *Hoodoo* have all done a good deal of development work, small shipments being made by the *Alberta* and *Slocan Chief*. The ore on this creek is of a dry silicious character, carrying silver and gold values.

There are numbers of other claims on the various branches of Lemon creek that are being slightly developed and look promising. Altogether, there are about 300 men now employed working on the claims and mines in the Slocan City Division, which is at least twice the number of a year ago. Mining matters are assuming a much more favourable aspect, and a steady improvement may be looked for in the future.

#### OFFICE STATISTICS—SLOCAN CITY MINING DIVISION.

Certificates of work issued .....	637
Crown grants .....	15
Locations recorded .....	321
Free miners' certificates issued .....	339
Bills of sale, etc., recorded .....	192

## NELSON DISTRICT.

### NELSON MINING DIVISION.

In the latter part of October the Provincial Mineralogist visited the Nelson Mining Division for a brief inspection of a few of the producing mines of that district.

During the past year the Hall Mines Limited Company has been re-organized, the new Company being styled the Hall Mining and Smelting Company, Limited.

The mining department is under the management of Mr. J. R. Gifford, who has, this past year, being employing about 30 men underground and as many above in developing the *Silver King* mine which, under the previous management, had had very little development done ahead of the stoping, a fact which seriously affected systematic and economical mining. At the time the district was visited, Mr. Gifford was installing new and improved machinery, which is expected to considerably reduce mining costs.

Little attempt has been made to ship ore this past year other than that taken out during the development work, so that only about 700 tons was actually sent down to the smelter.

---

From what could be learned, a serious attempt will be made to keep the development work well ahead of the mining in the future.

The ore carries from 2 to 2½% of copper with silver values.

The mine is situated on Toad mountain and is connected with the Company's smelter, at Nelson, by a Hallidie Aerial Rope Tramway, about 4½ miles long and having a total fall in its length of 3,750 feet.

The smelting department is under the management of Robert R. Hedley, as it has been for about 3 years. The plant has already been described in the Reports of this Department and there have been no very important additions thereto this past year.

This property, owned by the Athabasca Gold Mines, Limited, London, Athabasca Mine. is situated on Toad mountain, about 6 miles south of the town of Nelson.

The property is in charge of E. Nelson Fell, as General Manager, and of H. W. Mussen, as Engineer and Superintendent.

#### ORE BODY.

The ore body occurs near the well-defined contact of schist with an intrusive granite, such contact having a general east and west direction and dipping nearly vertically.

The ore body seems to be a true fissure quartz vein of the "blanket" variety, dipping into the hill at a very flat but very irregular angle; at least, such is the impression formed from a brief examination, but the situation is so complicated by a series of dykes, accompanied with faultings, that it is impossible to state very definitely what the dip or strike of the vein will prove to be. The work done, however, shows the vein to be very persistent, cutting across the schists and into the granite.

During the past year some 2,000 feet of development was done, the eccentricities of the vein necessitating work of such an irregular character as to defy description, further than to say that the workings have followed the ore.

Development has been pushed ahead of the stoping to a proper extent and with encouraging results, ore being blocked out for about 6 months ahead.

As a mining proposition this is one of the most complicated in British Columbia, and the management is to be congratulated on the success which has attended their efforts to solve the problem.

About 4 or 5 tons of waste are mined with every ton of milling ore, which, of course, brings the cost of mining very high; it is difficult, however, to imagine how this could be avoided.

The complete absence of "frills" and unnecessary expense about the property is so noticeable as to call for comment, while the essentials have all been provided for as they were needed. The annual report of the management is so admirable in its detailed statements that the following copious extracts have been made therefrom as best illustrating the work done:—

## ATHABASCA GOLD MINE, LIMITED.

### Detailed Statement of Mining Cost, 1900, including Development and Ore Extraction.

WAGES.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Per ton of Ore & Waste Mined.
Foremen and Shift Bosses.	\$ 354 50	\$ 427 34	\$ 493 75	\$ 381 77	\$ 303 00	\$ 260 00	\$ 340 00	\$ 373 62	\$ 270 00	\$ 250 00	\$ 340 00	\$ 285 50	\$ 4,079 48	\$ 0.145
Time-keeper.....	50 00	50 00	50 00	50 00	50 00	50 00	50 00	50 00	50 00	50 00	50 00	50 00	600 00	0.021
Miners.....	6,136 57	5,142 99	3,700 29	3,356 36	3,137 24	3,054 16	3,203 17	3,566 12	3,887 17	3,992 68	3,678 24	3,635 48	46,490 45	1.165
Muckers.....	1,179 37	1,103 75	1,136 25	1,701 00	1,743 75	1,596 75	1,629 00	1,735 75	1,803 00	1,719 75	1,863 44	2,374 75	19,586 56	0.695
Nippers.....	155 00	140 00	107 50	63 00	93 00	97 50	175 50	180 75	180 00	169 50	145 75	171 00	1,678 50	0.060
Blacksmith and Helpers ..	509 05	556 00	498 50	461 70	535 50	472 50	494 75	537 00	535 92	531 00	498 24	549 75	6,179 91	0.219
Timbermen.....	247 87	162 50	136 12	198 87	387 75	383 25	269 50	281 74	295 75	239 75	243 75	401 12	3,247 97	0.115
Fitters and Engineers.....	.....	241 00	405 87	508 46	664 57	610 50	580 50	566 49	599 27	599 37	561 12	585 12	5,022 27	0.210
Sundry.....	.....	61 75	32 50	.....	6 85	.....	2 30	64 50	14 00	99 25	39 00	88 00	408 15	0.015
<b>Total.....</b>	<b>8,632 36</b>	<b>7,885 83</b>	<b>6,560 78</b>	<b>6,721 66</b>	<b>6,921 66</b>	<b>6,524 66</b>	<b>6,744 72</b>	<b>7,355 97</b>	<b>7,635 11</b>	<b>7,651 28</b>	<b>7,419 54</b>	<b>8,140 72</b>	<b>88,192 29</b>	<b>3.130</b>
<b>MATERIAL.</b>														
Powder.....	\$ 579 15	\$ 869 00	\$ 627 50	\$ 417 50	\$ 534 50	\$ 544 50	\$ 814 75	\$ 649 50	1,237 50	\$ 588 75	\$ 774 55	\$ 615 00	\$ 8,252 20	\$ 0.293
Fuse.....	99 00	33 00	66 00	.....	142 91	33 00	75 85	90 00	60 00	70 00	90 00	93 00	852 76	0.030
Caps.....	35 00	38 00	.....	40 00	.....	25 00	24 75	.....	27 50	.....	.....	27 50	217 75	0.008
Candles.....	245 00	133 75	247 50	.....	123 75	.....	123 75	123 75	123 75	248 25	.....	126 25	1,495 75	0.053
Coal.....	11 00	39 30	24 45	18 45	.....	52 45	13 50	98 35	3 50	75 84	38 40	50 00	425 24	0.015
Steel.....	284 90	.....	99 00	55 10	13 14	25 00	.....	50 22	.....	20 74	.....	136 00	684 10	0.024
Rails.....	.....	.....	.....	.....	.....	15 00	.....	25 00	3 20	19 09	.....	64 75	127 04	0.005
Nails.....	15 86	16 00	2 40	20 30	22 00	.....	16 10	27 96	21 00	20 00	9 00	.....	170 62	0.006
Iron, Bars and Sheets ..	17 67	4 92	41 49	7 95	30 29	40 72	19 37	39 72	8 51	12 93	13 24	7 69	244 50	0.009
Oil.....	10 25	60 57	8 54	10 00	10 77	15 00	45 95	32 00	.....	16 00	18 15	20 50	247 73	0.009
Drill and Pipe Repairs ..	106 49	302 39	77 11	83 62	256 77	372 63	56 33	156 93	82 04	273 81	102 00	230 12	2,100 24	0.074
Timber and Wood.....	.....	16 00	15 00	15 00	10 00	15 00	16 92	29 00	238 75	34 90	10 00	5 00	405 57	0.014
Sundry Supplies.....	135 11	45 37	38 70	69 06	105 22	120 62	102 91	176 19	202 88	172 40	63 18	77 76	1,309 40	0.046
<b>Total.....</b>	<b>1,539 43</b>	<b>1,558 30</b>	<b>1,247 69</b>	<b>736 98</b>	<b>1,249 35</b>	<b>1,258 92</b>	<b>1,310 18</b>	<b>1,498 62</b>	<b>2,008 63</b>	<b>1,552 71</b>	<b>1,118 52</b>	<b>1,453 57</b>	<b>16,532 90</b>	<b>0.586</b>
<b>Gross.....</b>	<b>10,171 79</b>	<b>9,483 63</b>	<b>7,808 57</b>	<b>7,458 14</b>	<b>8,171 01</b>	<b>7,783 58</b>	<b>8,054 90</b>	<b>8,854 59</b>	<b>9,643 74</b>	<b>9,203 99</b>	<b>8,538 06</b>	<b>9,594 29</b>	<b>104,726 19</b>	<b>3.716</b>

Per Ton of Ore Milled, 20.72

## Reduction Report, 1900.

1900.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
Days and hours working .....	29 d. 16 h.	27 d. 14 h.	30 d. 07 h.	28 d. 21 h.	29 d. 01 h.	29 d. 09 h.	27 d. 23 h.	30 d. 14 h.	29 d. 07 h.	29 d. 01 h.	29 d. 08 h.	30 d. 10 h.	351 d. 11 h.
"    idle for clean-up .....	1 d. 00 h.	0 d. 09 h.	0 d. 17 h.	0 d. 13 h.	0 d. 21 h.	0 d. 12 h.	1 d. 00 h.	0 d. 10 h.	0 d. 17 h.	1 d. 07 h.	0 d. 16 h.	0 d. 10 h.	8 d. 17 h.
"    "    other causes .....	0 d. 08 h.	0 d. 01 h.	.....	0 d. 09 h.	1 d. 02 h.	0 d. 03 h.	2 d. 01 h.	.....	.....	0 d. 16 h.	.....	0 d. 04 h.	4 d. 20 h.
Tons Milled .....	405	347	416	388	420	475	404	430	410	445	465	449	5,054
Ozs. Amalgam Recovered .....	3,238.1	2,735.5	2,743.3	2,344.2	3,590.2	5,805.4	2,191.5	3,561.5	3,195.0	1,972.4	1,619.5	1,352.0	35,349.2
Ozs. Melted Bullion .....	714.83	624.13	610.01	502.07	974.99	1,441.35	901.34	857.40	780.51	477.43	373.5	346.9	8,604.51
Fineness of Bullion { Gold .....	738	738	726	739.5	733.5	743	747.5	710.5	709	689.5	690	682.5	725.3
Silver .....	229	225	255	241	244	232	211	255	252	280	277	266	245.5
Value at Mint .....	\$ 10,781 98	\$ 9,554 59	\$ 9,201 30	\$ 7,712 59	\$ 14,835 08	\$ 22,250 33	\$ 13,931 95	\$ 12,652 45	\$ 11,461 75	\$ 6,852 05	\$ 5,368 11	\$ 4,929 61	\$129,521 79
Value of Bullion per ton of Ore Milled .....	\$ 26 62	\$ 27 50	\$ 22 11	\$ 19 87	\$ 35 32	\$ 46 84	\$ 34 48	\$ 29 42	\$ 27 95	\$ 15 39	\$ 11 54	\$ 10 97	\$ 25 62
Tons of Concentrates .....	43.50	35	28	27	43.9	54.2	40	48.8	43.7	38.2	69.2	43.7	520.20
Percentage of Concentrates per Ton of Ore Milled .....	10.7%	10.0%	6.7%	6.9%	10.4%	11.4%	9.9%	11.3%	10.6%	8.5%	14.8%	10.8%	10.2%
Gross Value of Concentrates, Gold and Silver only .....	\$ 2,446 96	\$ 1,767 50	\$ 1,526 56	\$ 1,672 92	\$ 3,995 85	\$ 6,125 93	\$ 4,417 18	\$ 5,219 79	\$ 4,423 53	\$ 2,902 49	\$ 3,402 11	\$ 2,714 50	\$ 40,615 32
Value of Concentrates per Ton of Ore Milled .....	\$ 6 12	\$ 5 09	\$ 3 66	\$ 4 31	\$ 9 51	\$ 12 89	\$ 10 93	\$ 12 13	\$ 10 78	\$ 6 53	\$ 7 31	\$ 6 04	\$ 8 03
Total Values Recovered .....	\$ 13,228 94	\$ 11,312 09	\$ 10,727 36	\$ 9,385 51	\$ 18,830 93	\$ 23,376 26	\$ 13,349 13	\$ 17,872 24	\$ 15,885 28	\$ 9,754 54	\$ 8,770 22	\$ 7,644 11	\$170,137 11
Total Values Recovered per Ton of Ore Milled .....	\$ 32 66	\$ 32 60	\$ 25 78	\$ 24 18	\$ 44 83	\$ 59 73	\$ 45 42	\$ 41 56	\$ 38 74	\$ 21 92	\$ 18 86	\$ 17 02	\$ 33 66
Value of Tailings .....	\$ 10 46	\$ 7 49	\$ 7 26	\$ 8 05	\$ 10 28	\$ 13 94	\$ 10 85	\$ 10 60	\$ 10 07	\$ 6 05	\$ 5 43	\$ 4 04	\$ 8 71
Percentage of Recovery .....	75.7%	81.3%	78.0%	75.0%	81.3%	81.0%	90.7%	79.6%	79.4%	73.4%	77.6%	80.8%	79.4%

## Detailed Statement of Milling Cost, 1900.

WAGES.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Per Ton.
Foremen .....	\$ 335 00	\$ 326 00	\$ 338 38	\$ 337 25	\$ 337 25	\$ 358 85	\$ 362 25	\$ 364 50	\$ 360 00	\$ 366 75	\$ 360 00	\$ 369 00	\$ 4,215 23	\$0.354
Assistants .....	302 35	273 90	306 31	295 63	300 60	292 50	277 00	278 75	306 25	313 00	305 75	320 00	3,572 04	0.707
Assay Department .....	150 00	150 00	150 00	150 00	150 00	150 00	150 00	150 00	186 00	175 00	175 00	175 00	1,911 00	0.378
Hauling Concentrates .....	97 00	51 85	150 00	145 37	71 75	115 00	74 50	110 90	149 00	100 00	120 80	116 75	1,301 02	0.257
<b>Total .....</b>	<b>884 35</b>	<b>801 75</b>	<b>944 69</b>	<b>928 26</b>	<b>859 60</b>	<b>916 35</b>	<b>863 75</b>	<b>903 25</b>	<b>1,001 25</b>	<b>954 75</b>	<b>961 55</b>	<b>979 75</b>	<b>10,999 29</b>	<b>2.176</b>
<b>MATERIAL.</b>														
Shoes and Dies .....	\$ 75 00	\$ 75 00	\$ 75 00	\$ 76 45	\$ 75 00	\$ 75 00	\$ 100 00	\$ 125 00	\$ 75 00	\$ 100 00	\$ 106 71	\$ 132 00	\$ 1,098 16	\$0.216
Stems .....														
Heads .....														
Cams .....														
Tappets .....														
Screens .....	15 05				18 00	10 00	10 00	10 00				1 73	64 78	0.013
Small Repairs .....	10 27	10 00	10 00	10 00	10 00	10 00	32 50	20 00	22 00	20 00	20 00	26 50	201 27	0.040
Guides .....			24 36	20 00									44 36	0.009
Babbt .....			10 76										10 76	0.002
Oil, Grease, Gasoline .....	36 00		14 80	12 20	3 60	16 37	22 20	50 57	22 50	31 10	13 80	17 25	239 89	0.048
Mercury .....				48 50		48 60		55 66				61 20	213 95	0.042
Assay Supplies .....	27 40	21 45	27 70	17 45	13 10	35 25	22 15	29 25	24 65	30 65	25 00	65 95	340 00	0.067
Wood .....	75 00	75 00	65 00	45 00	40 00	50 00	63 17	75 00	50 00	67 71	60 00	50 00	715 83	0.141
Belts .....											22 70		22 70	0.004
Insurance .....	10 00	10 00	10 00	10 00	10 00	10 00	10 00						70 00	0.014
Sundry Supplies .....	23 77	9 25	29 16	6 41		31 86	25 30	21 00	22 60	21 22	22 54	3 12	216 33	0.043
Cyanide .....											23 15		23 15	0.005
Ore Sacks .....									72 00				72 00	0.014
<b>Total .....</b>	<b>272 49</b>	<b>200 70</b>	<b>266 78</b>	<b>246 01</b>	<b>169 70</b>	<b>237 08</b>	<b>235 82</b>	<b>386 47</b>	<b>238 84</b>	<b>270 68</b>	<b>293 40</b>	<b>360 70</b>	<b>3,928 23</b>	<b>0.658</b>
<b>Total Wages and Material .....</b>	<b>\$ 1,156 84</b>	<b>\$ 1,002 45</b>	<b>\$ 1,211 47</b>	<b>\$ 1,174 26</b>	<b>\$ 1,029 30</b>	<b>\$ 1,203 43</b>	<b>\$ 1,149 07</b>	<b>\$ 1,289 72</b>	<b>\$ 1,290 09</b>	<b>\$ 1,225 43</b>	<b>\$ 1,254 95</b>	<b>\$ 1,340 51</b>	<b>\$ 14,327 52</b>	<b>\$2.83</b>



## Summary of Operations for the Year ending December 31st, 1900.

INCOME.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Per Ton.	Profit.	Profit per Ton.
Bullion sold .....	\$10,826 09	\$ 9,583 42	\$ 9,239 13	\$ 7,744 10	\$14,895 08	\$22,340 08	\$13,987 71	\$12,704 81	\$11,509 33	\$ 6,881 42	\$ 5,391 81	\$ 4,951 16	\$130,053 64	\$25.734	.....	.....
Concentrates sold .....	2,446 96	1,767 50	1,526 56	1,672 92	3,995 85	6,125 93	4,417 18	5,219 79	4,423 53	2,002 49	3,402 11	2,714 50	40,615 32	8.036	.....	.....
Store and Sundry Profits .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,289 94	0.650	.....	.....
Total .....	13,273 05	11,350 92	10,765 69	9,417 02	18,890 93	28,466 41	18,404 89	17,924 60	15,932 86	9,783 91	8,793 42	7,665 66	173,958 90	34.420	.....	.....
<b>EXPENDITURE.</b>																
Mining .....	\$10,171 79	\$ 4,443 63	\$ 7,803 47	\$ 7,458 14	\$ 8,171 01	\$ 7,783 58	\$ 8,054 90	\$ 8,854 59	\$ 9,643 74	\$ 9,203 99	\$ 8,538 06	\$ 9,594 29	\$104,726 19	\$20.721	.....	.....
Milling .....	1,156 84	1,092 45	1,211 47	1,174 26	1,029 30	1,203 43	1,149 07	1,289 72	1,290 09	1,225 43	1,254 95	1,340 51	14,327 52	2.835	.....	.....
Tramming .....	88 00	86 00	95 80	89 60	88 70	100 00	95 12	113 64	105 06	120 75	108 46	96 87	1,138 00	0.225	.....	.....
Smelter Costs, Direct .....	391 62	274 24	228 54	317 01	452 40	556 91	430 12	521 76	489 87	385 64	494 75	459 98	5,004 84	0.090	.....	.....
"    Indirect .....	194 71	139 14	115 93	164 39	319 81	475 20	352 00	418 16	353 46	234 93	393 28	215 82	3,376 83	0.668	.....	.....
Plant Maintenance .....	209 48	148 65	95 71	74 10	116 46	123 86	162 28	350 13	249 55	535 38	596 05	157 10	2,318 75	0.558	.....	.....
Management, Legal, Gen- eral .....	559 60	567 21	1,511 37	640 87	555 61	1,240 29	885 81	990 46	808 87	879 42	739 05	954 75	10,243 31	2.027	.....	.....
Provincial Taxes .....	.....	.....	.....	301 29	.....	.....	.....	505 81	125 00	463 66	445 70	393 96	2,240 42	0.443	.....	.....
Bullion Charges .....	44 11	38 83	37 83	31 51	60 00	89 75	55 76	52 36	47 58	29 37	23 20	21 55	531 85	0.105	.....	.....
Total .....	12,316 15	11,650 15	11,105 12	10,251 17	10,793 29	11,575 02	11,155 06	13,086 63	13,113 22	13,078 57	12,593 59	13,239 83	144,407 71	28.572	\$29,551 19	\$ 5.847
New Construction .....	7,697 20	437 90	559 74	200 13	2,451 53	1,988 90	3,550 55	6,680 45	7,574 89	8,048 02	3,458 95	1,964 62	44,472 88	8.800	.....	.....
Total .....	\$20,423 35	\$12,088 05	\$11,664 86	\$10,451 30	\$13,244 82	\$13,513 92	\$14,705 61	\$19,717 08	\$20,688 11	\$21,126 59	\$16,052 45	\$15,204 45	.....	.....	.....	.....

## PLANT.

**At Mine.** The buildings at the mine consist of an office, ore-sorting house and timber shed, foreman's house, several houses for married miners, boarding-house and bunk-house.

**Tramway.** The ore is brought from the mine to the mill, in cars having a capacity of two tons each, by a three-rail gravity tramway. At the head of the tramway is a 50-ton ore bin, from which the cars are loaded by chutes. Placed directly under this is the brake of the usual three-wheel type, with rubber-lined sheaves and two wood-shod band brakes. At the bottom of the tram is a 150-ton ore bin, into which the cars dump automatically. The length of the tramway is 2,150 feet, and the difference in elevation between the top and the bottom is 1,120 feet. The capacity of the tram is 75 tons in 10 hours, and the cost of operating is  $6\frac{2}{3}$  cents per ton.

**10-Stamp Mill.** From the lower bin mentioned the ore is dropped into a car, is weighed, and trammed into the mill. It is then dumped on a 4-foot by 10-foot grizzly screen, with 2-inch openings, the portion of ore not passing through the screen going through a 7-inch by 10-inch Blake crusher, the whole falling into a 50-ton crushed ore bin, from which it passes into the hoppers of two automatic Challenge ore feeders and is delivered to the stamps. There are two batteries of five stamps each (the stamps weighing 930 lbs.), made by Fraser & Chalmers, of Chicago. The proportion of the values caught on the plates can be seen from the preceding tables. After leaving the aprons the pulp passes through two mercury traps placed beneath the floor, and thence to three Browne hydrometric sizers made of vitrified clay, the product of each of these and the overflow going to four vanners. The vanners are of the Frue type, with three plain 6-foot belts for the finer grades of pulp, and a Morse corrugated 4-foot belt for the coarser material.

The mill building is entirely of wood on a masonry foundation. The power is generated by two Tutthill impact water wheels, working under a 400-foot head. The smaller wheel is 12 inches in diameter and generates  $11\frac{1}{2}$  horse-power; this runs the vanners. The larger wheel is 24 inches in diameter, and can develop about 60 horse-power; this runs the rest of the mill, together with a dynamo for electric lighting. The efficiency of the mill is shown from the tables before referred to.

It will be noted that the tailings, as shown by such tables, run from \$4 to \$14 in gold. These tailings have all been impounded, and at the time the mine was visited a small cyanide plant was under construction for their treatment, and was expected to be in operation by the end of 1900. The experimental runs made with a revolving barrel indicate a recovery of over 90% at an estimated cost of \$4 to \$5 per ton.

The mill is in itself a model of neatness and order, reflecting great credit on the management.

The waste water from the mill wheels is carried by flume and is delivered, under a head of 300 feet, at a point 1,000 feet further down the gulch, to the air-compressing plant. This plant consists of a 4-foot Pelton wheel, fed by a 10-inch pipe, the power thus generated being transmitted to a Rand duplex class D compressor, 14 by 22-inch cylinder, by means of a Dodge rope drive, consisting of an endless 4-strand manilla rope passing 8 times around the pulleys. The distance from the water wheel to the driving pulley of the compressor is about 60 feet, the latter being situated at about 20 feet higher elevation on the side of the gulch. The air from the compressor is delivered into a 42-inch by 10-foot receiver, and thence to the mine by a 5-inch pipe, a distance of 3,500 feet. The compressor and receiver are housed in a 2-storey 20 by 30-foot house, the upper portion being occupied by the engineer in charge and his family as living rooms. The

water wheel is enclosed in a 12 by 16-foot house, and connecting these two houses and covering the rope-drive is a 6-foot enclosed passage-way.

#### YMIR GOLD MINES, LIMITED.

This is at the present time one of the most successful mining companies in the Province. It was incorporated in August, 1898, with a capital of £200,000, the head office of the Company being in London and the Provincial head office in Nelson. The Company is under the management in British Columbia of J. Roderick Robertson, with S. S. Fowler as mining engineer and technical adviser, while G. W. Barnhart is superintendent of the mine and mill. The property owned by the Company was taken over from the London and B. C. Goldfields, Limited, and consists of 163 acres, comprising the *Ymir, Rockland, Mugwump, Golden Horn*, and other mineral claims, situated on the north fork of Wild Horse creek, about five miles from Ymir station, on the Nelson and Fort Sheppard Railway, from which point a very fair waggon road has been built to the mine and mill. The vein is a quartz fissure with a strike of about S. 65° W., and a dip of 68° to north. The width of the vein varies somewhat, but in places reaches 40 feet. The pay chute is said to have a horizontal length of about 500 feet, and to be bounded by approximately parallel boundaries. The ore body consists of a quartz gangue, carrying galena, pyrite and zinc blende, with gold and silver values. Exactly what these values are will be seen in the tables following, taken from the report of the Directors for the year.

The mine has been developed and is being worked by three adit levels, the lowest at present being No. 3, which cuts the ore body at a depth of about 400 feet. It is from this adit that the ore is being taken out. From this No. 3 level a winze has been sunk on the ore for another 200 feet, and the management reports that the values have been steadily maintained to this depth.

At a vertical depth of about 1,000 feet, No. 10 cross-cut level is now being driven, and it is calculated that it will strike the ore body in a distance of about 2,200 feet. This level has been planned to come out just about the line of the upper receiving bins at the mill, and the ore will thus be trammed directly from the level to the bins.

The development is most extensive, and is said to reach a total of over 1½ miles of underground work.

The stopes, when worked out, are filled by material blasted from an open cut on the surface and sent down by chutes to where required.

The compressed air for the drills is supplied by an Ingersoll-Sargeant duplex 10-drill compressor situated at the mill, while there is also a 5-drill Rand compressor at the mine. The mine is well equipped with buildings and all requisites.

As already stated, the ore is at the present time being taken out through No. 3 tunnel. From here it is conveyed by a Hallidie tramway 2,400 feet long, with a 650-foot drop to the mill ore bins. The buckets are filled by an automatic loader, the plant having a capacity of 250 tons in 10 hours. This tramway plant is only a temporary expedient, and will be done away with as soon as the No. 10 level is in working order. The consequence is, naturally, that the tramway is not very well kept up, as it is considered that its usefulness is about over.

The ore from the tram-line is dumped into a bin, from which it is fed over a grizzly into a No. 3 Gates crusher, driven by a 24-inch Pelton wheel, under a head of 335 feet. From the crusher the ore falls into bins, from which it is dropped into cars and trammed a short distance into the mill building proper

an 83 by 160-foot structure, having behind the stamps a row of bins, which can hold about 900 tons of crushed ore.

There are 16 batteries of 5 stamps each, fed from bins by Hendy & Challenge automatic feeders. The weight of the stamps is 850 lbs., drop from 5 to  $7\frac{1}{2}$  inches, speed 96 to the minute, and they crush to about 50 mesh, No. 11 diagonal slotted plate. The crushing capacity of each stamp is about  $2\frac{1}{2}$  tons per day.

Of the values saved, about two-thirds are caught on the plates and one-third in concentrates. The concentrates are made on a double row of Frue vanners, the headings from which are automatically carried by water to the lower floor, where they are collected, bagged and sent to the smelter.

The tailings are said to run about \$2, and are all conveyed to a central point, where they are sampled by a most ingenious automatic sampler, simple in construction and absolute in its action. This sampler is kept in a locked compartment, and should give a proper sample of the tailings for each shift. It is of "home" manufacture, being made chiefly from old kerosene oil cans, and is said to be an invention of the superintendent, Mr. Barnhart. It is worthy of special illustration, were this possible here.

The mill, &c., are run by water power and steam power, connected on the same line shaft, an arrangement which seemingly works very well. There are three 75 horse-power boilers and one of 60 horse-power used to supplement the water-power when required.

The mill and surroundings are models of neatness and order, the interior of the mill being whitewashed and painted, and the whole reflecting the greatest credit on the management.

The following are extracts from the report of Mr. S. S. Fowler, the Company's engineer, to the Directors :—

"The new battery of 40 stamps was put in operation a little before July 1st, but during June the whole mill was "hung up" for practically three weeks, in order to connect the new and old parts and re-arrange shafting and various parts of the plant. During July and August the old battery was being extensively repaired, and during the latter month we suffered from an accident to the engine, at a time when the water for power was at a very low stage. Again, in November, the heavy countershaft, through which the water and steam-power systems join, was broken. All of these, together with other delays, such as are caused by freezing and accidents to the flume line, have made our mill record one not to be looked upon as an example of what we may hereafter expect.

"The monthly crushings were as follows:—

January,	40 stamps	22 days 7 hours	2,160 tons.
February,	"	23 " 0 "	2,263 "
March,	"	27 " 2 "	2,682 "
April,	"	29 " 2 "	3,000 "
May,	"	30 " $7\frac{1}{2}$ "	2,990 "
June,	"	9 " $2\frac{1}{2}$ "	892 "
July,	80 stamps	23 " $19\frac{1}{2}$ "	4,650 "
August,	"	20 " 9 "	4,100 "
September,	"	28 " $16\frac{1}{2}$ "	5,730 "
October,	"	29 " 3 "	5,630 "
November,	"	18 " 12 "	3,663 "
December,	"	25 " $11\frac{1}{2}$ "	4,900 "
Total . . . .	80 stamps	216 days 10 hours	42,660 tons.

"Average per 24 hours, 197.10 tons, or 2.464 tons per stamp per day, as compared with 2.483 tons during 1899. This difference against 1900 is principally, if not entirely, due to the increased hardness of the quartz.

"The cost of mill operation during the year was 66 cents, and of repairs 24, making a total of 90 cents. As compared with 1899 (76½ cents), the increase of 13½ cents is due principally to repairs, and partly to the fact that 40 shoes and dies, supplied with the original mill, were not taken into account as supplies; but the actual operating labour during 1900, including the share of extra cost incurred by running the steam plant, was 3 cents per ton less than in the preceding year. We confidently expect to show a considerable decrease for 1901.

"Tramway.—The duplication of milling plant created the necessity of altering the wire tramway plant. This was effected by the introduction of a better loading device, and the provision of larger buckets. Operations for the year show a good saving, the cost being 7½ cents per ton, while in 1899 it was 15½. This difference, however, is largely due to the greatly increased tonnage handled with a labour increase of only ½. The total cost per ton during 1900 was 10.76 cents, and this amount includes the cost of two new cables, one of which proved to be of very poor material and had to be discarded after carrying about 20,000 tons. Had this not been the case the year's cost would have been reduced by 3 cents per ton.

#### "PRODUCE OF THE MINE.

	Tons.		Tons.
Milling ore stopped .....	41,643	Ore milled .....	42,660
Milling ore from shaft.....	1,339	Crude ore .....	83
Crude galena.....	83	On hand in mine .....	322
Total .....	43,065	Total .....	43,065

#### "QUALITIES AND VALUE OF PRODUCT.

	Ozs.	Gold ozs.	Silver ozs.
Bullion .....	23,063	12,036.625	8,730.13
	Tons.		
Concentrate .....	2,950	3,327.830	36,717.23
Crude ore .....	83	219.822	1,411.88
Totals .....		15,584.277	46,859.24
Average per ton.....	42.743	0.3646	1.096
Average 1899.....	17.522	0.4812	1.425
	Lead lbs.	Gross value.	Value p. t.
Bullion .....		254,098.80	†5.9448
Concentrate .....	1,265,738	*119,467.13	2.7950
Crude ore .....	36,248	*6,046.10	0.1415
Totals .....	1,301,986	\$379,612.03	\$8.8812
Average per ton.....	1.523%		8.8813
Average 1899.....	1.863	\$209,145.33	\$11.94

|| All gold at \$20.67 per ounce; all silver at market price.

\*95 per cent. gold at \$20.00 per ounce; 95 per cent. silver at market, 90 per cent lead at M.

† Corresponding figures in last annual report were exclusive of express, freight and smelting charges.

"AVERAGE RECOVERY FROM MILL FEED PER TON, FOR 1900 AND 1899.

	Oz. gold.	Oz. silver.	% lead.	Gross value.
1900.				
Bullion .....	0.2822	0.2046		\$5.9560
Concentrate .....	0.0780	0.8607	1.474	2.8004
Total .....	0.3602	1.0653	1.474	\$8.7564
1899.				
Concentrate .....	0.0702	0.6680	1.114	\$2.5887
Bullion .....	0.3263	0.2250		6.8720
Total .....	0.3965	0.8930	1.114	\$9.4607

"The former table very well illustrates the effect of the rich carbonate and galena ores shipped during 1899. The table of mill feed recoveries shows a net decrease of about 70 cents per ton; the decrease of bullion recovery of \$0.916 having been partially offset by an increase in concentrate of \$0.2117. The condition of the ore, which partly accounts for this, is further reflected in the statement that whereas, in 1899, 82.3 per cent. of the mill ore recovery of gold was in bullion, it was, during 1900, only 78.3 per cent. This percentage may, of course, still further be decreased as the volume of material treated from the lower levels increases; still, it is expected that any increased degree of refractoriness will be more than compensated by our cyaniding operations.

"COSTS PER TON (42,743 TONS).

"MINING.

	Labour.	Other charges.	Totals.
Stoping .....	\$1.4483	\$0.3561	\$1.8043
*Development .....	0.2425	0.0570	0.2995
Repairs .....	0.0187	0.0143	0.0329
Totals .....	\$1.7095	\$0.4274	\$2.1367

"MILLING.

	Labour.	Other charges.	Totals.
Operation .....	\$0.3670	\$0.2930	\$0.6600
Repairs .....	0.1823	0.0573	0.2396
Totals .....	\$0.5493	\$0.3503	\$0.8996

"TRAMWAY.

	Labour.	Other charges.	Totals.
Operation .....	\$0.767	\$0.0010	\$0.0777
Repairs .....	0.0096	0.0202	0.0299
Totals .....	\$0.0863	\$0.0212	\$0.1076

"SACKING AND TRANSPORT TO YMIR STATION.

	Labour.	Other charges.	Totals.
Express, freight and smelting .....	\$0.0399	\$0.1627	\$0.2027
			0.9901

\*Other than No. 10 adit and Ymir shaft.

## "OFFICE, ASSAYING, ETC.

Salaries .....	\$0.1558
Telegrams and postage .....	0.0138
Assaying .....	0.0131
Office supplies .....	0.0073
Travelling .....	0.0278
	<hr/>
	\$0.2198

## "CONTINGENT.

Exchange .....	\$0.0091
Insurance .....	0.0386
Legal charges .....	0.0031
Taxes .....	0.1002
General .....	0.1327
	<hr/>
	\$0.2837

## "SUMMARY.

	Amount.	Cost p. t.
Mining .....	\$ 91,327 48	\$2.1367
Milling .....	38,451 93	0.8996
Tramway .....	4,597 29	0.1076
Transport, etc. ....	8,662 44	0.2027
Salaries and office .....	9,397 24	0.2198
Contingent and general .....	12,125 09	0.2837
Freight and smelting .....	42,319 04	0.9901
	<hr/>	
Totals .....	\$206,880 51	\$4.8402
		<hr/>
Total, omitting freight and smelting . . .		\$3.8501
		<hr/>

"Comparison of these costs and the total of \$3.85 per ton for all operating expenses, except smelting, with the figures given in our last annual report, wherein the total cost per ton was shown to be \$3.32, appears to manifest an increase of 53 cents per ton during 1900; but it must be remembered that the mining costs per ton of mill feed during 1899 were much reduced on account of our having had at that time over 5,000 tons of ore on the dump, the cost of producing which was partly incurred by the vendors of the property, and partly was included in development. As a matter of fact, had all the ore which was milled in 1899 been stoped, the total cost would have been almost exactly the same as in 1900.

"On the whole, I am glad to say that the present condition of the property and plant is excellent; and that while there is always the possibility of geological disturbance below our lowest workings, there has been thus far little, if any, cause for anxiety as to the future, in this respect. The outlook, therefore, seems to be a very bright one, and the general situation one on which I think the Company is to be congratulated."

The *Granite Gold Mines, Limited*, secretary, J. Laing Stocks, Nelson, owns the *Granite, Poorman* and *Royal Canadian Groups*, situated on Eagle Creek, a few miles west of Nelson. This company mined and milled during the past year about 12,000 tons of ore, the values being chiefly in gold, of which over 90% is caught on the plates, the remaining 10% being

saved as concentrates. About 20 men were employed underground, and about 50 are said to have been at work on the surface.

The *Fern Gold Mining and Milling Company, Limited*, president, Geo. Kydd, and secretary, R. W. Brigstocke, Nelson, operates the *Eutruria, Fern, Chicora Fraction, Eureka, Hidden Treasure* and *Hope Fract.* mineral claims, situated on Hall creek. During the year some 600 tons of ore were mined and milled, but towards the latter part of 1900 the property was closed down. The ore is chiefly free-milling gold.

The *Venus Gold Mining Co., Limited*, Dr. P. E. Doolittle, manager, Nelson, has been operating a number of claims on the hill above the *Athabasca* mine, and is credited with producing about 1,000 tons of free-milling ore, and employing about 15 men underground and as many more above.

The *Molly Gibson Mining Co., Limited*, Bruce White, manager, has been operating its claims, situated on the headwaters of Kokanee creek, on the north side of Kootenay outlet. The Company has this past year installed a very complete aerial tramway for taking the ore down the mountain side to a waggon road, over which it is teamed to the landing on Kootenay lake. The ore is chiefly galena of rather a low grade as regards lead, but carrying good silver values of about 10 oz. to the per cent. of lead. Some 800 tons of this ore were mined during the year and shipped to the Nelson smelter. About 15 men were employed underground and about 30 above.

The *Tamarac Mining Co.*, A. Marsh, secretary, Rossland, has during the year been operating its claim situated about  $1\frac{1}{2}$  miles from Ymir. A wire rope tramway to the Nelson and Fort Sheppard Railway has been in course of construction and is said to be now nearing completion. Some 8 men were employed underground, but no ore shipments were made, pending the completion of the tramway.

The *Yellowstone Mines, Limited*, has been working its property, the *Yellowstone*, situated on Sheep and Wolf creeks, near Salmo, and, under the management of H. E. T. Haultain. About 8,500 tons of ore were mined and milled in the Company's mill during the year. The ore is chiefly free-milling gold, but a certain amount of concentrates is also recovered. Some 10 men were employed underground and about 20 above.

The following is an extract from a report sent me by Mr. Haultain:—

“The ten-stamp mill was completed in February. The stamps were dropped for the first time on January 28th, and commenced running regularly on February 1st. In its first eleven months' run, ending December 31st, the mill ran 312 days and 21 hours out of a possible 334. Out of the 21 days and 3 hours that the stamps were hung up,  $8\frac{1}{2}$  days were due to causes outside of the mill, i. e., holidays, tramway troubles, etc., and 12 days and 15 hours were due to the monthly clean-ups and repairs. In the 11 months the mill crushed  $8,467\frac{1}{2}$  tons, or an average of 770 tons per month, or 2.7 tons per stamp per day of running time. The ore is a hard white quartz, carrying iron pyrites and traces of galena and zinc blend.”



## NELSON MINING DIVISION.

## REPORT OF J. A. TURNER, GOLD COMMISSIONER.

I have the honour to submit the following report on the Nelson District for the year ending December 31st, 1900:—

The general condition of the mining industry in this District during the year 1900 shows a marked improvement over that of 1899. More actual development work has been done than at any time previously, and in almost every instance, when carried out in a systematic and business-like manner, the result has been satisfactory, and the prospects for the future never looked brighter than they do to-day.

The labour troubles are over, and mine-owners and miners are again working in harmony. The properties that are being opened up are, as a rule, looking well, and the fact that capital is being brought into the country for investment is encouraging, as it indicates that those interested are satisfied that the Kootenay country is worthy of their attention, while there is, as a consequence, no scarcity of work for skilled miners, business is good, and the District generally is in a very prosperous condition.

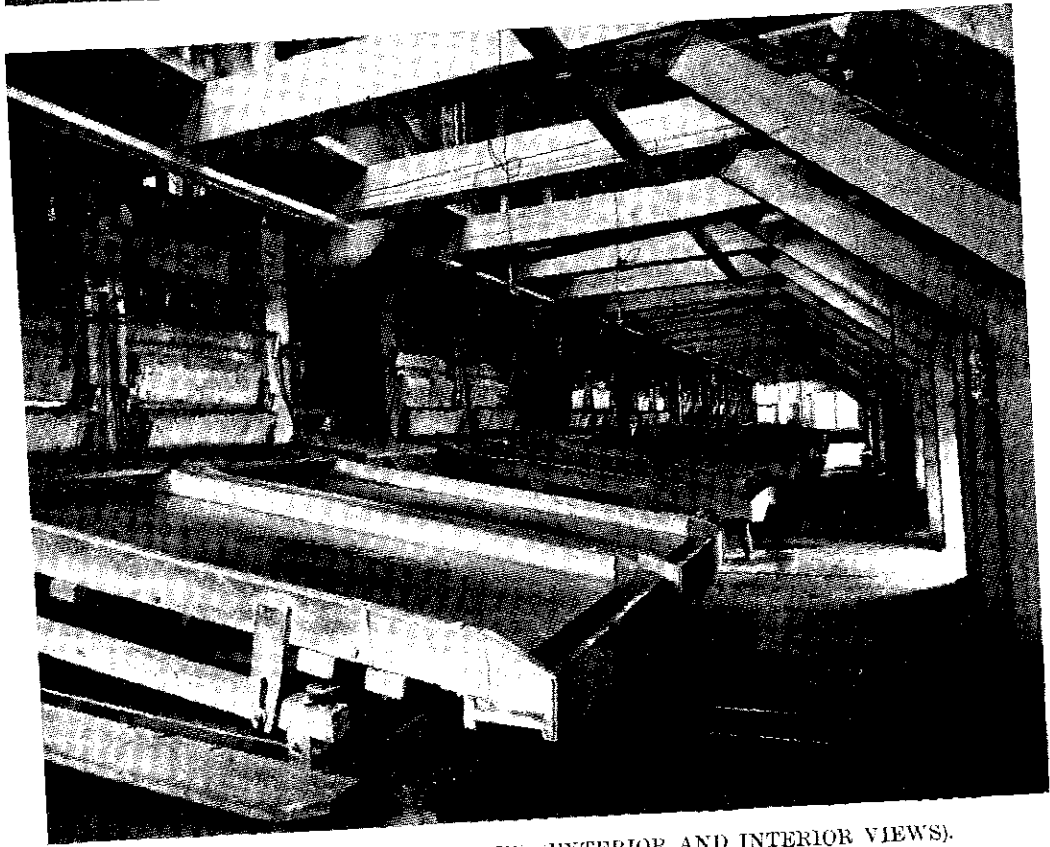
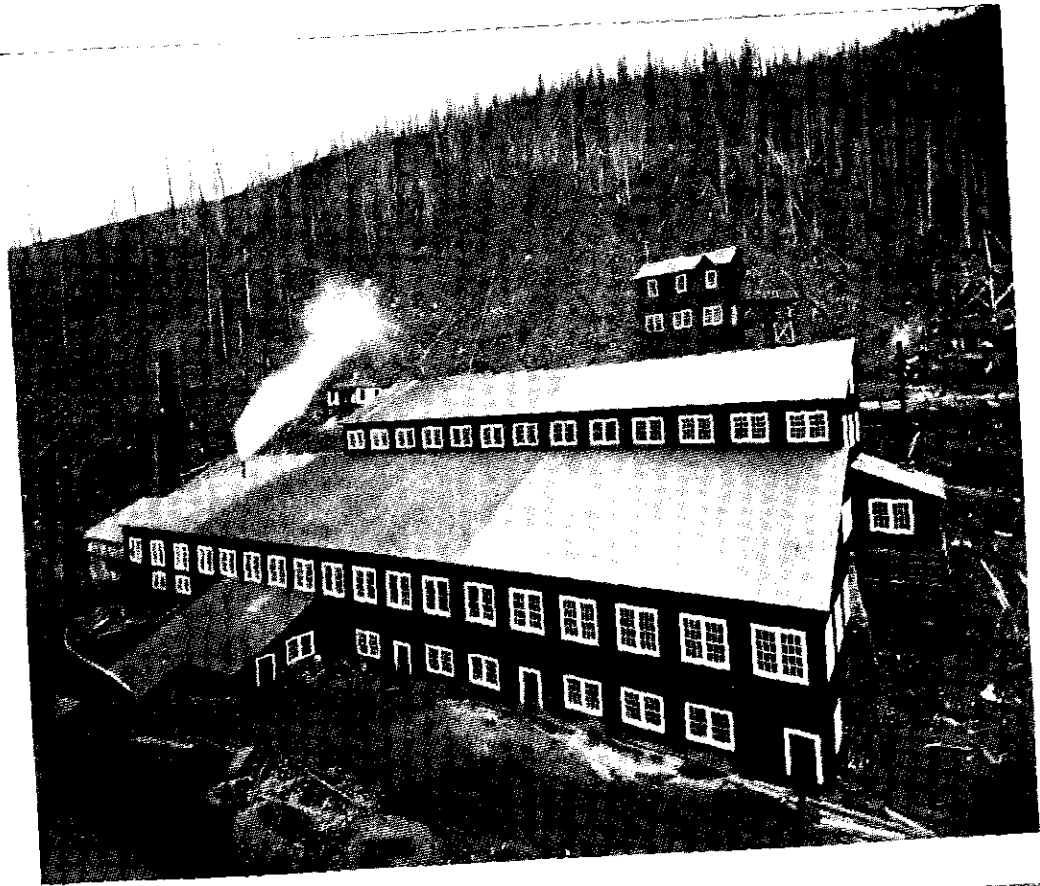
One of the oldest and most important mines in the Nelson District is  
**Hall Mines.** the *Silver King*, owned by the Hall Mines, Limited. Since the re-organization of this Company in April last, the management has been changed and work is being carried on at both the mine and smelter in a very energetic manner.

The Hall Mines smelter employs about 75 men, and is being run to its full capacity on ores from Nelson, Ainsworth and Slocan Districts.

No ore has been smelted from the *Silver King* this year, but a great deal of development work, amounting to 2,012 feet, has been performed under the management of Captain J. R. Gifford. Very little stoping has been done, but some 2,900 tons of ore have been taken out, and during 1901 large and regular shipments may be looked for. A considerable amount of machinery has been installed, including two new boilers, one large double hoist, and one large duplex pump. The boilers have been placed in the mine, and an iron smoke-stack, 32 inches in diameter and 430 feet high, has been erected. Sixty-five men are employed at the mine.

The *Ymir* mine is running its 80-stamp mill to its full capacity, partly  
**Ymir Mines,** by water power and partly by steam. Several thousand feet of work have  
**Limited.** been done and a cross-cut tunnel, which will tap the lead at about 1,000 feet deep, has at present been driven a distance of 800 feet. An aerial tramway is used to bring the ore from the mine to the mill, where about 200 tons per day are treated. The concentrates are being shipped to the Hall Mines smelter. Power drills are used and about 140 men are employed. The *Ymir* is a dividend payer, and is one of the best mines in the district.

Another dividend payer is the *Athabasca* mine, situated about three  
**Athabasca.** miles from Nelson. Like the *Ymir* mine, it is a free-milling property. There is a 10-stamp mill, tramway and air compressor, and a cyanide plant is being installed. During the 11 months from January 1st to December 1st, 1900, 1,500 feet of development work were done and 5,000 tons of ore were treated. An average of 103 men are employed, under the management of Mr. E. Nelson Fell.



STAMP MILL, YMIR GOLD MINES (EXTERIOR AND INTERIOR VIEWS).

The *Molly Gibson* mine is situated about 12 miles east of Nelson, at **Molly Gibson.** the head of Kokanee creek. During the year, 1,108 feet of tunnelling, sinking, raising and stopping have been done, 787 tons of ore have been shipped, and on an average 43 men have been employed.

The Granite Gold Mines, Limited, operates the *Granite* and *Poorman* mines, both free milling properties situated about six miles west of Nelson.

On the *Granite* mine 1,198 feet of development work have been done, **Granite Mine.** consisting of 1,006 feet of tunnelling, 132 feet of raises, and 60 feet of shaft. About 3,000 tons of ore were crushed during the eight months that the Company was working the mine, and on an average about 50 men were employed.

At the *Poorman* mine 1,250 feet of development work were done, **Poorman.** consisting of 913 feet of tunnelling, and 337 feet of raises. Some 8,500 tons of quartz were crushed in the *Granite* mill during the year, and an average of 50 men were employed. Several improvements were made to the 20-stamp mill, two Wilfley Tables were added, and a small trial cyanide plant put in for conducting experiments. The concentrates are sent to the Hall Mines Smelter. In addition to the above, new bunk houses, dining rooms, a bath room with hot and cold water, and a drying room for the miners were built during the year.

The *May and Jennie Group* is situated about nine miles west of Nelson, **May and Jennie** and consists of the *May and Jennie, Red Top, Tip Top, Gold Bell* and **Group.** *Golden Giant.* These claims are controlled by the United Gold Fields of B. C., with head office in London, England, and of which Mr. J. J. Fleutot is the local Managing Director. During the year work has been done as follows:—1,400 feet of development; 400 feet of flume; 1,200 feet of pipe line; 4,000 feet of trail, and 2,000 feet of waggon road, in addition to which the Company has contributed \$2,800 towards the construction of the main road. Two camps have also been built, with accommodation for 50 men.

A 10-stamp mill has been ordered which, it is expected, will be working by May 1st, 1901, and a saw-mill will also be erected with a capacity of 1,200 feet per day. A tramway is to be built, running a distance of 1,000 feet, connecting the mine with the mill, and by the 1st of April it is expected that 60 men will be at work on these properties.

The *Venus* mine is situated on Morning mountain, about seven miles **Venus.** from Nelson. This is a free-milling gold property, of which P. E. Doolittle is manager. One thousand and thirty-two feet of tunnels and 290 feet of shaft have been made during the year, and a rotary mill has been installed. At present only 15 men are employed.

The *Juno*, situated on Toad Mountain, about four miles from Nelson, **Juno.** is a free milling property of which Chas. Parker is the Managing Engineer. Two hundred and forty feet of development work have been done, and cabins, &c., have been erected. Six men are employed.

The *Birdseye*, situated on Morning mountain, is under the management of Mr. E. G. Wilson. Two hundred and ninety-six feet of tunnels, 100 feet of shaft, and 154 feet of drifting have been done. Twelve men are employed.

The *Referendum*, on 49-creek, is under the management of Chas. Parker. Six men are at work, and a shaft has been sunk 45 feet.

On the *Fern* mine, situated on Hall creek, about twelve miles from Nelson, very little work has been done this year, but a 10-stamp mill has been erected.

The *Bluebird*, *Lorna Doone*, *Michigan*, *Trout* and *Randolf* are silver Montana G. M. lead properties, situated on Deer creek, and controlled by the Montana Co. Gold Mining Company (Foreign), the head office of which is at Spokane, Wash., U. S. A. Four hundred and twenty-five feet of development work have been done, reaching a depth of 110 feet. The vein is 3 feet 10 inches wide, and a smelter test on the ore gave a value of \$31 per ton. Eight men are employed on the properties under the management of C. H. Doughton.

The *Maud S.*, *Yellow Jacket*, *Touch-Me-Not*, *Standard*, *Eric* and Onondago Mines: *Syracuse*, situated on Champion creek, near Waterloo, are controlled by the Onondago Mines, of Syracuse, N. Y., and are managed by Thomas James. During the year about 515 feet of development work have been done, 30 men have been employed, and \$2,000 have been spent on waggon roads and trails. There are now being installed a 10-stamp mill, a saw-mill, and buildings to accommodate 65 men. The ore is free-milling, and averages about \$20 per ton in gold.

The *Bunker Hill* mine, situated about fifteen miles from Waneta, on Bunker Hill. Fifteen-Mile creek, a tributary of the Pend d'Oreille river, is controlled by the Bunker Hill Mining Company, of Toronto, Ont. Several hundred feet of development work have been done, and a 10-stamp mill has been erected. Ten men are employed.

On the *Tamarac*, situated about two miles from Ymir, 800 feet of development work have been done, 250 feet of which were performed this year. A trial shipment of four tons has been made, and the company is building a tramway capable of hauling 75 tons per day. Eleven men were employed this year.

The *Foghorn*, situated about six miles from Ymir, is controlled by Thomas Kane. On this property about 75 feet of development work have been done.

On the *Edith Group*, also controlled by Thomas Kane, and situated near Ymir, there have been about 75 feet of development work done.

On the *Beresford Group*, adjoining the *Ymir* mine, and controlled by the British America Corporation, sufficient work has been done to obtain a Crown grant.

On the *Dundee*, situated about three miles from Ymir, I believe no work has been done. The officials declined to give me any information.

On the *Dumas* and *Alexandre*, situated on the north fork of Wild Horse creek, about seven miles from Ymir, 200 feet of work have been done.

On the *Big Horn*, situated near Ymir, 290 feet of work have been done.

On the *Shiloh* and *Royal*, situated on Bear creek, about one and one-half miles from Ymir, and controlled by the Silver Crown Consolidated Company, 125 feet of work have been done.

On the *Eldorado*, situated on Porcupine creek, near Ymir, 1,400 feet of work have been done.

On the *Wilcox Group*, situated on Wild Horse creek about 6 miles from Ymir and controlled by the Broken Hill Mining Company, 400 feet of work have been done and 4 men have been employed.

On the *Blackcock*, situated on Wild Horse creek about 5 miles from Ymir and controlled by the Blackcock Gold Mines, Limited, the Secretary of which is Wm. Tomlinson, 353 feet of work have been done, 43 tons of ore shipped and 7 men have been employed.

The *Summit-Ymir Group* is situated about 6 miles from Ymir and Summit-Ymir. about  $1\frac{1}{2}$  miles from the *Ymir* mine. The property consists of 4 Crown-granted claims which are controlled by the Summit-Ymir Mining Com-

pany, of which the Secretary is W. A. Galliher; 800 feet of development work have been done. The ledge is 14 feet wide carrying free-milling gold and having an average assay value of \$10 per ton.

The *Canadian King*, controlled by Boyd & Merriman, of Spokane, Washington, is situated about 3 miles from Erie. On this property a total of 300 feet of shaft and 200 feet of drift have been made. A hoisting plant has been installed and a shipment of 14 tons was made from which a net value of \$31 per ton was obtained; 8 men have been employed.

The *Arlington* mine, situated near Erie, is controlled by the Hastings & B. C. Exploration Syndicate, the Manager of which is Mr. C. D. McKenzie. Underground work has been done to the extent of 5,600 feet, and 1,127 tons have been shipped, valued at \$38,469.05. No stoping has been done and all the ore taken out in development has not been shipped.

The *Second Relief* is situated about 13 miles from Erie on the north fork of the Salmon river and is controlled by Messrs. Finch and Campbell, of Spokane, Washington; 390 feet of work have been done and 6 men have been employed.

The *Ida D.* adjoins the *Second Relief* and is controlled by Joseph Reid, of Erie; 200 feet of work have been done and 2 cars of ore shipped, giving a return of \$127 per ton in free gold.

The *Henry Clay*, situated about 3 miles from Erie, adjoins the *Canadian King*; 320 feet of work have been done and 8 men employed.

The *Keystone*, situated about 5 miles from Erie, is controlled by A. L. Davenport, of Spokane, Washington. The work done on this property consists of one shaft of 35 feet and one tunnel of 190 feet, and 10 tons of ore are ready for shipment. Fifteen men have been employed on the property. During the year a waggon road 2 miles long has been built.

The *Yellowstone* mine is situated about 10 miles from Salmo and is operated by the Yellowstone Mines, Limited, of which the business manager is J. A. Forin. Tunnels were driven for 934 feet, a 10-stamp mill has been erected and 8,467 tons of ore treated.

The *Queen Group* of 4 claims adjoins the *Yellowstone* mine and is also a free-gold property; 200 feet of work have been done.

The *Porto Rico* has not been working during the season.

#### OFFICE STATISTICS—NELSON MINING DIVISION.

Number of claims recorded (mineral) .....	777
"    "    "    (placer) .....	1
Certificates of work issued .....	1701
Money paid in lieu of assessment work .....	10
Certificates of improvements recorded .....	125
Bills of sale and transfers recorded .....	429
Agreements, options and notices recorded .....	34
Abandonments recorded .....	6
Substituted certificates issued .....	4
Free miners' certificates issued .....	1715
"    "    ordinary .....	1644
"    "    special .....	38
"    "    company .....	33

## AINSWORTH MINING DIVISION.

## REPORT OF J. A. TURNER, GOLD COMMISSIONER.

The *Cork* mine is situated 5 miles west of the Kaslo and Slocan Railway on the south fork of Kaslo creek. The property includes 8 claims, operated by a French Company, the head office of which is at Lisle, France, and of which the local manager is

**Cork Mine.** J. J. Fleutot. About 520 feet of development work have been done, 2,000 feet of waggon road have been built from the Government road and a large camp has been erected with ample accommodation for 50 men. Assays run from 60 to 65% lead and 50 to 60 oz. silver. Twelve men were employed during the year.

The *Great Britain Group* of 5 claims, of which D. D. Birks is manager, is situated 10 miles from Lardeau at the head of Kootenay lake. Two hundred and fifty feet of work have been done and 8 men have been employed. Assays give 76% lead, 77 oz. silver, \$12 gold and 4% copper.

The *Pontiac* and *Tecumseh* claims are situated on Woodberry creek and are operated by the Nelson and Slocan Prospecting and Mining Company, the head office of which is at Toronto, Ontario, and the local office at Kaslo, B. C. About 400 feet of development work have been done, very little of which is stoping. Twelve men have been employed under the management of C. F. Caldwell, and 100 tons of ore carrying silver and gold values are ready for shipment.

The property of the Woodberry Mines, Limited, is under the management of T. R. French. Eight hundred feet of development work have been done, 60 tons of ore carrying silver and gold values have been shipped, and 1,000 tons are on the dump. Eight men were employed during the year.

The *Scranton*, situated on Woodberry creek, is under the management of Austin Corbin. Sixty feet of development work have been done.

The *Highland Group*, operated by the Highland (Kootenay, B. C.) Mining Company, Limited, consists of 8 claims and fractions. On these, a total development of 577 feet has been done, consisting of 490 feet of tunnelling and 87 feet of raises, and 95 tons of silver-lead ore were shipped to the Hall Mines Smelter. About 25 men have been employed, and upon the completion of the 100-ton concentrator work will be pushed with all speed.

An aerial rope tramway on the Hallidie system has been put up, connecting the mine and the concentrator, and a flume and pipe line have been constructed from Cedar creek to operate the concentrator which, it is expected, will start up early in January. A wharf was also built on the lake shore, and is connected with the concentrator by a self-acting inclined tramway. The ore and concentrates will be shipped in bulk directly on to barges alongside this wharf. Large bunk houses, offices, etc., have been built at the mine and mill, and the whole plant is lighted by electricity. All the power is supplied from Cedar creek, and is generated by the aid of Pelton wheels.

The *Silver Hill Group* is situated on Crawford creek, and operated by Silver Hill Group. the London Consolidated Gold Fields Exploration and Mining Company of Rossland. It consists of the following claims:—*Silver Hill, Green Crown, S. & N. Frac., Norfolk, Simcoe and Roy.*

The development work done on these properties comprises 3,090 feet of underground tunnelling and drifting, exclusive of stoping, together with 800 feet of surface cuts and stripping. One-third of the above amount of work has been done during the past year. Several stopes have just been opened, from which ore is being mined for shipment.

No shipments of ore were made up to 31st of December, 1900, but, commencing with the new year, the mine will ship steadily for the rest of the winter. The number of employees during December was 42, and during the other months of last year an average of about 17 men were at work.

In addition to the above, the Company has during the past year constructed a waggon road  $9\frac{1}{2}$  miles in length, towards which the Provincial Government contributed \$6,000, about one-half the cost. The Company has also, at its own expense, constructed a trail over two miles in length, and costing over \$800, and has built a substantial wharf at Crawford Bay.

The *Richelieu Group* is situated on Crawford creek, and is operated Richelieu. by the Richelieu Mining Company, Limited; it consists of the *Indication* and *Jennie D.* claims. The development comprises 253 feet of underground work and 755 feet of open cuts and stripping on veins. This is the total development work done in 1899 and 1900, about an equal amount in each year, the surface work, however, being all done in 1899.

The number of men employed during 1900 averaged about eight.

No ore has yet being shipped by the Richelieu Company, although a large quantity is on the dump and blocked out in the mine.

The following is a statement of the Certificates of Improvements issued in Nelson District during the year 1900:—

Nelson Mining Division .....	123
Ainsworth " .....	84
Arrow Lake " .....	7
Goat River " .....	3
Total .....	217

## AINSWORTH MINING DIVISION.

## REPORT OF E. E. CHIPMAN, MINING RECORDER.

I herewith submit my report on the Ainsworth Mining Division for the year 1900.

Coming into the office late in the year, I am unable to present as complete a report as I should like to do, and such as the progress made during the year demands.

## LARDEAU-DUNCAN RIVER CAMP.

This portion of the Division has been very quiet during the year, in consequence of the lack of transportation facilities and the shutting down of railroad construction, but the claims have been better represented than in any other part of the district.

The Irene Mining Company, owning the *Irene, Eva, Marion* and *Char-Irene Group*. *lotte* claims, has made five and a half miles of trail up Duncan river, besides building bridges and constructing cabins for the men employed. A shaft 60 feet deep has been sunk on the properties, and a tunnel driven 39 feet, in addition to which a great deal of surface work has been done. The ore is silver lead, with a small percentage of copper, and as soon as transportation can be had, the Company confidently expects to be a heavy shipper, large bodies of ore being in sight.

On the *Wagner Group*, which consists of a large number of claims, 10 men have been at work during the year preparatory to the obtaining of a Crown grant for the property.

On the *Abbott Group*, Crown-granted and adjoining the *Wagner*, no work has been done this year, and, like most of the properties in the camp, it is awaiting transportation facilities.

The *Bannockburn Group*, on Hall creek, consisting of 7 claims, has been Crown-granted this year. One hundred and ten feet of tunnel have been driven, and a shaft 33 feet in depth has been sunk. On this same creek about 50 other claims are situated, all of which have been represented.

The *Lost Mountain Group*, on Hammill Creek, consisting of seven claims, has had seven men working on it since June, and about 300 feet of tunnel have been driven. It is a very promising property.

The *Lavina Group*, comprising four claims on the same creek, is owned by the Lavina Butte Mining Company. About 400 feet of tunnel have been driven and one shipment of ore has been made during the year, giving fair values in silver and lead. This is considered to be one of the best properties in the camp.

It is expected that the railways now under construction will be completed during the year 1901, and if this anticipation is realized, the Lardeau-Duncan River District will, it is believed, prove of much importance.

## BLUE RIDGE CAMP.

All the claims have been represented, but very little more than the required assessments have been done, although some very valuable discoveries are reported.

The *Eureka Group* comprises six claims, the *Eureka, Homestake, Yosemite, Scottish Chief, Echo, and Paris*. Sixty-four feet of tunnelling have been driven on this property, and it is expected that it will again enter the list of shippers during the coming year.



Some of the properties on Lyle creek have been Crown-granted, but no work other than the annual assessments is reported, except on the *Fletcher Group* of seven claims. This property is under bond to the French Canadian Syndicate, Limited, and a force of men has been at work excavating for buildings and making preparations for active development, which will be commenced early in the coming year. The vein is well defined and shows good values in gold, with a small percentage of copper.

#### WHITEWATER CAMP.

The *Whitewater* mine has been working steadily since April, and has *Whitewater Mine.* again taken its place among the heavy shippers of the District. At the present time about 100 men are employed, and there has been shipped, since the resumption of operations, 4,831 tons of high grade silver lead ore.

The *Whitewater Deep Group* has been practically idle for the entire year, only sufficient work having been done to obtain a Crown grant for one claim, the *Whitewater Deep Fraction.*

The *Sunset* is under bond to the Gooderham-Blackstock Syndicate, and 13 men are now at work.

On the *Florida* considerable work has been done during the year, but the property is now closed down.

The *Hillside Mines, Limited,* worked a small force of men for several months and made a small shipment of high grade silver lead ore from its property, which, however, is also now shut down.

#### SOUTH FORK OF KASLO CREEK.

The *Réné Laudi Group,* situated in Camp Mansfield and consisting of *Rene Laudi* about 15 Crown-granted claims, is operated by a French syndicaté. A *Group.* force of 30 men has been at work during most of the year, and has driven a total of about 1,500 feet of tunnelling on four of the claims, besides exploring the well-known *Joker* claim by stripping the ledge. The property is not being worked at present, but it is the intention to resume operations as soon as the snow disappears in the spring.

Lower down the south fork of Kaslo creek is the *Bismark Group,* *Bismark Group.* which has come into prominence during the year. It is owned by a number of business men of Kaslo. There are three tunnels on the property. No. 1. has been driven a depth of 240 feet, and No. 2 a depth of 112 feet. The latter is vertically below the former and is connected with it by a winze; it shows a body of ore which maintains a width of from 2 to 6 feet the whole distance. No. 3 tunnel has been driven below No. 2 for a distance of 237 feet. The ore is a silver lead, the average assays of the carbonates being 190 oz. silver with 14 per cent. lead, while the clean galena averages 290 oz. silver and 72½ per cent. lead. Several car-loads have already been shipped. The owners have constructed bunk-houses and ore-bins, preparatory to working the mine on a much more extensive scale. They have also built a trail two and one-half miles long, to connect with the waggon road which was constructed by the Government last summer. Eight men are employed on the property.

The *Dublin* and *Cork* claims, near the *Bismark* and adjoining the *Cork Mine.* *Black Fox,* have come into the hands of a French syndicate, with headquarters at Lisle, France, and designated the Silver Star Mining Company, Limited. The property has been opened up by three tunnels, respectively 300, 68 and 30 feet

in depth, and shows ore in all its workings. The vein is a large one, being 20 feet in width; it is of a concentrating nature and carries average values of 50 oz. of silver and 40 per cent. lead. The Company intends building a concentrator in the spring, and confidently believes it has a property that will be a large producer.

#### WOODBERRY CREEK.

The King Solomon Mines, Limited, is a Company owning about 35 claims at the mouth of this creek, and a number of men are engaged, principally on development work. Commodious buildings have been constructed for the accommodation of a large force. The concentrator owned by the Company has been idle all the summer.

Further up the creek are the *Sunset No. 5* and *Mayflower* claims, Woodberry Mines. owned by the Woodberry Mines, Limited. Ten men have been at work during the greater portion of the year, and a small quantity of silver lead ore has been shipped. At present the property is shut down, pending a sale. About \$35,000 has been expended in development.

Nearer the head of the creek are the *Pontiac* and *Tecumseh* claims, Pontiac and Tecumseh. the property of the Nelson Prospecting and Mining Company. Ten men have been working on these claims since August, putting the property into shape for more extensive production. Since beginning operations this year the Company has made one shipment of 25 tons, carrying good values in silver and lead.

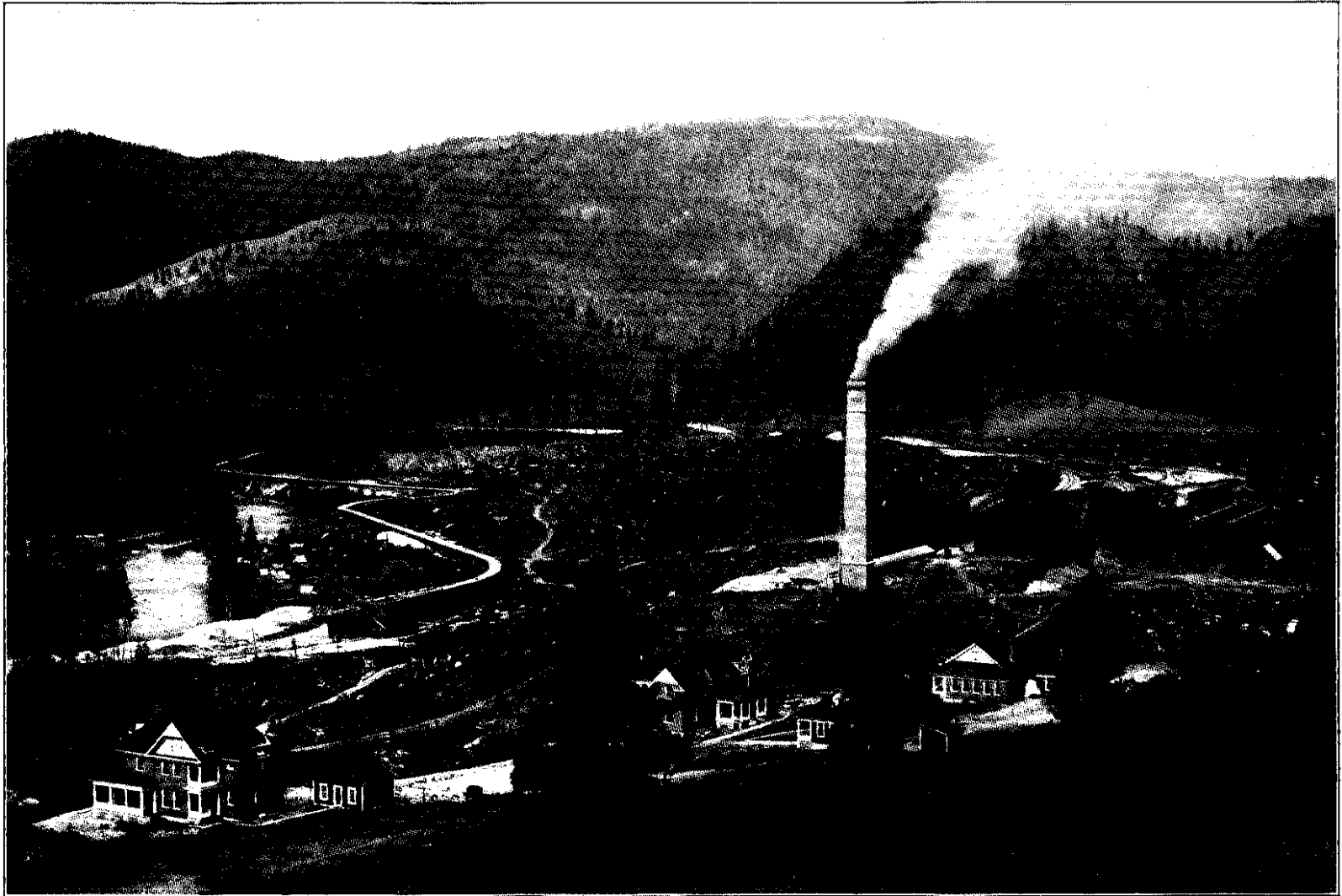
#### HOT SPRINGS OR AINSWORTH CAMP.

At Ainsworth the *Highland* mine is employing 80 men, and a wire rope tramway has been built from the mine to Kootenay lake, where a concentrator, having a capacity of 100 tons a day, has been erected.

The *Highlander* tunnel has been driven a distance of over 1,300 feet, Highlander Mine. from a point near the shore of Kootenay lake, and will tap a number of the well-known veins of the old Hot Springs camp. It is intended to continue the tunnel to a total distance of 2,000 feet. The work has been prosecuted with machine drills, the power for operating which was supplied by the Kootenay Air Supply Co., of Coffee creek.

This last-named Company has a plant of the Taylor air system in operation, and while it does not properly come into a report on mines and mining, yet the power supplied can be used for any purpose in the operation of mines or in the treatment of ores, where steam is the motive power, and it may, therefore, be considered of interest in this connection. The plant consists of a shaft 4 feet by 6 feet and 200 feet deep, at the bottom of which there is a chamber 20 feet in diameter, in which the air is compressed by falling water, which is brought from a source 200 feet above the mouth of the shaft. The plant is capable of supplying 350 horse-power, or sufficient to operate 60 machine drills. The Company is prepared to supply power to any point in the Hot Springs camp, at one-half the cost of operating with steam. It has successfully supplied the power for running the *Highlander* tunnel, and is now connecting its plant with the *Highland* mine and concentrator. Only one man is required to operate the system, and his services are only needed for a portion of the time, since there is, apparently, nothing to get out of order.

Very little other work has been done in the Ainsworth camp except that which is necessary for the annual representation of the claims.



THE GRANBY COPPER SMELTING WORKS—GRAND FORKS, B. C.

## CRAWFORD CREEK.

The *Silver Hill* mine, belonging to the London Consol. G. M. Co., has come into prominence during the year; it employs 75 men.

Nearly all the claims on Crawford creek have been represented, and with the facilities now provided by the Government waggon road, just completed, increased activity is anticipated for the coming year.

## OFFICE STATISTICS—AINSWORTH MINING DIVISION.

Free miners' certificates (individual) .....	765
"    "    (company) .....	17
"    "    (special) .....	19
Mining receipts issued .....	1,431
Certificates of work issued .....	1,243
Certificates of improvements recorded .....	105
Cash payments in lieu of work .....	16
Notices filed .....	204
Bills of sale, bonds, etc., recorded .....	354
Water records recorded .....	3
Surveys recorded .....	51
Field-notes filed .....	106
Abandonments recorded .....	5
New claims recorded .....	579
Abstracts of title .....	111
Letters received .....	2,028
Letters written .....	1,851

## GOAT RIVER MINING DIVISION.

## REPORT OF E. N. MURPHY, MINING RECORDER.

I have the honour to report as follows on mining operations in the Goat River Mining Division during the year ending 31st December, 1900.

The development work executed in this Division during 1900 has been greatly in excess of that of any previous year.

The southern portion of the Division is fortunate in that it has two railroads running through it, besides having steamboat communication for nine months in the year.

In the vicinity of the town of Kitchener the London and British Columbia Gold Fields has several properties on which in the neighbourhood of 200 feet of tunnelling was driven last season. While nothing can be learned positively, it is understood the Company intends prospecting with a diamond drill in the spring.

On Goat river some promising properties are located, of which the *Anchor* and the *Leadville* are the best known. The former has been bonded to some local parties, and work is being actively prosecuted.

Half a mile from the above properties is situated W. H. Glaser's claim. A tunnel 170 feet long was driven on it last summer and very fair values have been obtained.

On Russell creek, south of Kitchener, a number of claims have been located for several years past and extensive work done upon several of them. The ore found here is mostly copper of a high grade.

On Goat mountain, a mile north of the town of Creston, the *Alice* mine is situated. The outcrop on this property is about 4 feet wide; the ore is galena and assays well. A tunnel 170 feet long was driven to tap the vein at a depth of 100 feet, and drifts were run on the ore body, north and south, for 100 feet. T. G. Proctor has an option on the property, and at the present time a large force of men is engaged on development work. At the 250-foot level a tunnel is being driven which will be nearly 600 feet long when completed.

About half a mile from the *Alice*, W. P. Sloan and G. A. M. Young have a group of promising claims. On the *Iris* a tunnel 100 feet long has been driven, and further up the hillside another tunnel has been commenced to cross-cut the 10-foot vein exposed at this point. The ore assays from 100 to 160 oz. silver, 70% lead and a small amount of gold, per ton. There is also a 35-foot shaft on this vein. On the *Edith*, belonging to the same group, there is a 25-foot shaft from which a considerable quantity of high-grade ore has been taken.

The owners of the *Black Knight Group* on Goat mountain are driving a tunnel on their property this season; they are reported to be taking out some excellent copper-gold ore.

On the *St. Patrick Group* of claims, owned by Messrs. Couch and Sloan and situated at the base of Goat mountain, there is a vein 20 feet wide. Sufficient work has not yet been done to arrive at any conclusions as to the values in this vein, although it is highly mineralized and exceptionally good assays have been obtained. A trial shipment of half a ton was sent recently to the Trail Smelter and the returns were 9% copper, 10 oz. silver and \$5 in gold per ton. Prospecting with the diamond drill will be the form of development pursued in the spring, as it is believed large bodies of ore exist.

The *Blenheim Group*, comprising the *Blenheim*, *Black Prince* and *Queen Anne*, owned by G. Alexander, of Kaslo, and situate about four miles south-east of Duck creek, is a very promising property. On the *Blenheim* a shaft has been sunk 43 feet, and encouraging values in copper and gold have been obtained.

The *Show Down* and *Full Hand* claims, adjoining the *Blenheim Group*, have exceptionally good showings of high-grade copper ore, but very little work has been done upon them.

The *Lizard* claim, near Duck creek, owned by the Duck Creek Mining Company, has a shaft sunk 25 feet on the lead and ore has been taken out that assays 26 oz. silver and 50% lead. There are about 50 tons of ore on the dump.

On Duck creek about 50 claims have been located, notably the *Wisconsin*, *Omaha* and *Diamond Joe*. The latter have recently been bonded and considerable development work has been done on them with satisfactory results.

On Boulder creek is situated the *Waverley Group* upon which considerable development was done early in the season. The property gave great promise of becoming a paying mine but, owing to a disagreement arising amongst the owners, work was stopped. A considerable

amount of ore, taken out in sinking a 40-foot shaft, is on the dump; the values are about 40 oz. silver per ton and 30% lead.

On Boundary creek is situated the *Homestake Group*, comprising the Homestake, Park, Skylark, Falls View, Grey Copper and Victoria claims and owned by The British Columbia (Rossland and Slocan) Syndicate, Limited, represented by A. J. McMillan, of Rossland.

On the *Homestake* a tunnel 80 feet long was driven during the past season. The ore encountered in this work was gray copper and galena.

On the *Skylark* a shaft was sunk 50 feet and a considerable amount of ore was taken out of the same character as that of the *Homestake*. Recently the six claims were surveyed preparatory to applying for a Crown grant.

On Goat creek, which empties into Kootenay lake about 15 miles from its head, a large number of claims are situated and active work is being carried on on several of them, although no shipments have been made so far. Prominent among the Maratt Group. claims on this creek are the *Maratt*, *La Salle* and *William Tell*, all of which were recently acquired by the Imperial Mines Company, Limited, having its head offices at Kaslo, B. C. Operations were begun in August and have been carried on vigorously. A cross-cut tunnel, 130 feet, has been driven and the vein tapped at 100 feet depth, the showing encountered being very encouraging, while plenty of ore is being taken out to pay the expenses of development.

Adjoining the *Maratt Group* is the property of the Valparaiso Gold Valparaiso. Mines, consisting of the following claims: *Valparaiso*, *Government*, *Sunset*, *O.K.*, *Starter*, *Franklin* and *Jackson*.

The Valparaiso Gold Mines, Limited, was incorporated in May, 1900, for the purpose of acquiring and developing the above claims. Since commencing work large and comfortable quarters have been erected for the men and a cross-cut tunnel 230 feet long has been driven, tapping the vein at a depth of 125 feet. Drifts have been extended both north and south on vein, and it is the intention of the management to commence another cross-cut tunnel lower down the hill, to be used as a main working tunnel. The vein, which lies in a granite formation, is from 5 to 25 feet wide, the ore carrying values in gold of from \$5 up, per ton. At present 12 men are employed doing development work.

On La France creek are situated some high-grade galena properties upon which development work has been carried on steadily during the past year.

On the *Snow King*, owned by T. Wall and H. Barr, 250 feet of tunnel have been driven during the past year and a large chute of gray-copper ore opened up.

On the *Umpire*, also belonging to Messrs. Wall and Barr, 120 feet of tunnel were driven during the summer. The ore met with while making this tunnel was piled on the dump, and it is estimated that some 50 tons, valued at \$100 per ton, were taken out.

The *Echo*, another claim belonging to Messrs. Wall and Barr, had about \$1,500 worth of work done upon it last season.

The *Mulligan Group* and the *Workman Group*, in the same locality, had steady work performed on them last season the details of which I have not obtained.

In the White Grouse camp nothing more than the annual assessment work was performed on any of the claims, although very few old claims were allowed to lapse and quite a few new locations were made. The camp only requires transportation facilities to make it a very important one, and the lack of these has greatly retarded progress.

## OFFICE STATISTICS—GOAT RIVER MINING DIVISION.

Certificates of work issued .....	303
Number of mineral claims, locations recorded .....	261
Free miners' certificates issued .....	166
Payments of \$100 in lieu of assessment work .....	3
Bills of sale, bonds, etc., recorded .....	137
Locations of placer claims recorded .....	2
Number of certificates of improvements recorded .....	11

## ARROW LAKE MINING DIVISION.

## REPORT OF WALTER SCOTT, MINING RECORDER.

I have the honour to submit my report on the Arrow Lake Mining Division for the year ending December 31st, 1900.

Mining matters have been very quiet during the past year, the only development of any importance, beyond the annual assessment work, being that done on the *Chieftain Group*, owned by Messrs. Clark, Burns and McKenzie, and on the *Paladora Group*, the property of Messrs. Old, Bros.

On the *Chieftain* mineral claim a tunnel of 200 feet has been driven, intercepting the lead. The ore is high grade, assaying from \$50 to \$1,000 per ton, and carrying quite a quantity of native silver. The property is considered likely to become a producer in the near future.

The *Paladora Group* is situated near the headwaters of Fire Valley creek, on the summit of an oblong-shaped mountain, where occur the outcroppings of four parallel quartz veins, which are traceable for a distance of two miles.

A good deal of stripping has been done on two of the ore bodies, and four shafts have been sunk, varying from 20 to 30 feet in depth, and in all of which good pay ore has been found.

Several hundred pounds of the ore have been treated, yielding values of \$15 to \$30 in gold and several ounces in silver per ton, while at the western end of the property a pay streak has been discovered yielding \$75 in gold per ton.

The veins vary in width from 2 to 10 feet; about 50 % of the gold contents is free, the remainder being carried in pyrites.

Messrs. Shields Bros. have been working on the eastern extension of the *Paladora Group* during the greater part of the summer. They have done a good deal of surface stripping, have made several open cuts, and have driven a tunnel 25 feet in length, exposing a quartz vein 4 feet wide, the ore from which is of the same nature as that from the *Paladora*.

On the *Balarat* claim a tunnel has been driven for 20 feet, exposing a well-defined vein, 4 to 6 feet in width and carrying fair values in gold, silver and copper.

The *Eureka Group* is about 5 miles distant from the *Paladora*, and is being developed by a tunnel, which is now in some 50 feet. The ore carries tellurides, and high assay values in gold have been obtained.

The *Morgan Group* of four claims is located on Monashee mountain, and is a recent discovery of some importance. Nothing has been done on the property other than a little surface stripping, exposing two parallel quartz veins of from 18 inches to 3 feet in width. The ore, which is well mineralized with arsenical pyrites, assays very well, the returns from picked samples being as high as \$500 per ton in gold.

One of the oldest locations in the camp is the *Monashee* claim, also situated on the mountain of that name. Negotiations are pending for the purchase of this property, and it is expected that extensive development work will be begun in the spring. The ore, which is of a milling and concentrating nature, carries good values in gold, and a little silver. Several hundred feet of tunnelling have been done on this claim.

In conclusion, I may mention that the Messrs. Keefer *et al.* have driven an 80-foot tunnel on a quartz vein 20 feet in width, on their claim near Kettle mountain. T. McKinnon is tunnelling on a 4-foot quartz vein on his property, the ore assaying \$20 per ton in gold; while on the group of claims owned by A. L. Sciae and others, about 20 miles south of the Fire Valley trail, considerable development is being done, I understand. The ore from this latter property is of a high grade, and carries good silver values.

The most pressing need of the Division is a continuation of the waggon road up Fire valley, much of which could be built at a small cost.

On the whole sufficient development has been done to demonstrate that there are several properties of value in this Mining Division.

OFFICE STATISTICS—ARROW LAKE MINING DIVISION.

Number of mineral claims recorded . . . . .	95
Certificates of work . . . . .	122
Certificates of improvement . . . . .	8
Bills of sale, &c. . . . .	55
Crown grants . . . . .	8
Free miners' certificates . . . . .	134



---



---

**ROSSLAND DISTRICT.**

—o—

---

**TRAIL CREEK MINING DIVISION.**


---

**REPORT OF J. KIRKUP, GOLD COMMISSIONER.**

I have the honour to present herewith my annual report on the condition of the mines and mining properties in the Trail Creek Division for the year ending December 31st, 1900, showing the amount of ore shipped during the year, the gross value thereof, the amount of development work done, the number of men employed, and the value of improvements made in connection with the different properties.

The ore shipments made were as follows;—

Le Roi .....	159,734 tons.
Le Roi No. 2 .....	3,013 "
War Eagle .....	9,886 "
Centre Star .....	40,875 "
Iron Mask .....	2,739 "
Evening Star .....	345 "
Giant .....	504 "
I. X. L. ....	432 "
Spitzee .....	106 "
Total.....	217,636 "
Gross value .....	\$2,333,125

**DETAILED STATEMENT.**

*Le Roi Mine.*

Tons of ore shipped (dry) .....	159,734
Gross value.....	\$1,437,726
Average number of men employed .....	655.25
Underground .....	435.85
Surface .....	219.4
Development :	
Shafting .....	900 feet.
Driving .....	2,061 "
Raising .....	379 "
Cross-cutting .....	1,085 "
Additions to plant :	
Total value of plant and surface improvements .....	\$378,207 90
Additions for this year consist of :	
1 40-drill air compressor.	
1 hoist engine, steam operating.	
1 electric hoist engine.	

9 boilers.

Crushing and sampling machinery.

Additions to compressor building:

New boiler house for 12 boilers, 38 feet by 140 feet.

3 new ore bins, 1,000 tons holding capacity.

Aerial tramway; capacity, 100 tons per hour.

New head frame, 100 feet high.

Hoist-engine room.

Crushing and sampling mill, 100 tons per hour.

Timber and timber-framing shed and carpenter shop.

Blacksmith and machine shops and storehouse.

ROSSLAND GREAT WESTERN MINES, LIMITED.

*Nickel Plate Mine.*

Tons of ore shipped .....	<i>Nil.</i>
Average number of men employed .....	113
Underground .....	82
Surface employees .....	31
Development:	
Shafting—raising third compartment alongside working shaft, making it a 3-compartment shaft .....	268 feet.
Sinking shaft, 3 compartments .....	218 "
Driving .....	1,900 "
Raising .....	59 "
Cross-cutting .....	1,131 "
Total value of plant and surface improvements .....	\$61,319 66

A new hoist engine has been added to the plant, and the surface improvements have had the following additions made:—

New hoist-engine building.

Head frame and ore bins.

New brick compressor building.

KOOTENAY MINING COMPANY, LIMITED.

*Kootenay Mine.*

Tons of ore shipped .....	<i>Nil.</i>
Average number of men employed .....	35
Underground .....	26.33
Surface .....	8.67
Development:	
Shafting .....	466 feet.
Driving .....	474 "
Tunnelling .....	68 "
Winzing .....	80 "
Raising .....	299 "
Cross-cutting .....	829 "
Total value of plant .....	\$22,066 62

Additions consist of new compressor building and foundations.

## LE ROI No. 2, LIMITED.

*Josie Mine.*

Tons of ore shipped (dry), Josie and No. 1 combined.....	3,013.43
Gross value .....	\$46,239 06
Average number of men.....	47
Underground .....	11
Surface.....	36
Development:	
Raising third compartment alongside working shaft .....	447 feet.
Sinking shaft .....	45 "
Sinking shaft on <i>Annie</i> .....	120 "
Driving.....	1,940 "
Raising.....	107 "
Winzing .....	141 "
Cross-cutting .....	917 "

Additions to plant consist of electric hoist engine.

Surface improvements consist of gravity tramway to railway and ore bins in connection with *No. 1* mine.

*No. 1 Mine.*

Tons of ore shipped.....	See " <i>Josie</i> ."
Average number of men.....	45
Underground .....	30.59
Surface employees .....	14.41
Development:	
Sinking .....	120 feet.
Driving .....	1,532 "
Raising.....	249 "
Winzing .....	86 "
Cross-cutting .....	251 "
Total value of surface improvements and plant for <i>Josie</i> and <i>No. 1</i> mine.....	\$53,778 05

Additions to plant consist of an electric hoist engine.

Surface improvements:

    New head frame.

    Hoist-engine room.

    Ore bins and gravity tramway in conjunction with the *Josie* mine.

## WAR EAGLE MINE.

Tons of ore shipped, year ending December 31st, 1900.....	9,886
Gross value .....	\$142,282 98
Average number of men employed .....	166
Development work .....	4,428 feet.
Value of machinery buildings, etc. (increase during 1900) ..	\$80,000

## CENTRE STAR MINE.

Tons of ore shipped .....	40,875
Gross value .....	\$609,358 75
Average number of men employed .....	240
Development .....	3,525 feet.
Increase of value of machinery buildings during 1900 .....	\$190,000 00



INTERIOR POWER HOUSE—GRANBY SMELTER, GRAND FORKS, B. C.



EXTERIOR POWER HOUSE—GRANBY SMELTER, GRAND FORKS, B. C.

## IRON MASK MINE.

Tons of ore shipped.....	2,737
Gross value .....	\$43,117 61
Average number of men employed .....	33
Development work .....	2,124 feet.

## NEW ST. ELMO.

Tons of ore shipped.....	<i>Nil.</i>
Number of men employed .....	6 to 12
Development work .....	1,912 feet.

## CALIFORNIA.

Average number of men employed .....	25
Development :	
Drifting .....	825 feet.
Sinking .....	168 "
New machinery building, etc.....	\$21,150 00

## SUNSET No. 2.

Average number of men employed.....	20
Development during 1900.....	450 feet

## HOMESTAKE.

Average number of men employed .....	15
Development :	
Shaft .....	210 feet.
Tunnel .....	1,200 "
Cross-cutting .....	900 "

## VELVET.

Tons of ore shipped .....	<i>Nil.</i>
Average number of miners .....	12
"          surface men .....	20
Development work—shafts, drifts and cross-cuts .....	1,000 feet.
Plant: 2 7-inch Knowles pumps and 1 1500-foot saw-mill.	

## EVENING STAR.

Number of men employed below surface.....	16
"          "          above " .....	9
Tons shipped .....	348
Gross value .....	\$4,985 50
Development :	
Sinking .....	250 feet.
Drifting .....	475 "
Cost of machinery.....	\$1,800 00

## GREEN MOUNTAIN.

Number of men employed .....	15
Development :	
Sinking .....	100 feet.
Cross-cutting .....	400 "
Machinery added :	
20 horse-power hoist.	
5-drill compressor.	
2 No. 7 sinking pumps.	

## I. X. L.

Number of men employed .....	11
Tons of ore shipped .....	432
Gross value .....	\$39,800 00
Tunnels and raises .....	480 feet.

## SPITZEE.

Tons of ore shipped .....	106
Gross value .....	\$2,635 00
Average number of men employed .....	6
Shaft .....	50 feet.

## DOUGLAS.

Average number of men employed .....	4
Tunnelling .....	480 feet.

## NORTHERN BELLE.

Number of men employed .....	5
Development :	
Cross-cutting .....	315 feet.
Drifting .....	158 "
Sinking .....	30 "
Tunnelling .....	50 "

## GIANT.

Tons of ore shipped .....	504
Gross value .....	\$6,986 00
Average number of men .....	9
Development work .....	300 feet.
Machinery consisting of :	
An air compressor.	
50 horse-power electric motor.	
Hoisting engine.	
2 pumps.	
3 machine drills.	
50-ton ore bin.	
Cost of plant detailed .....	\$10,000 00

**Big Four Group.** This group consists of four Crown-granted claims, situated on Little Sheep creek. The work done during the past year consists of 300 feet of tunnel and shaft, 5 men being employed.

**Gertrude.** This property was worked for a short time during the early part of the year. No returns of amount of work done.

**Bonanza Group.** Consisting of the *Bonanza No. 3*, *Our Hope*, *Bonanza No. 3 Fraction*, and *Our Hope Fraction* mineral claims. This is a very promising group, situate on Iron creek, in the Norway Mountain camp. The property is being worked by the Rossland Bonanza Gold Mining and Milling Company, Limited, non-personal liability, and during the latter part of the year 75 feet of tunnel work have been done on the *Bonanza No. 3*.

**Cascade Group.** This is also a very promising group of claims, comprising the *Cascade*, *California* and *Royal Kangaroo*, and is situated on Grenville mountain, to the south-west of Norway mountain. During the past year 130 feet of tunnel work were done. The property is being operated by the Cascade Gold Mining and Milling Company, Limited, of Rossland.

OFFICE STATISTICS—TRAIL CREEK DIVISION.

Mineral claims recorded .....	228
Placer " " .....	1
Certificates of work .....	520
Money paid in lieu of work .....	4
Certificates of improvements .....	58
Bills of sale, transfers, etc .....	127
Abandonments .....	4
Water grants .....	7
Miners' certificates, personal .....	1,337
"    company .....	60
"    special .....	39

---

---

## BOUNDARY CREEK DISTRICT.

—o—

### SMELTING WORKS.

The Boundary District has this past year (1900) been amply supplied with smelting facilities sufficient to handle the present output, while the plans of the existing plants are so arranged as to be capable of an extension which will permit of the handling of any increase likely to take place within a year.

#### GRANBY SMELTER.

The Granby Smelter was the first in this District to be completed, and was "blown in" during the fall of 1900. While legally owned by a separate company, this smelter is controlled by the syndicate holding the predominant interests in the *Old Ironsides*, *Knob Hill*, *City of Paris* and other properties in the Boundary District, and was built to treat the ores from these properties, although, naturally, arrangements were made to take in such custom ore as might be obtainable.

The plant, which was built and is now operated under the superintendence of Mr. A. B. Hodges, has been described and illustrated so frequently in the local press that only a brief outline of it will be here given.

The smelter site is on an easily sloping hillside on the south side of the north fork of the Kettle river, about half a mile above the town of Grank Forks.

The ore from the mines at Phoenix, already referred to, is brought in dump bottom ore cars over the Columbia and Western Railway main line to a point a few miles above the station at Columbia, from whence a branch line, about  $2\frac{1}{2}$  miles in length, runs directly to the smelter site, arrangements having been made for a high level track to bring the ore into the bins. A track on the lower level serves for merchandise and for fluxes, customs ores, &c., while still a lower track is placed to take away the matte produced by the cupolas.

#### ORE BINS.

The ore bins, into which the ore from the mines is dumped from the railway cars, are 116 feet long by about 17 feet wide, and are capable of holding 1,000 tons of ore. Over these bins the railway cars are run, the approach being made on a long wooden trestle. From the bins the ore is dropped through chutes into tram cars, which run on tracks across a passage way to the

#### SAMPLING BUILDING (70 BY 64 FEET),

where it is dumped into a No. 5 Gates crusher, so set that the top comes level with the ground floor.

From the crusher the ore is elevated to the top of the building by a steel bucket elevator, and is discharged through chutes into the furnace ore bins, which form three sides of the building, the sample being at the same time separated out by a Snyder automatic sampler, whence it passes first to a 7 by 10 Blake crusher, thence through another Snyder sampler, being further reduced in size by rolls and other samplers, and is finally quartered on steel plates and ground in a sample grinder.



Besides these furnace ore bins just referred to, a second block of bins has been built, into which the ore can be diverted, and which will be used for a reserve stock of ore. These are estimated as capable of holding another 1,000 tons of crushed ore.

The smelter building proper, as at present erected, is 104 feet long by 70 feet wide, and contains 2 stacks, although room has been left for extending the building so as to allow for the placing of 6 furnaces in all. Behind the furnace building there is now built, in anticipation of such enlargement, a 10 by 10 feet brick flue dust-chamber, capable of accommodating such furnaces and which connects with the base of a brick chimney, 11 by 11 feet inside and 150 feet high.

The furnaces are double-decked, steel water-jacketed cupolas, 160 by 44 inches at tuyeres. The height of the charging level above the floor is 14 feet, the jackets coming almost to the charging level. The lower tier of jackets is 7 feet 6 inches high, the upper tier is 2 feet 6 inches, and there are nine 5-inch tuyeres on a side. The blast is obtained from a general blastpipe extending along the rear of the furnace shed.

The ore from the furnace ore bins is dropped into ore buggies and run into the furnace shed over a scale. Here it is dropped into a specially designed charging apparatus, below the floor level, together with the requisite coke and fluxes, which can be arranged in this charger as they are required to be distributed in the furnace.

The charger is mounted on wheels, resting on a track which rises to the floor level and runs over and through each furnace, and is propelled by a wire cable actuated by power and controlled from the furnace-charging floor. The ore once dumped into this charger is not again handled, but the charger is run over the furnace and the side discharge loosened so that the charge can be dropped just where required in the furnace, a very strong point in favour of this form of automatic charger.

The ore seems to be practically self-fluxing, at least it was so at the time the plant was visited, while the small amount of sulphur present made it possible to dispense with any preliminary roasting, a 50% copper matte being produced at the first smelting, with a sufficiently clean slag. The furnaces were running beautifully, smelting an average of 300 tons of ore each in 24 hours, and making a concentration of from 20 to 25 into one.

The matte produced is crushed, sampled and elevated into bins, from which it is run in wheel-barrows into box-cars and shipped east for refining.

#### POWER.

The power required for the works and for pumping up water is obtained from an electric plant, situated just below the works and operated by water obtained from the north fork of the Kettle river, which has been dammed for the purpose at a point about a mile higher up.

The water is brought down in a 9 by 11-foot wooden flume a mile long, and gives a pressure head of 45 feet, capable of generating 1,200 horse-power.

The plant is also provided with machine, blacksmith and carpenter's shops, equipped with the best of labour-saving appliances.

There is also a well-equipped laboratory and assay office, a warehouse, a general office, with quarters for the staff above, and a mess-house.

The Superintendent's house is also situated on the ground and is an unusually fine building.

The whole plant is exceedingly well-equipped and most conveniently arranged, constituting as complete a smelting plant of its sort as can be found on this continent.

## THE B. C. COPPER COMPANY'S SMELTER.

The B. C. Copper Company, Limited, a company organised in New York, in 1898, and owning the *Mother Lode* and other properties in Deadwood camp, found it necessary to build a smelter for the treatment of the ores from its properties, and selected a hillside to the south-west of Greenwood as the most suitable site for its plant.

The Company has for General Manager in British Columbia, Mr. Frederic Keffer, whose office is in Anaconda, an adjoining townsite to Greenwood, while the Manager of the Smelting Department is Mr. Paul Johnson.

The smelter was almost completed at the close of 1900, and started operations in the first part of the present year (1901).

The following is a description of the plant:—

The British Columbia Copper Co.'s smelting works were located and designed in the year 1899-1900 by Paul Johnson, E. M., with a view, principally, of treating the Company's own ores from the *Mother Lode* mine, but also with a view to doing custom smelting of ores from the Boundary District, when the properties in that locality should be enough developed to begin shipping. The works are located on an elevated flat between Greenwood and Anaconda, near where Copper creek joins Boundary creek. The smelter site is thus only  $2\frac{1}{2}$  miles in a straight line from the *Mother Lode* mine, and at about 850 feet lower elevation. An aerial tramway can thus be installed, if the railway should charge too high rates for bringing the ore down from the mine to the smelter, while the location is also a good smelting centre for custom ores, as the mining camps surrounding Greenwood are at a distance of not over 12 miles, and all have a down-hill grade towards the smelting works.

The Columbia and Western Railway, passing up to Deadwood camp and the *Mother Lode* mine, goes right through the smelter grounds. It was thus an easy matter to construct three different track-levels for bringing in ore, coke and coal, and for shipping out matte or copper. The average elevation of the smelter site is about 100 feet above the Boundary creek valley, so that ample slag dump is thus provided for many years to come. The smelter site comprises about 70 acres of land.

Water for the works is brought from a dam on Copper creek by means of a steel water-pipe line, 8 inches in diameter and 2,600 feet long, placed in the centre of a wooden box flume on trestle work. The box is 2 feet in the clear inside and packed with sawdust, to prevent the freezing of the water in the pipe in winter, when the temperature sometimes comes down to 20° F. below zero. The water is delivered at the smelter at a pressure head of 115 feet, and is sufficient for all purposes, including slag granulation.

This main pipe-line is also connected, by means of a 6-inch pipe-line of 500 feet in length, with a steam pump, placed lower down in order to take the water from Boundary creek. This pump has a capacity of 1,200,000 gallons in 24 hours, and has its own boilers; it is a precaution taken lest any accident should happen to the upper line. The smelter has its own railroad scales.

The smelter has been planned with a view to permit of its enlargement in the future to treat up to 1,800 tons of ore daily, and the addition of Bessemer works when the production of a sufficient amount of matte justifies their erection. All operations will be done as cheaply as possible by strictly utilising the gravity principle, instead of shovelling and lifting materials.

The ores taken to the smelter, are brought—if they are to be sampled—in bottom dumping cars to the tracks (1 and 2) of the upper ore bins, at 156 feet elevation. These ore

bins are in two rows, side by side, with three bins, each 50 feet long. The bins are 20 to 22 feet high, the track being on a 1 per cent. grade, so as to "brake back" the cars when unloaded, if so desired. Each bin holds 500 tons of ore, the total capacity being 3,000 tons.

The ores from these bins are drawn into ore buggies and run on rails down to the upper floor of the sample mill at the 134-foot elevation. The car passes first over the scales inside the door, to be weighed if so required; after this it is brought to the hopper of a No. 5 Gates crusher. This crushes the ore to a size of 3 to 5 inches. The crushed ore falls through the spout to a No. 1 Johnson automatic sampler. This sampler cuts out one-fifth part of the ore for a sample, and rejects four-fifths to the sample mill ore bin below. The sample is then spouted to a No. 2 Gates crusher, which crushes the ore to a fineness of  $1\frac{1}{2}$  inches, and chutes it to a No. 2 sampler. This, in the same way as before, cuts out one-fifth for a sample and rejects four-fifths to the lower part of the ore-receiving bin. The sample is then spouted down to the boot of a bucket elevator and lifted from the lower floor of the sample mill up to the top floor, a distance of 50 feet, whence it is spouted down to a No. 0 Gates crusher, the top of which is level with the upper floor of the sample mill. This crushes the ore to pieces of  $1\frac{1}{2}$ -inch size and chutes it down to a No. 3 sampler, which cuts out one-fifth part of the sample and rejects the four-fifths part into the ore-receiving bin; the sample is then spouted to a pair of 10 by 16-inch Reliance rolls, which crush it to a fineness of one-eighth of an inch; it is then again spouted to a 4th sampler, which rejects the four-fifths part into the ore bins and conducts the one-fifth part for final sample through a spout to the sample box. From the box the sample is taken to the sampling room, ground in the sample grinder, then quartered down and further ground to pass a 100-mesh sieve, before being bagged up.

The upper floor of the sample mill is 36 feet above the lower floor, and as the first and second crushers are placed high up, they allow the rejected product to fall by gravity into the ore bin below. It will thus be seen that only  $\frac{1}{25}$  part of the original ore, and that crushed to a fineness of  $1\frac{1}{2}$  inches, has to be elevated.

The sample mill has a present capacity of crushing and sampling of 500 tons in 12 hours, or 1,000 tons by working both shifts. Everything is done automatically, and does not require other work than dumping the ores into the big crusher at the top, the sample being automatically brought to the sample box and the rejected ores to the sample mill storage bins.

The dimensions of the sample mill are 78 feet long, 65 feet wide, and 58 feet high, and it is laid out in such a way that the present capacity can be doubled or trebled by extending the main shaft and putting in other sets of crushers, samplers, belt elevators and ore bins.

The power is supplied by a 16 by 18-inch Erie City engine, rated at 100 horse-power, at 100 lbs. steam pressure. The steam for this engine is taken from the main boilers by a 5-inch steam pipe line 400 feet long, covered and boxed-in.

From the sample mill ore-bins the ores are drawn into ore-buggies and, on 1 per cent. inclined tracks, are run out over the smelter mixture bins. These at present number 12, each of 500 tons capacity, arranged in 4 rows of 3 bins each, the whole having a length of 152 feet and a width of 52 feet, all being under one roof. These bins are 20 feet high, and under them are tracks and ore-bin gates to draw out the ores into ore-buggies running to the furnace feed floor. Ores of a similar nature are now put into the same smelting mixtures.

To the south side of this 6,000-ton complex bin a levelled space has been made, in order to add three more such complex bins, if they should be needed, thus allowing a storage capacity of 24,000 tons of ore in gravity bins. Across the top of these lower ore bins go the two present lower ore railroad tracks (Nos. 3 and 4), while there is room left for a third

between these for switching, when more smelting capacity is required than 1,000 tons of ore daily. This arrangement allows the ore to be dumped, without sampling, right into these bins from the railroad cars, which simplifies the handling of the ore from the Company's own mine. When the different character of ores from the various stopes is known, the ore being crushed and sorted at the mine can be dumped into the ore bins right in front of the furnaces, and thus sampling and transfer costs from the upper ore bins will be saved.

On the same levelled flat, but north of the ore-mixture bins, is the room and floor space allotted to coke and coal storage, being large enough to allow room for the storage of several thousand tons, if such an amount should be needed at times.

The ores are drawn from the smelting-mixture bins into cars and brought over the charging scales, there weighed and adjusted, and then brought on to the furnace floor in front of the feed doors, from whence they are charged with coke and slags into the furnace.

Slag and matte run together continuously out of the furnace through a trapped spout into a forehearth, where they are separated, the matte running continuously out of one spout and the slag through another into a second large settling pot, from which it runs down into the granulating flume and is carried away.

The lower part of the blast-furnace house is constructed entirely of stone work and steel, and the feed floor is of one-inch cast iron plates. This will allow later on the putting in of the large 12-foot diameter settlers without danger of fire from radiation when the plant for converting the copper matte is installed, and makes the smelter fire-proof against frequent matte explosions, which are hard to prevent now and then when liquid matte is dumped or spilled over moist places.

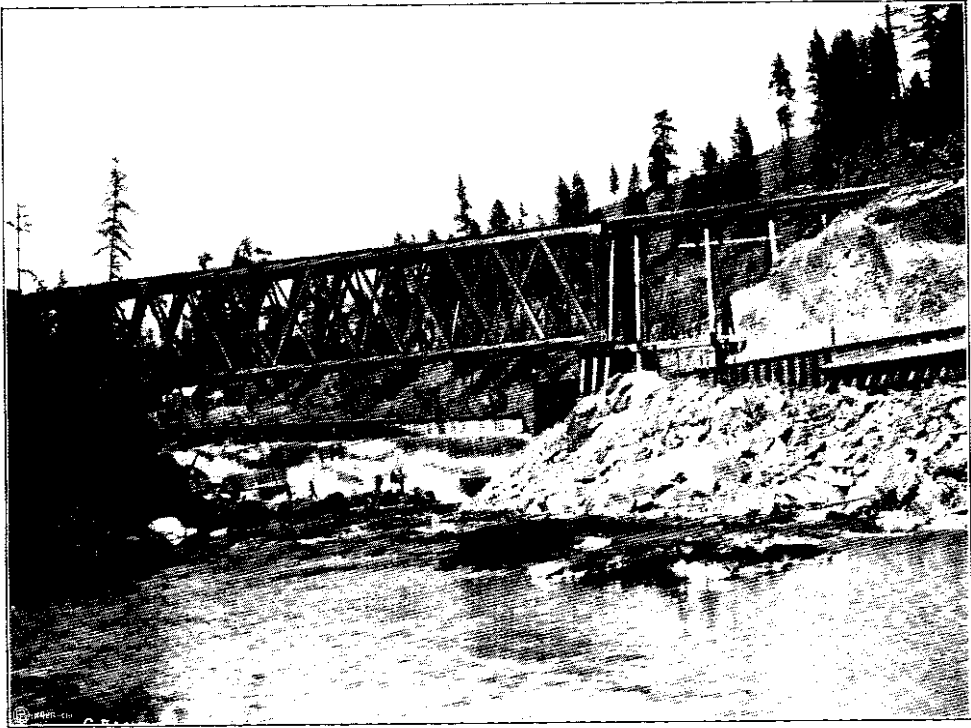
The furnace house is 58 feet wide, 45 feet long, 15½ feet to the feed floor, and 42 feet to the peak of the roof. At the middle of the north part of the blast-furnace building is a double platform elevator, having a lift capacity of 5,000 pounds, to take up cars of slag or matte to the feed floor.

The furnaces are water-jacketted stack furnaces, the flue going from 12 feet above the feed floor, up some 15 feet, and then down into the big main brick flue. The present furnace is 42 inches wide by 150 inches long, inside dimensions, at tuyeres, of which latter there are 10 at each side of 3½ inches diameter. The furnace and all the machinery for the smelting works were furnished by the Edwd. P. Allis Co. of Milwaukee.

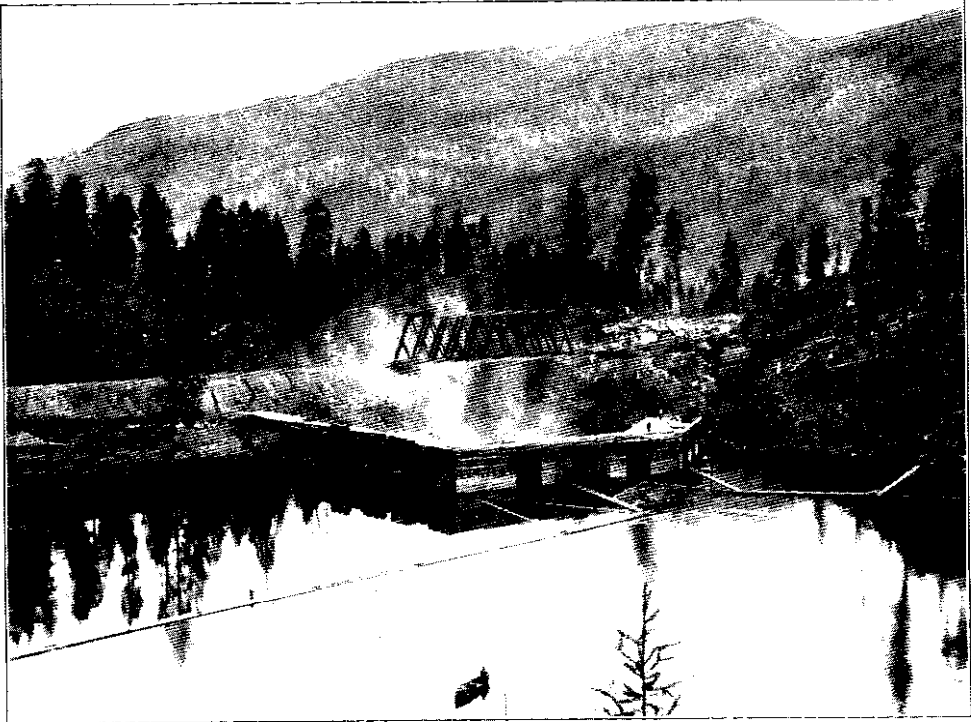
The main brick flue is 12 feet wide by 14 feet high, and has a length of 620 feet. The last third part of it goes up the slope of a hill, and at the top there is a temporary steel stack 6½ feet in diameter by 90 feet in height, giving an effective draft height of 190 feet above the furnace floor. The flue is for the present extended beyond the first furnace to take the fumes from the two next ones, but is large enough in cross section and length for 6 furnaces, and to take the fumes from the Bessemer works when built.

At the end of the flue, on the solid rock, a space 35 feet square is levelled, on which can be built a large brick stack as soon as the smelter needs to be increased to over 600 tons daily capacity and the Bessemer works are erected.

The engine and blower-house is 60 feet long by 45 feet wide, and can be extended towards the blast-furnace house to hold 6 large blowers, there being at present room for two. The high pressure cylinder of a compound condensing Reynolds-Corliss engine, 16 inches by 36 inches, rated at 150 h. p., with 100 lbs. steam pressure, is now installed. This will give power for blast for two large furnaces, and later on the other half can be put in, the foundations for the same having been finished.



DAM AND HEAD OF FLUME - GRANBY SMELTER.



DAM - CASCADE WATER POWER, GRAND FORKS M. D.

The boiler room, 45 feet wide by 40 feet long, is an extension of the engine room, and is separated from it by a partition wall. At present three 66-inch by 16-foot horizontal tubular boilers, each of 100 h. p., have been put in. The boilers are manufactured to stand a pressure of 130 pounds of steam.

By extending the boiler house to the north there is room for the addition of as many as 12 similar boilers should they be required.

The blacksmith shop is 30 feet by 21 feet, the store house 40 feet by 24 feet wide, and the carpenter shop 46 feet by 26 feet wide. The assay office, laboratory and Superintendent's office is a two-storey building, 78 feet long by 40 feet wide, containing rooms up-stairs for the chemist and assayer.

The office of the smelter is a one-storey building, 30 feet by 30 feet square, and is situated in the town of Anaconda. The smelter manager's residence is near the assay office, and was built and furnished by the Company.

## GRAND FORKS MINING DIVISION.

### REPORT OF S. R. ALMOND, MINING RECORDER.

I have the honour to submit my report of mining operations in the Grand Forks Mining Division during the year 1900.

Marked progress has been made during the past year, not so much as regards the opening up of new properties as in the shipments made by the older mines to the smelters, and in the development of the various claims throughout the Division.

The Granby smelter, at Grand Forks, was "blown in" during April of this year (1900), and has been steadily running ever since. The first shipment of matte made by the smelter was sent east to the refineries early in September, and consisted of some 20 tons, assaying, it is said, about 50 % copper, and containing gold and silver values; since that time shipments have been regularly made.

Owing to the self-fluxing character of the ores of this Division, together with the utilization of the water power of the north fork of Kettle River, the smelter has been enabled to work even beyond its estimated capacity, and, at the same time, the mining of very low grade ore is rendered profitable.

### CENTRAL CAMP.

The *City of Paris Group*, comprising three Crown-granted mineral claims, is the most prominent property in this camp and has shipped a considerable amount of ore, which carries values in copper and gold, to the Granby Smelter. On the same property occurs a lead carrying galena, ore from which has been shipped to the Trail Smelter. This lead was cut while running a tunnel to tap the main ore body.

About 600 feet of drifting and sinking has been done on this group during the year.

Adjacent to the *City of Paris* are the *Lexington Group*, the *Jack of Spades*, *City of London*, *Alena*, *Excelsior* and other claims.

## WELLINGTON CAMP.

There are several well-developed properties in this camp, of which the *Snowshoe*, *Winnipeg*, *Golden Crown* and *Athelstan* are now on the shipping list. The principal development work done during the year is summarized briefly:—

*Golden Crown*: 500 feet of drifting and sinking.

*Winnipeg*: 300 feet of sinking and drifting; a 35 horse-power boiler has been installed.

*Snowshoe*: 500 feet of sinking and tunnelling.

*Athelstan*: shaft, 150 feet; drifts, 136 feet; a small plant has been installed.

*Golden Drop*: tunnel, 200 feet.

*Hartford*: 200 feet of sinking and drifting.

*Evening Star*: sinking, 50 feet.

*Hard Cash*: sinking, 100 feet.

## FOURTH OF JULY CREEK.

At the head of this creek several promising claims are situated.

On the *Betts* a 75-foot shaft has been sunk, the ore carrying copper values; the lead appears to be of some extent.

On the *Iron Chief*, owned by Messrs. Simpson and Nelson, there occurs a vein of pure white quartz in which are occasional deposits of free gold. A well-timbered shaft, 30 or 40 feet in depth, has been sunk.

## SUMMIT CAMP.

This camp lies on the divide between the north fork of Kettle river and the headwaters of Boundary creek, across which the Columbia and Western Railway passes. Development work is being steadily prosecuted on a number of claims.

The *B. C. Group* of eleven claims, owned by the B. C. Chartered Co.,  
**B. C. Mine.** is one of the principal shipping mines in the "Boundary" district. Development work during the year comprises some 600 feet of drifting and sinking.

On the *R. Bell* mineral claim some 200 feet of sinking and drifting have been done.

On the *Blue Bell*, *Bonner* and *Tiger*, together, a total of about 200 feet of sinking have been done.

Other properties on which development has been done are the *Oro Denero*, *Rathmullen Group*, the *Homestake*, *Maple Leaf*, *Emma* and *Remington* claims; the details of the work performed I have not been able to obtain.

## BROWN'S CAMP.

The work done in this camp is briefly summarized; there are two properties shipping, the *Humming Bird* and *Golden Eagle*.

*Golden Eagle*: 200 feet of drifting and sinking. A plant has been installed during the year.

*Humming Bird*: 200 feet of tunnelling.

*Strawberry*: 200 feet of sinking and drifting.

*Pathfinder*: 325 feet of sinking and drifting. A 7-drill compressor, a 50 horse-power boiler and a 7 by 10 hoist have been installed.

*Bertha*: 275 feet of tunnelling and sinking.

*Florence*: sinking, 30 feet.  
*Chicago*: sinking, 60 feet.  
*Earthquake*: tunnelling and sinking, 200 feet.  
*French and English Group*: tunnel of 100 feet.  
*Seattle*: drifting, 50 feet.  
*Volcanic*: tunnelling, 150 feet.

#### SEATTLE CAMP.

Development work has not been very vigorously prosecuted in Seattle camp this year; such as has been done is, however, of an encouraging nature.

#### KNIGHT'S CAMP.

On the *Bonanza Group* development work has been steadily progressing for some time, 100 feet of sinking and drifting having been done and machinery installed.

There are other properties in this section, which are, however, only in the primary stage of development.

#### FRANKLIN CAMP.

This camp has been little known heretofore, owing to its inaccessible situation on the upper waters of the north fork of Kettle river. A Government trail was, however, cut last season and some exceptionally good samples of ore giving high assay values in gold and copper have been brought from this section.

Little work of any consequence has been done except upon a few claims, notably the *Banner* on which a tunnel of 200 feet has been driven to cut the ledge, together with a quantity of cross-cutting.

NOTE BY PROVINCIAL MINERALOGIST.—The following information regarding Franklin camp is contributed by Mr. John Coryell, P. L. S:—

Franklin camp is situated at the headwaters of the east fork of the north fork of Kettle river and 45 miles north-easterly from Grand Forks, the nearest shipping point on the Columbia and Western Railway. It is reached by a good Government trail, built this summer up the valley of the Kettle river, which affords an excellent route for a railway, the building of which would give the camp access to the smelting facilities of the "Boundary" district.

The major portion of this section is well timbered with fir, cedar and tamarack, suitable for mining purposes, as well as with spruce, cedar and pine along the Kettle river.

The camp is traversed by Blue Joint, Gloucester and Franklin creeks and one unnamed creek, as well as by the east fork of Kettle river, each of which, with the exception of Blue Joint creek, affords ample water-power for milling and concentrating plants.

Sufficient power can be obtained near the junction of the east and west forks of the north fork of Kettle river, about 16 miles from the camp, for an electric tramway to Grand Forks, for which purpose a charter is now being obtained.

The formation is similar to that of the Similkameen district, the lodes occurring in porphyry dykes, diorite, greenstone and granite. The following are some of the claims examined: *Homestroke*, *Deadwood*, *Banner*, *Silver Bell*, *Laura McRae*, *Mountain Line*, *Gloucester*, *Sollard*, *Big Four*, *Apex*, etc., etc.

The *Homestroke* claim (surveyed, area 40 acres) is traversed by 3 veins of white quartz on which some development has been done. Assays obtained are as follows: No. 1 vein, \$5 gold, 1 oz. silver per ton; No. 2 vein, \$19 gold, 26½ oz. silver; No. 3 vein, \$36 gold, 16 oz. silver.



The *Deadwood* (unsurveyed, area approximately 50 acres) is an extension of the *Homestake* and is traversed by the same leads, on which assessments only have been done.

The *Banner* is traversed by a vein of white quartz 10 feet in width. Two small shafts have been sunk on the lead. The ore is said to assay \$30 in gold, 21 oz. silver, and to carry some copper and zinc. A tunnel 180 feet long has been run to cross-cut the lead, and in the course of this 32 feet of white quartz have been encountered, carrying \$8 per ton in all values, but it is doubtful whether this ore body is identical with the vein first mentioned.

The *Silver Bell*, a full-sized mineral claim, is located on the west of the *Homestake*, with the No. 3 vein of that claim developed by an open cut. The assay values obtained are 40 oz. in silver and from \$5 to \$30 in gold.

The *Laura McRae* is located to the west of the *Deadwood*. An open cut shows an iron capping similar to No. 1 ledge of the *Homestake*.

On the *Gloucester* the vein is developed by a shaft 40 feet deep on a ledge of chalcopryrite and iron sulphide ore, assaying 18% copper and \$5 gold, and widening from 18 inches at the surface to 5 feet at the foot of the shaft.

The *Mountain Lion* is on an extension of the *Gloucester* vein. The ledge carries iron pyrites and some copper pyrites; values unknown.

The *Pollard*, a full-sized mineral claim, is located on a porphyry and diorite contact, a 10-foot open cut having exposed 8 feet of chalcopryrite and iron sulphides in a diorite gangue, while a second cut shows 14 feet of the same ore. Assay values in gold and copper of from \$50 to \$70 per ton are reported.

The *McKinley* is located on a vein carrying chalcopryrite and iron sulphides in a quartzose gangue and occurring between walls of porphyry and limestone. An open cut has been run and assay values of \$30 to \$50 per ton, on picked samples, are reported.

#### HARDY MOUNTAIN CAMP.

On the *Yankee Girl Group*, the only property which shipped from this camp during the year, 600 feet of tunnelling were driven.

On both the *Riverside* and the *Montreal*, two claims in the vicinity of Grand Forks, about 45 feet of sinking were performed.

Among other properties on which development has been done, the particulars of which I could not obtain, are the *Monte Carlo*, *Monte Christo*, *American Eagle*, *Little Babe* and *Black Bear*.

#### CHRISTINA LAKE SECTION.

There are many promising properties in the Christina lake section of this Mining Division, on which development is being carried on and quite a number of which have been Crown-granted during the year.

On the *Daisy Group*, comprising the *Daisy*, *Daisy Fraction*, *Lizzie L.*, *Lizzie L. Fraction* and *Martha May*, and owned by the B. C. (Rossland and Spokane) Syndicate, Limited, work is being extensively carried on, as well as on the *Cannonball Group*, consisting of the *Cannonball*, *Deadwood* and *Alma*, and the *Mother Lode Group*, comprising the *Daly*, *Ajax*, etc.

Mention may also be made of the *Ennismore* claim, the *Burnt Basin Group*, the *Edison Group*, the *Victoria* claim, on which latter a tunnel 112 feet in length has been driven, as well as of the *Champion*, *Helena No. 2*, *Minnieball Fraction*, *Granite Butte* and *Cracker Jack*, most of which have passed into the hands of Spokane parties, and of the *Granville*, *Mystery* and *John Bull Groups* and the *Dykehead* claim.

NOTE BY THE PROVINCIAL MINERALOGIST.—The following additional information regarding the Grand Forks Mining Division was obtained from Mr. E. Jacobs :—

The *Snowshoe Group*, situated near Phoenix, is owned by the British Snowshoe Group. Columbia (Rossland and Slocan) Syndicate, Limited, of London, England. The *Snowshoe* claim is being developed by both shaft and tunnel workings, and an incline shaft has been sunk 200 feet, and cross-cuts and drifts have been run at both the 100 and 200-foot levels. These developments have opened up a lot of ore that may profitably be sent to the smelter. From the 200-foot level a diamond-drill hole has been put down 500 feet.

The cross-cut tunnel is in about 500 feet. It has encountered one body of ore, and is now being driven ahead in the hope of another payshoot being met with. A winze in the tunnel has been sunk 100 feet, and a cross-cut in the bottom of it has shown that the ore continues at that depth and is of good grade. This ore body, as developed by the tunnel and winze, has been shown to have an average dip of about 45 degrees northerly—that is, further into the *Snowshoe* property.

A raise from the tunnel, at the westerly extremity of this ore body and now up about 80 feet, is also in ore of good grade. The main object in view in making this raise is to improve the ventilation of these workings, but it is at the same time good development work, since it is proving the ore to be continuous. The *Snowshoe* ore is generally similar to that on the neighbouring *Old Ironsides* and *Knob Hill Groups*.

The *Snowshoe Group* comprises the *Snowshoe*, *Pheasant*, *Fairplay Fraction*, and *Alma Fraction* claims. A prospect shaft sunk 35 feet on the *Fairplay Fraction* shows, at the present time, a large deposit of iron pyrites carrying values in gold and silver. Altogether, some 4,000 feet of work, in shafts, drifts, cross-cuts, etc., have been done on the group.

A spur has been put in from the Phoenix branch of the Columbia and Western Railway for loading ore, but, although there is a large quantity of ore blocked out ready for extraction, the mine is not yet equipped for maintaining regular shipments. From time to time, one or two carloads have been sent to the smelter for test purposes, and in this way 14 carloads in all have been shipped.

The plant on the property includes a 70 horse-power horizontal return tubular boiler, a 40 horse-power locomotive boiler, 2 air compressors, a 28 by 10 air receiver, half a dozen machine drills, 3 hoisting engines, and a No. 5 Cameron sinking pump.

#### NORTH FORK OF KETTLE RIVER.

The shipment of a little ore during the past six months from two or three mining properties situate on the north fork of Kettle river has had the effect of once more directing attention to several groups of claims distant 10 to 15 miles from Grand Forks. The best known of these are the *Earthquake*, *Golden Eagle*, *Volcanic*, *Pathfinder*, and *Little Bertha*, on the eastern side of the river, and the *Seattle*, *Humming Bird*, and *Strawberry* on the western side. Quite recently a short switch was put in on the Columbia and Western Railway, its location being on the Grand Forks side of Eholt and between the latter place and Fisherman station. As there is only room for three or four cars at a time on the switch, it is evident that it is not expected that immediate shipments will be large. However, it is the intention to send ore to one or other of the smelters from the *Humming Bird*, which has already made several small shipments to the Granby smelter at Grand Forks, and, after a bridge shall have been built across the river, from the *Golden Eagle*, *Pathfinder*, and *Little Bertha*. Of the above claims, the *Humming Bird* and *Pathfinder* appear likely to make the best showing as regards early output. Of the former, which is reported to have shipped 600 or 700 tons of

ore, only this passing mention will at present be made, no reliable particulars of it being just now available to the writer.

The *Pathfinder* lately resumed work. There are 2 double-compartment shafts on this property, respectively 135 feet and 125 feet in depth, and about 700 feet of cross-cutting and drifting has been done. It is stated that there are 3 main ore bodies, of a somewhat irregular character, partially developed by these workings, and that these ore bodies are large, low-grade masses of pyrrhotite, carrying gold, silver, and copper, and running about \$15 to the ton. The formation is a porphyry and a diabasic rock, the ore occurring seemingly at or near a contact, in a quartzose gangue. The general indications were some time since regarded by the Provincial Mineralogist, some of whose comments are given above, as favourable to the finding of considerable bodies of ore. The manager of the Company, when recently in Greenwood, intimated his intention to shortly ship ore to the Standard Company's pyritic smelter near Boundary Falls. The power plant on the property consists of a 50 horse-power horizontal tubular boiler, a 16 by 24, straight-line, Rand air compressor, a 42 by 10 air receiver, 2 Little Giant drills, a 6 by 8 hoisting engine, a No. 5 Cameron sinking pump, and a 3 by 2 by 3 boiler feed pump. The mine buildings comprise good offices, manager's house, bunk and boarding-houses, stables, etc.

Up the east fork of the north fork of Kettle river there is a very Franklin Camp, promising mineral country known as Franklin camp, which for size of ore bodies, so far as shown by the very limited amount of development work done and specimen assay values, compares very favourably with what was known of the older camps at a similarly early stage. It is not to be expected, though, that extensive mining operations will be undertaken in this outlying district before it is given waggon road connection. A trail was cut out last year to connect with the waggon road from Grand Forks, but the construction of a road is an urgent necessity for the getting in of mine supplies and machinery, otherwise the mineral resources of Franklin camp must remain undeveloped. Numerous mineral claims have been located, and of these the best known at the present time are the *Banner*, *McKinley*, *Glouster*, and *Polard*. No doubt strong representations will be made to the Government so as, if possible, to secure this session an appropriation for construction of this much-needed road.

OFFICE STATISTICS—GRAND FORKS MINING DIVISION.

Free miners' certificates . . . . .	786	\$ 3,634 30
Companies' " . . . . .	18	1,475 00
Special " . . . . .	10	160 00
Records of location . . . . .	570	1,425 00
Certificates of work . . . . .	974	3,235 00
Conveyances . . . . .	340	890 80
Certificates of improvement . . . . .	65	162 50
Filings . . . . .	227	53 75
Re-locations . . . . .	1	2 50
Water rights . . . . .	5	30 00
Abandonments . . . . .	8	81 25
		\$11,150 10
Miscellaneous . . . . .		207 50
		<u>\$11,357 60</u>

## KETTLE RIVER MINING DIVISION.

## REPORT OF WM. G. McMYNN, MINING RECORDER.

I have the honour to submit my report of operations in the Kettle River Mining Division during the year 1900. For the information obtained I am largely indebted to Mr. E. Jacobs.

By far the greater part of the development work done in the Kettle River Mining Division during the past year was on a few properties in Deadwood and Greenwood camps. There was practically nothing, beyond the assessment work necessary to hold the mineral claims, done in Kimberley, Providence, Skylark, Smith's and Graham's camps. A little development was done in Long Lake and Central camps, and that part of Summit camp which is in this Mining Division.

## DEADWOOD CAMP.

On the *Mother Lode*, the property of the B. C. Copper Co., a comparatively large amount of work was done during the year, and the power plant was increased by the addition of a 35-drill cross compound condensing Corliss-valve Ingersoll-Sergeant air compressor, with all modern improvements; a 300 horse-power double cylinder Corliss-valve first motion hoisting engine, made by the Jenckes Machine Co.; two 100 horse-power and two 80 horse-power horizontal return tubular boilers; an ore sorting plant, including a 70 horse-power Nagle engine; a No. 5 Gates crusher to crush about 40 tons per hour; a 36-inch picking belt 111 feet long, with return conveyor 41 feet long; a 12-inch fine-ore conveyor, length 110 feet, and a waste conveyor 16 inches wide by 556 feet long, with all accessories; a 250-light Westinghouse dynamo, with a full complement of arc and incandescent lights and a 25 horse-power Armington & Sims engine to run the dynamo; two platform cages, with safety clutches and shield roof; machine drills, ore cars and numerous other requisites necessary to keep pace with the increased requirements of the mine. A larger gallows frame, 60 feet in height, was substituted for the one formerly in use, and new buildings for the housing of plant and the accommodation of the mine employees, numbering about 100, were erected.

The number of feet of work done in development during 1900 was 3,009, making a total of 5,169 feet to the end of that year. Ore shipping commenced in October, and by the end of the year 5,564 tons had been sent to the Company's smelter at Greenwood. The development work done in the mine has proved the existence at both the 200 and 300-foot levels of big bodies of copper-gold ore, much of which can be treated at a profit.

On the *Sunset* and *Crown Silver* claims, adjoining the *Mother Lode*, work was continued throughout the year. A find of ore at the 200-foot level of the former was reported, and a couple of car-loads were sent to the smelter, but latterly little or no information has been made public respecting this discovery. A shaft sunk near the boundary line between the *Crown Silver* and the *Mother Lode* is stated to have disclosed the presence, at a depth of 250 feet, of 25 feet or more of ore carrying pay values. The shaft was afterwards sunk to a greater depth and cross-cuts were run.

No material addition was made during the year to the power-plant, which consists of two 80 horse-power horizontal return tubular boilers, an 80 horse-power hoisting engine, half of a 20-drill duplex air compressor, air receiver, machine drills, pumps, etc. The *Sunset Group* is now owned by the Montreal and Boston Copper Co., Ltd.

Following the reconstruction of the company owning the *Morrison*, also in Deadwood camp, work was resumed below ground and continued until at present the number of feet of development done totals more than 2,000. A policy of avoiding publicity as to the work done and the results attained has been persistently followed in connection with this property, but it has been learned, upon authority believed to be reliable, that in a drift on one of the leads there is about 25 feet of solid ore, which, after a railway spur shall have been constructed to the mine, can be profitably shipped to the smelter. It is uncertain, however, when the necessary rail connection will be provided.

The mine is equipped with a 30 horse-power boiler, 4-drill air compressor, machine drills, pumps, etc., and its prospects are stated to be encouraging. The name of the company now owning the property is the Morrison Mines, Ltd.

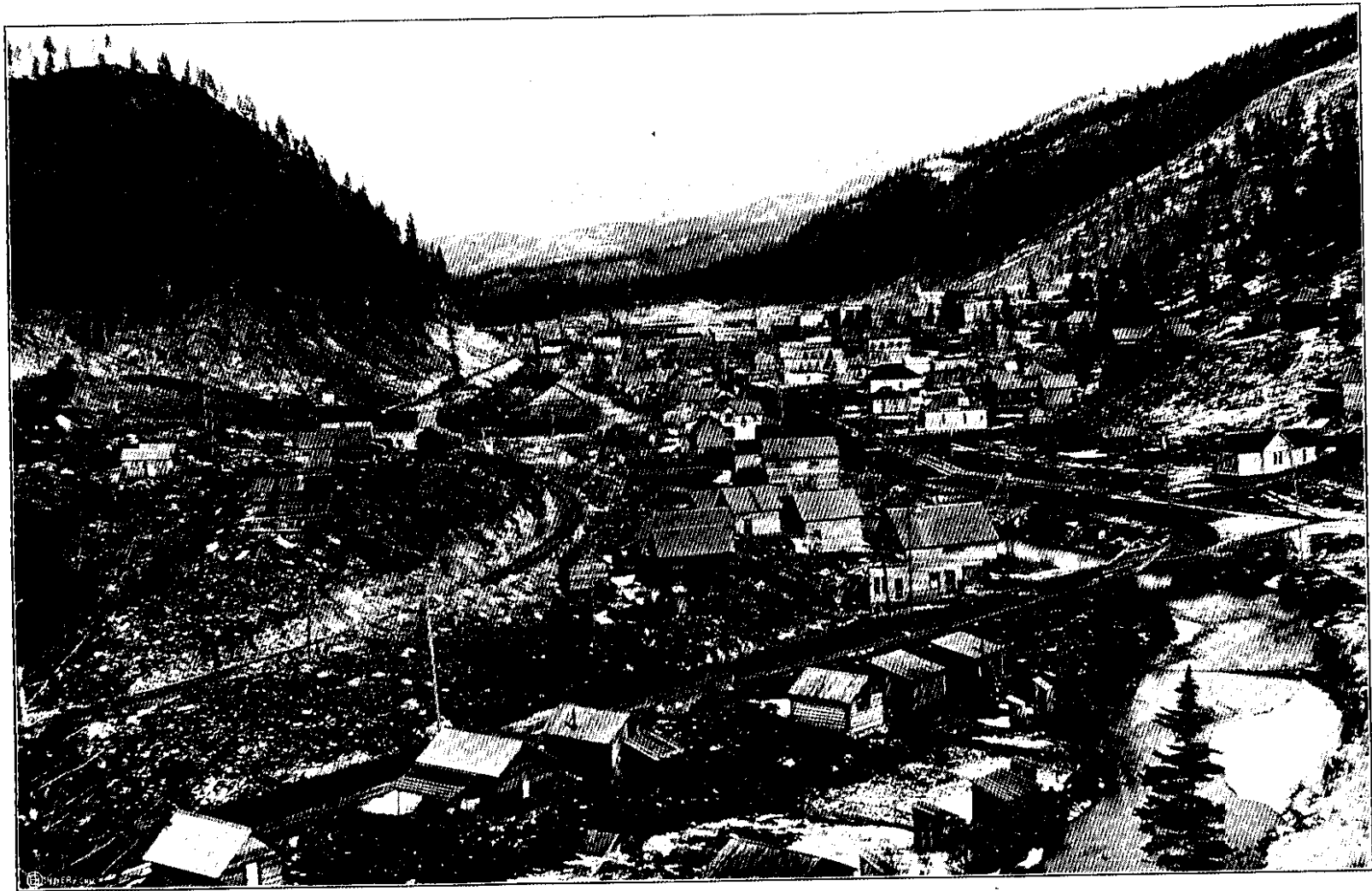
The *Marguerite* and an adjoining fractional claim were acquired last year by the Quebec Copper Co., Ltd., an offshoot of the Standard Copper Co., Ltd., of Quebec. A shaft has been sunk 110 feet on the *Marguerite*, and some 240 feet of cross-cutting have been done at the 100-foot level. The east cross-cut has been advanced 140 feet, about 80 feet being through ledge matter. Two chutes of pay ore were encountered, one 22 feet in width and the other 17 feet. Assay values obtained from the latter are stated to have ranged from \$2.40 to \$4.20 in gold, \$1.80 to \$4.50 in silver, and 4 to 10 per cent. of copper. The east cross-cut is being continued and a drift has been started in ore. The west cross-cut is in about 100 feet, but it has not yet reached the second lead outcropping on the surface. A 35 horse-power boiler, 18 horse-power hoisting engine, two machine drills and a sinking pump have been put in.

Work has been discontinued on the *Buckhorn*, results so far not having been satisfactory. There are on this claim an 80 horse-power boiler, half of a 10-drill duplex air compressor, three machine drills, a 20 horse-power hoisting engine, air receiver, pumps, etc. A shaft has been sunk 220 feet, with 270 feet of cross-cutting at the 200-level, and 240 feet at the 100-level. Two car-loads of ore were shipped, and returned a profit above freight and treatment charges, but the quantity met with was small.

The shaft on the *Greyhound* is down 212 feet. A cross-cut to the east at the 200-level has opened up some good ore and the workings are looking well. There is a small steam plant on the claim and another on that adjoining, the *Ab There*, on which the shaft has reached a depth of 150 feet and is now in solid white iron, of little value, however. A cross-cut tunnel has been driven about 500 feet on the *Great Hopes*, but without meeting with any ore worth mentioning. Some work was also done on two of the Boundary Creek Mining and Milling Co.'s claims, but an exhausted treasury compelled suspension of operations. There are numerous other claims in Deadwood camp, but little more than the annual assessment work has been done on them.

#### GREENWOOD CAMP.

Mining developments were more extensive and the output of ore much larger in Greenwood camp last year than in any other part of the Division. The biggest showing was made on the group of mines—*Old Ironsides*, *Knob Hill*, *Victoria* and *Greg Eagle*—owned by the several companies controlled by what is known as the Miner-Graves Syndicate. The work done prior to 1900 was as follows:—



TOWN OF GREENWOOD, KETTLE RIVER M. D.—LOOKING NORTH.

	Sinking and raising.	Cross-cutting and drifting.	Total.
Old Ironsides .....	558 feet.	1,853 feet.	2,411 feet.
Victoria .....	29 "	1,445 "	1,474 "
Knob Hill .....	277 "	2,006 "	2,283 "
	<u>864 feet.</u>	<u>5,304 feet.</u>	<u>6,168 feet.</u>

That done during 1900 was:—

Old Ironsides .....	345 "	703 "	1,048 "
Victoria .....	63 "	981 "	1,044 "
Knob Hill .....	310 "	1,190 "	1,500 "
Grey Eagle .....	...	477 "	477 "
	<u>718 feet.</u>	<u>3,351 feet.</u>	<u>4,069 feet.</u>

The total development work done to January 1st, 1901, was:—

Old Ironsides .....	3,459 feet.
Victoria .....	2,518 "
Knob Hill .....	3,783 "
Grey Eagle .....	477 "
	<u>10,237 feet.</u>

Also with a diamond drill about 2,700 feet.

The tonnage of ore shipped from this group, which commenced shipping in July, 1900, was:—

July .....	2,791 tons.
August .....	3,507 "
September .....	9,197 "
October .....	12,502 "
November .....	17,025 "
December .....	19,513 "
Total .....	<u>64,535 tons.</u>

During the year additions were made to the plant and machinery of these mines, which now have between them four 80 h. p. and one 60 h. p. horizontal return tubular boilers; two 10-drill cross compound condensing Rand air compressors; five air receivers; thirty machine drills; seven hoisting engines of various sizes, the largest being of 50 h. p.; ten pumps; an electric light plant, including a 160-light dynamo run by a 15 h. p. engine; electric motor for crushing samples, etc., etc. Ore bins, railway trackage, buildings for plant and machinery and for the accommodation of employees (who numbered about 280 at the end of the year), are all on a larger scale than is to be found anywhere else in the Boundary district, and the shipping capabilities of the mines are such that it is intended to increase the output to 1,200 tons of ore per day so soon as the smelter at Grand Forks shall be prepared to treat the additional quantity.

The *Brooklyn* and *Stemwinder*, owned by the Dominion Copper Co., Brooklyn and Stemwinder. remained closed down during the greater part of the year, but operations were lately resumed by cross-cutting, first at the 250-foot level of the *Brooklyn* and afterwards of the *Stemwinder*. No particulars of the work done are at present available, but it is stated that more than 100 men are now employed on

these properties. The plant comprises a 5-drill air compressor; two 40 and one 25 h. p. boilers; machine drills; two 16 h. p. hoisting engines; two sinking pumps, &c.

On the *Gold Drop* about 1,700 feet of exploratory work was done below ground in the first half of last year, but the property was closed down in the summer, and work has not yet been resumed. The plant put in included a 4-drill air compressor; 40 h. p. boiler; air receiver; machine drills; pump, &c.

The *War Eagle* is similarly equipped to the *Buckhorn*, in Deadwood camp, and, as on that claim, work was suspended without very satisfactory results after some 400 feet of development had been done.

#### SUMMIT CAMP.

The *Oro Denero* was at work in the early part of the year, but the company owning the property got into financial difficulties, and it has been inoperative for several months. The plant consists of a 40 h. p. boiler; a 10 by 12 air compressor; air receiver; three machine drills; a 6½ by 8 hoisting engine; sinking pump, etc.

On the *Emma*, after about four years' inactivity, an open cut has been made in ore, the presence of which was disclosed during the cutting of the railway grade.

There are other properties in Summit camp making a much more satisfactory showing, but as these are in the Grand Forks Mining Division no particulars respecting them are given here.

#### LONG LAKE CAMP.

In Long Lake camp the *Jewel* and *Ethiopia* were the only two claims on which work was performed last year, but on neither was there anything of importance done. A cross-cut tunnel was driven 240 feet on the *Ethiopia*, cutting the ledge, which was drifted on about 50 feet. The *Jewel* sent out about 250 tons of gold-quartz ore for treatment at the Silica Works, Rossland, but with what result has not been made known.

#### CENTRAL CAMP.

Operations have been resumed on the *No. 7*, in Central camp. This **No. 7.** claim is owned by the *No. 7 Mining Company, Limited*, of New York, the leading shareholders in which are also large stockholders in the *British Columbia Copper Company*, owning the *Mother Lode* mine and the smelter at Greenwood. Small shipments of ore are now being made to the smelter, and an increase in the output will follow the installation of the machinery lately delivered at the mine. This plant consists of a 4-drill air compressor; air receiver; 100 h. p. boiler; Lidgerwood hoisting engine with 32-inch drum; machine drills, pumps and all other necessary equipment.

#### WEST FORK OF KETTLE RIVER.

The *Carmi*, *Sally*, *Washington* and *Idaho* claims, on the west fork of **Carmi.** Kettle river, attracted some attention last year. Purchase of the first named was completed by a representative of English capital, and active development was proceeded with. Later a contract was entered into for the delivery of 1,500 tons of ore to the smelter at Boundary Falls. Notwithstanding that this ore had to be hauled 50 miles, first for nearly 20 miles over a rough winter road, and thence about 30 miles farther to Midway, to be there loaded on railway cars, a determined effort is being made to carry out this undertaking, and already nearly half of the quantity contracted for has been delivered. A 60 h. p. boiler, 20 h. p. hoisting engine, sinking pump and two machine drills have been taken up to the claim to facilitate development.



The *Sally* is one of a group of seven claims owned by the Vancouver and Boundary Creek Development and Mining Company, Limited, and is situated on Beaver creek. It is stated that there are five distinct leads occurring on this group, varying in width from six inches to four feet. On one of these a tunnel has been driven for 190 feet, and a car load of ore, which a careful sampling indicates will run \$150 to the ton, is being sent to the Hall Mines smelter at Nelson. Another lead has been stripped for 100 feet, and a tunnel, now in 30 feet, has been started. The conformation of the ground is such that should the leads continue into the hill it will be practicable to attain a depth of 800 to 1,000 feet by tunnelling.

Much interest was excited early in the year by reports of high assay values of ores from the *Washington* and *Idaho* claims, but work was not continued, so that it is not yet known whether values and quantity will be maintained with depth. A small engine and boiler were obtained for these claims, but they did not reach their destination before operations were suspended.

There are numerous other mineral claims on the west fork and its tributaries, but few, if any, call for particular mention at present.

#### MAIN KETTLE RIVER.

On the main Kettle river there are also a number of very promising claims. On the *Montana*, *Colorado* and *Fourth of July*, on Canyon creek, good showings of copper-gold ore are to be found, which carry fair assay values and upon which about \$2,000 has been expended in development work. On the *Silver Dollar* and *Barnato* claims, on Horseshoe mountain, there are large bodies of quartz carrying arsenical iron and gold values. The *O. K.* and *Fletcher's Group* of claims have also very large iron-cap showings, with streaks of high-grade quartz and traces of tellurides. Considerable surface work has also been done on the *Mogul*, *Riverside*, *Hackla* and *Little John*, but on no claim in this locality has sufficient work been performed to prove actual values.

In Perkins camp and in Crown Point camp, near Westbridge, there are also a number of claims with good indications.

#### CAMP MCKINNEY.

The Cariboo-McKinney Mining and Milling Company, of Toronto, Ontario, continues to be the only company operating on a comparatively large scale in this camp. It owns the *Cariboo*, *Amelia*, *Okanagan*, *Saw Tooth*, *Alice*, *Emma*, and *Maple Leaf* mineral claims, all of which adjoin. From official reports submitted to the annual general meeting of shareholders held recently in Toronto, the following information is taken :—

During the past year there were mined and milled 15,238 tons of ore, which yielded 11,469 ozs. of gold bullion and 557 tons of concentrates. This ore was taken for the most part from the *Saw Tooth* and *Okanagan* claims. The mining of ore was largely in conjunction with the further exploration of the mine, consequently a considerable portion of the year's output was of ore extracted from drifts and raises opened up in the course of the development, which was carried on, to the east, on the *Okanagan* and, to the west, on the *Cariboo*. Development of the property included 4 shafts, the main shaft being 370 feet in depth. Owing to extended breaks in the continuity of the vein, both east and west of the various levels, the contemplated increase in the capacity of the Company's stamp mill was not made.

To reduce the cost of exploration of ground beyond where the ledge was broken, boring with a diamond drill was resorted to, and this was in progress on the date of the shareholders' meeting. The erection of a cyanide plant for the treatment of the tailings, systematic tests of which showed them to contain values of from \$2.20 to \$4.80 per ton, is favoured by the Managing Director, who is of opinion that it would considerably increase the quantity of gold saved. Receipts from bullion for the year were \$160,831.85, and the balance of net profit was \$53,148.02, of which the sum of \$50,000 was paid to shareholders as dividends. The total amount this mine has paid in dividends to date is \$459,337. The payment of dividends has, however, been temporarily suspended, and the profits derived from the mine are being applied to more extensive development of the property, with the object of eventually increasing its earning power. The receipts from bullion up to the 31st December, 1899, amounted to the sum of \$676,680.36, and to the 31st December, 1900, the total sum of \$837,512.21.

From an account of the mine by Mr. Donald A. Ross, published last August in the British Columbia Mining Record, it is learned that the mining machinery includes 2 60 horse-power horizontal return tubular boilers, a 10-drill Rand air compressor, and a 60 horse-power link-motion hoist, and that the mill is equipped with 2 10-stamp batteries, a 60 horse-power Corliass engine, 2 Johnstone vanners, a Wilfley table, a Blake rock crusher, and a Gates crusher.

The *Sailor* and *Minnehaha* Groups of claims have been consolidated under one company, but the work done does not appear to have yielded satisfactory results. The *Minnehaha* has been equipped with machinery for both mine and mill.

Of the numerous other claims that have been before the public during the past two years, the *Waterloo* is about the only one now attracting any attention. Recent reports are to the effect that the work in progress is encouraging, and that the prospects of this claim are good.

The Columbia and Western Railway, built by the Canadian Pacific Railways and Smelters. Railway, from Robson, on the Columbia river, was completed and opened as far as Midway during the year. Branch lines from Eholt, through Summit, Wellington, and Greenwood camps to Phoenix, and from Greenwood, through Deadwood camp to the *Mother Lode* mine, with a switch for the *Marguerite*, were constructed. Rail connections were also made with the Greenwood and Boundary falls smelters, and with several other industrial establishments in the District. Thus, convenient railway transportation facilities are now provided for the *B. C.*, *Emma*, *Oro Denero*, *Winnipeg*, *Golden Crown*, *Snowshoe*, *Brooklyn & Stemwinder*, *Old Ironsides*, *Victoria*, *Knob Hill*, *Mother Lode*, and other properties, the Canadian Pacific Railway Company having shown an unusual amount of enterprise in constructing these lines, in some cases in advance of the immediate needs of the claims benefited. The early construction is promised, and the survey is now being made for an electric tramway connecting the towns of Phoenix and Greenwood and the various mines in the vicinity. It is intended to carry freight as well as passengers over this line, which will have connections with the smelters in the vicinity of Greenwood, and will so admit of ore being conveyed from the mines to the reduction works.

The British Columbia Copper Company's smelter was practically completed last year, but it was not until February 18th of the current year that the furnace was "blown in." Present indications are that it will continue to run smoothly and successfully, and there does not appear to be any doubt that the owners will be warranted in shortly adding another furnace and the necessary appliances for converting the copper matte into metallic copper.

The Standard Pyritic Smelting Company's smelter, situate on Boundary creek, about 3 miles south of Greenwood, is nearing completion, and will, it is confidently anticipated, be in operation in March, 1901. The arrangement of buildings and plant is compact and convenient, and the location of the smelter is considered a good one. As in the case of the smelter at Greenwood, provision has been made for the enlargement of the plant should circumstances warrant it.

The provision of these adequate transportation and ore-reduction facilities is distinctly favourable to the advancement of the mining industry in this Division, the prospects of which were never brighter than at present.

In conclusion, mention may be made of the fact that arrangements are already well forward for the utilization of the Cascade water power. An English company now has control of the water rights, and announcement has been made that it will, during the coming summer, instal a plant large enough to generate all the electric power likely to be required in the Boundary District for some time to come. The head works have already been constructed, the flume-way and site for power-house excavated, and the right of way for the transmission lines cleared through to Phoenix, so that much of the preliminary work has been done. This year should therefore see electric power in use in some of the mines of the District.

#### OFFICE STATISTICS—KETTLE RIVER MINING DIVISION.

Free miners' certificates issued .....	1,268
Mineral location records .....	854
Placer records and re-records .....	27
Certificates of work .....	1,268
Certificates of improvements .....	68
Conveyance records .....	446
Abandonments .....	20
Water grants .....	6

#### Abstract of revenue received during 1900:

Free miners' certificates .....	\$7,084 09
Mining receipts general .....	8,067 40
	\$15,151 49

## OSOYOOS MINING DIVISION.

## REPORT OF C. A. R. LAMBLY, GOLD COMMISSIONER.

I have the honour to submit herewith my annual report on the mining development in the Osoyoos Mining Division for the year 1900.

## CAMP FAIRVIEW.

The work done in this camp during the past year has, with the exception of prospecting and assessment work on the *Victoria*, *North Star*, *Oro Bastavlo*, *Hairspring* and a few other mineral claims, been confined to the group of claims owned by the Dominion Consolidated Mines Company.

This Company owns the *Dominion*, *A. D. A.*, *Black Hawk*, *Flora*, *Virginia*, *Western Hill*, and several other claims in this camp, but at present work is being confined to the three last named, which extend in a straight line up the mountain side above the *Stemwinder* mine. On the *Flora*, the lowest of these claims, the mine buildings have been erected and the machinery, consisting of a 6-drill Rand Air Compressor plant with boiler and engine, has been installed.

Close by the compressor house a tunnel has been run into the mountain for a distance of more than 1,200 feet, following the middle vein for the greater part of the distance and proving the ore body to have an average width of about 16 feet. It is said that an assay taken at the face of the tunnel, in March last, gave a value of \$10.26 per ton, while the latest assay, obtained in December last, gave a value of \$10.35 per ton. The ore in this vein is a white quartz impregnated with fine grains of galena and free gold, and with occasional deposits of iron pyrites.

The tunnel has now reached a vertical depth of over 300 feet on the centre vein, and a drift has also been run cross-cutting the south vein at a depth of 250 feet and showing it to consist of the same character of ore as is found in the main tunnel.

The management intends to continue the tunnel to a length of 2,000 feet along the ledge, at which distance a vertical depth of 700 feet will be attained.

It is proposed to instal at an early date a large milling and chlorination plant, which will be driven by electricity, generated by the Company's water-power at Okanagan falls. The average values of the ore appear to be about \$7 per ton.

About 14 men were employed by this Company during the year.

The *Stemwinder* has been lying idle during the past year owing to want of capital for development purposes. During the summer arrangements were made to secure this capital from an English Syndicate but, owing to the bad effect of the war upon the English money market, this scheme was abandoned and negotiations were opened with the Gooderham-Blackstock Syndicate, of Toronto, the representative of which examined the mine in December last, with the result that capital was at once advanced and the mine is now in active operation. It is intended to sink the present shaft to the 500-foot level.

## TWENTY-MILE CREEK SECTION.

This section comprises Hedley, Summit, Riordan mountain, and 15 and 16-Mile creek camps, and has attracted a great deal of attention during the past few months. Many locations have been made, the most noteworthy of which are the *Nickel Plate Group*, the *Climax*, *Copper Cleft*, *Iron Duke*, *Morend*, *Horsefly*, *Bulldog*, *I. X. L.*, *Cold Spring*, *Terrier*, *Cabin*, *Union Jack*, *Rollo*, *Princeton* and *Ironsides* claims, all of which are surveyed. Amongst the unsurveyed properties worthy of note are the *Kingston*, *Florence* and *Red Mountain Groups*.

The *Nickel Plate*, on which the most extensive operations have been carried on, was bonded in the fall of 1898 to Mr. M. K. Rodgers for the sum of \$60,000, the bond being eventually taken up. A series of adits have been driven tapping the lead at various depths, and ore has lately been encountered in the lowest tunnel, proving the lead at the 400-foot level. A new and powerful plant has been partially installed and, when completed, the shipping to the smelter of the ore already on the dump will begin, *via* Penticton, over the waggon road which was completed last fall.

The ore is chiefly arsenical iron, carrying high values in gold.

On the other claims mentioned above, shafts have been sunk varying from 20 to 100 feet in depth and first-class showings have been obtained without exception, the ore being in some cases of an arsenical character resembling that of the *Nickel Plate*, whilst in others it carries more copper pyrites. Among the latter is the *Keystone*, which lately passed into the hands of Mr. Wells, of Republic, Washington. On this property there is a ledge the outcrop of which varies from 17 to 20 feet in width. A 12-foot tunnel has been driven on this vein in solid ore, and a force of men has lately been put on to push development.

From 9 to 12 claims in this section could, at little cost, be placed in a shipping condition and are only awaiting a cheaper mode of transportation than at present exists.

The district is traversed by granitic and porphyritic dykes.

In the basin of 20-Mile creek, surrounded by high precipitous cliffs on three sides and in the vicinity of the claims above described, are the *Mafeking* and *Kimberley* claims, on which a 70-foot tunnel has been driven exposing a lead of arsenical iron. Further up on the same creek the following noteworthy claims have been located and partially developed, *viz.*: the *Susquehanna*, *O. I. C. Frac.*, *Wellington* and *Cracker Jack*; all have very promising showings.

On 16-Mile creek the owners of the *Two Brothers' Group* have done a considerable amount of work on their property. Several tunnels have been driven and shafts sunk, exposing a very fine lead of galena, carrying copper and lying between granite walls.

In Summit camp extensive operations have been carried on on the *Ymirman Group*, owned by Mr. E. Bullock-Webster. The ore in this section differs entirely from that in other parts of the district, being chiefly composed of quartz carrying sometimes very high values in gold.

On the *Savage* and the *Ada Bell Groups*, also in this vicinity, considerable development work has been done, showing rich-looking quartz. Very high assays have been obtained from the free-milling quartz of this camp, but further development is required to prove whether these values are continuous.

Riordan mountain is situate on the north side of the Penticton-Nickel-Plate waggon road, and is distant 18 miles from Penticton. Extensive outcroppings occur here, and samples of gold-copper ore obtained have given satisfactory returns.

On the *Shamrock*, a cross-cut across the vein shows 18 feet of ore, while another opening, 30 feet distant, is also in ore.

The *Billy Goat* has a large surface exposure of mineral, in which a cross-cut at one place shows 11 feet of ore, neither wall having been reached.

Adjoining the last are the *Grand View*, *Knob Hill*, and *Lake View*, on which assessment work has shown good-sized bodies of mineral.

On the *Penticton* and *Cinnabar*, on the north side of Keremeos creek, assessment work has been done, and mineral bodies of very unusual size exposed.

Two miles east from the foregoing is located Green mountain, on **Green Mountain Group.** which is situated the *Green Mountain Group*, consisting of the *Green Mountain, Black, Alfred, Hope, Central, Connection, Rajah, and Recruit* claims, the first three being Crown-granted. On this property outcrops one of the most prominent mineral bodies of this section; its width being from 25 to 50 feet and its surface length 600 feet. The ore is a fine-grained pyrrhotite associated with copper sulphides, and carrying small gold values. There are three open cuts on this ledge, all in heavy mineral, and a tunnel is being driven lower down the mountain on the course of the ore body. This tunnel is now in 100 feet, and has just reached the ore. Several smaller veins occur near the large ledge, on one of which a tunnel, 70 feet long, and at another point a drift, 20 feet long, have been driven.

On this group, situated on Bullion mountain, a tunnel was begun in **Bullion Group.** 1899, with the intention of cutting the main ore body, which outcrops on the *Bullion* claim at an altitude of 1,200 feet above the valley bottom. This tunnel has been driven during 1900 to a total length of about 520 feet, reaching a vertical depth of 500 feet. During the progress of the work, several small seams of ore and ledge matter have been intersected, thus proving the continuation at depth of ore bodies outcropping on the surface of the mountain. It is estimated that this tunnel must be driven about 200 feet further to cross-cut the main body of ore, and this should be accomplished in May or June next.

On the *Flagstaff Group*, the large deposit carrying bornite, discovered early in the year, has been exposed by an open cut of nearly 20 feet face and a tunnel 10 feet in length, the two together cross-cutting the deposit on its width, about 30 feet, disclosing large quantities of ore. This deposit, having an exposure of 100 feet or more in height and from 100 to 150 feet in width, consists of a gangue of vari-coloured feldspar and calcite, through which bornite is quite uniformly disseminated. Many tons of this ore are naturally exposed in a bluff located about 1,100 feet above the valley.

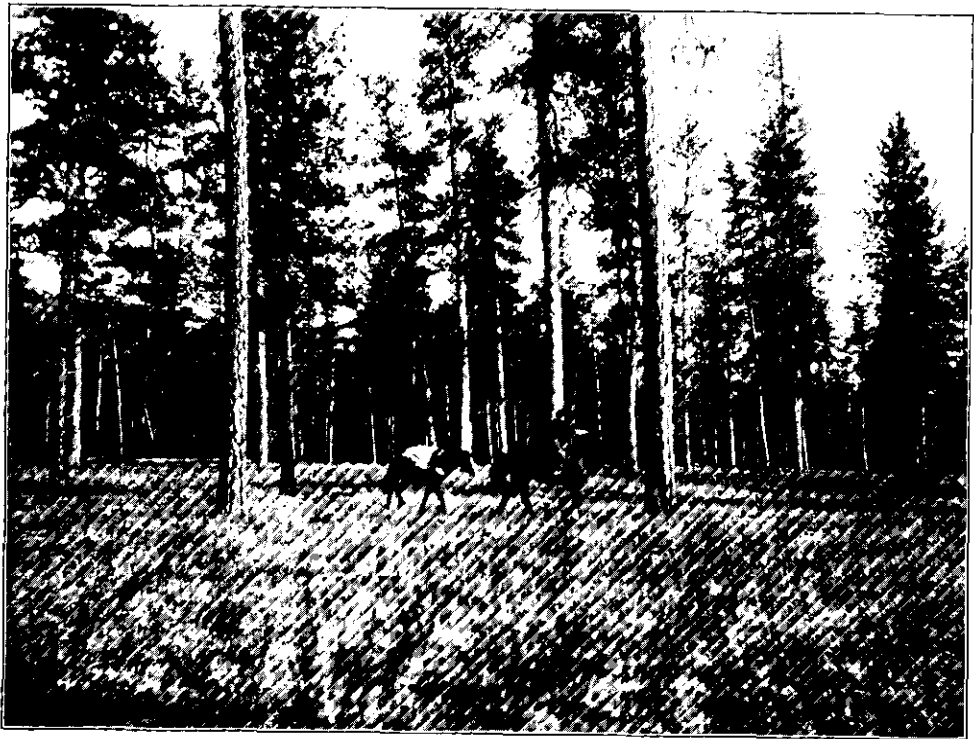
The *Opulence Group* (now in process of Crown-granting), shows native copper, but has had little work done on it in the past year. On the adjoining claims, however, viz., the *Eldorado* and *Shamrock*, assessment work has proven this native copper-bearing zone to have a width of at least 350 feet. These groups are situated on the east side of Keremeos valley. The necessary assessment work has also been done on many other claims in the same vicinity, with very encouraging results.

The shaft on the *Roadside*, situated on the west side of Keremeos valley, has been continued to a depth of 40 feet, showing a considerable body of copper sulphides.

On the *Copper King* a cross-cut tunnel has been driven 50 feet, but has not yet encountered the ore body. On the same claim a 35-foot shaft has been sunk and is in ore for its



MAIN KETTLE RIVER--KETTLE RIVER M. D.



VALLEY OF UPPER KETTLE RIVER--BOUNDARY DISTRICT--B. C.

entire depth, while about 100 feet lower down the slope a body of high-grade sulphide ore has been exposed by an open cut.

On the *Cream of the Camp* an ore body carrying copper values has been exposed by a cross-cut.

On the *Sunrise* the shaft has been continued to a depth of 45 feet. The vein is 2 feet in width and is composed of free-milling quartz.

On the *Golden Rule* and *Mount Zion Groups* a little work has been done, and on the *Golconda* a tunnel, which is expected to cut the continuation of the *Copper King* ledge on this claim, has been driven to a length of 300 feet.

#### UPPER KEREMEOS.

On the *Dividend Group*, situate on Dividend mountain, the work consists of one shaft 20 feet deep on a ledge 20 feet wide; a cross-cut 30 feet long and a shaft 10 feet deep, on an ore body nearly 40 feet wide.

Adjoining the *Dividend*, on the north-west, are the *Long Shot* and *Maple Leaf*, on both of which assessment work has exposed bodies of apparently good ore, chiefly copper sulphides and pyrrhotite.

Lower down, on the north side of the same mountain, are the *Scotia* and *Le Roi No. 2* claims. On the latter, two cross-cuts 300 feet apart and a short tunnel on the ledge are in good ore.

West of the *Dividend* are the *Pearson* claims, comprising the *Monarch*, *Independence*, *Republic* and *Spar Dyke*. On these several pits have been sunk and cross-cuts made.

In this vicinity are also the *Monarch Extension*, *Keystone Fraction*, *Australian*, *Apex*, *Rocky*, *Ryan*, *Fairy Queen*, *Sunset*, *Redcliff*, *Rosland*, *Lady May*, *Castle*, *Lost Ruby*, and others, on which the usual assessment has been done.

#### OFFICE STATISTICS—OSOYOOS MINING DIVISION.

Free miners' certificates .....	362
"    "    special .....	4
Location records .....	425
Conveyances and agreements .....	124
Certificates of work .....	503
Certificates of improvement .....	38
Permissions to re-locate .....	4
Abandonments .....	17
Water grants .....	4
Receipts—Free miners' certificates .....	\$2,309 00
Mining receipts general .....	3,234 90
	<hr/>
	\$5,543 90



---



---

## VERNON DISTRICT.

—o—

### VERNON MINING DIVISION.

#### REPORT OF L. NORRIS, GOLD COMMISSIONER.

I have the honour to submit my report on the Vernon Mining Division for the year 1900.

There has been very little development done during the past season, beyond the necessary assessment work.

The *Monashee Group* of 6 claims, situated 48 miles east of Vernon, in the Gold Range, was bonded last year to a party of Ainsworth capitalists for a large sum and, I understand, a new mill will be erected next spring and the property developed. This Monashee  
Group. group of claims was first recorded in 1886, and since then some \$30,000 has been expended on it, tunnels aggregating over 1,000 feet in length having been driven. Some ten years ago a Bryan Roller Mill, driven by water-power, was put in but was found on trial to be unsuited for the purpose. The ore is capable of concentration, but the chief values are in free gold.

#### ABERDEEN MOUNTAIN CAMP.

Aberdeen mountain camp lies 12 miles north-east of Vernon, at an altitude of about 5,800 feet. The following are the principal claims in this section with a brief summary of work done.

*Maid of Vernon*, *Center Star* and *Montezuma*, owned by J. Campbell and T. E. Crowell, of Vernon: 1 tunnel 18 feet in length and cross-cutting 10 feet, all on the *Center Star*.

The *Black Prince* and *Prince of Wales*, owned by A. J. McMullen, A. Clark and A. Fleming: 73 feet of tunnelling on the former and 30 feet of open cut and tunnel on the latter.

The *Silver Queen*, owned by the Silver Star Mining Co.: 2 shafts 51 and 47 feet, respectively. This claim was bonded last year for \$30,000, and considerable work has since been done on it; the vein is of white quartz occurring at a contact between slate and granite, its chief values being in lead and silver with some gold and copper.

The *Frank & Joe*, *Maid of Erin* and *White Elephant*, owned by C. J. Becker, J. Hamil, H. Wood and J. Ethier: 10 feet of shaft on the *White Elephant* and 15 feet of shaft on the *Maid of Erin*.

#### PORTEOUS CAMP.

A group of some 20 claims, situated on Siwash creek  $1\frac{1}{2}$  miles from the shore of Okanagan lake, have been staked on several veins of white quartz carrying galena and free gold and some copper pyrites; these veins run east and west with a dip to the north.

Two claims in this camp have a ledge of iron and copper ore 5 feet wide carrying good values. The following is the work on the respective properties:—

*Mountain Chief*, owned by H. Knight, A. Porteous and A. Vidler: tunnel, 60 feet.

*Iron Queen*: work sufficient for a Crown grant.

*Golden Link*: 15 feet open cut.

*British Lion*: 20 feet of open cut.

This claim, situated 13 miles west of Vernon, is staked on a ledge  
 Peoich. about 4 feet wide, composed of white and black spar carrying iron pyrites  
 with values in gold and silver, improving with depth. Development com-  
 prises a tunnel on the ledge for 125 feet, an 8-foot shaft and 20 feet of open cut.

On the *Stag*, situated in Camp Hewitt, a fine body of high-grade ore has been disclosed  
 and a quantity of ore is in readiness for shipment to the smelter.

OFFICE STATISTICS—VERNON MINING DIVISION.

Free miners' certificates .....	201
" " (companies) .....	6
Claims recorded .....	104
Certificates of work .....	93
" improvements .....	3
Bills of sale recorded .....	26
Claims Crown-granted .....	3

## YALE DISTRICT.

— o —

FROM REPORT OF G. C. TUNSTALL, GOLD COMMISSIONER.

I have the honour to submit my report of mining operations in the Kamloops and Similkameen Divisions of Yale District during the year 1900.

The reports of the Mining Recorders of the Yale and Ashcroft Divisions of this District are also forwarded.

### KAMLOOPS MINING DIVISION.

The mining industry in this Division has not escaped the prevailing dullness that existed last year on the Pacific coast and elsewhere, and, in a great measure, prevented the introduction of capital for the development of claims, the surface indications of which indicated that they would prove profitable with a reasonable outlay. Claim-owners are now, however, beginning to realise that the large amounts demanded by them for mere prospects cannot be entertained, and they seem disposed to accept terms more in accordance with the value of their properties, thus removing a great obstacle to investment.

**Coal.** A company is being organised in England to prospect for coal in the neighbourhood of Kamloops, at a point where the late Dr. Dawson, Director of the Geological Survey of Canada, indicated that an extensive body would be found. This is a continuation of the seam found at Coal hill, but which at that point was not of sufficient thickness to be of commercial value. Favourable arrangements have been concluded with the Hudson's Bay Company for the purchase of its property, embracing 1,900 acres of land near Kamloops, and the ground will be tested with a diamond drill, as being a comparatively inexpensive means of determining the existence and extent of the mineral. The coal is of a superior quality, and will produce excellent coke.

**Dredging.** The discoveries with relation to dredging made on the North Thompson river have already attracted attention, and the coming summer will see the first dredge, the machinery for which is expected shortly, in operation. This is a branch of mining which, if successful, is likely to provide occupation for many, and will tend to the settlement of the large stretches of fertile land bordering on the North Thompson river.

**Platinum.** The discovery of platinum on the North Thompson and Clearwater rivers has created some interest, as its existence was not formerly suspected. It is found associated with the alluvial gold, but the extent and conditions of the find are not yet fully determined.

### COAL HILL.

**Mineral Claims.** The mineral claims deserving particular mention, in consequence of the labour expended in developing them and the large bodies of ore exposed, are chiefly situated on Coal hill. The assessments performed on the numerous other locations have not led to any change in their condition since my last report, although they may prove equally valuable when sufficient work has been done upon them.

The *Python Group* consists of the *Python*, *Noonday*, *Copper Head*, *Python Group*. *Python Fraction*, and *Calumet Fraction* mineral claims, embracing a total area of 186 acres. Development work has been confined to the *Python*, which was the first claim located on Coal hill, and on which, with the exception of a few periods of idleness, work has been carried on since the date of record.

The ore body has been traced on the surface for a distance of 3,400 feet, and while the outcroppings show an average width of about 8 feet of ore, a cross-cut 44 feet long, at the 56-foot level, has failed to reach either wall, as also has a cross-cut 39 feet long, at the 40-foot level. On this property, as elsewhere, the best ore lies in chutes at intervals along the course of the lead.

The following is a summary of the work done during the past year:—A double-compartment shaft sunk 45 feet, making a total depth of 125 feet; drift at 56-foot level extended 23 feet; drift at 110-foot level of 188 feet; tunnel to tap the vein at a depth of 190 feet from the surface, now in 222 feet.

The *Iron Mask* mineral claim originally attracted attention on account of the large outcroppings of ore which appeared on the surface. Considerable litigation has ensued over this property, but it has now been bonded to the B. C. Exploring Syndicate, an English company, and work is being carried on under the superintendence of Capt. Argall.

The property is situated at an elevation of about 2,700 feet above the level of the sea, and at a distance of about five miles in a south-westerly direction from Kamloops. A double-compartment shaft has been sunk to a depth of 130 feet, and is being rapidly continued by three shifts of men. The lode is 60 feet wide, the ore being chalcopyrite with a magnetite filling, and assaying from 4 to 16 per cent. copper and from \$4 to \$5 in gold per ton. A large quantity of ore of this character is on the dump.

A cross-cut has been effected where the shaft intersects the tunnel, and will be repeated at suitable intervals as the shaft goes down, in order to determine the quantity and quality of ore in existence at various depths.

The *Kimberly Group*, consisting of eight claims, was sold last year by the original locators to the Kimberly Copper Mines Co., Limited, with head office at Woodstock, Ont. The ore is copper pyrites, averaging \$4 in gold and 5 per cent. in copper. The tunnel has been extended 175 feet since my last report, and cross-cuts have been made. Work is being actively prosecuted under the superintendence of Mr. Outhett, and some high assays in gold have been obtained from different portions of the vein.

The *Noonday*, situated 4 miles south-east of Kamloops, is owned by A. G. Macdonald, W. Ford, C. J. Robinson, and O. S. Batchelor. Two veins, measuring at the surface 18 and 6 inches wide, respectively, come together below the 100-foot level and form a lode 5 feet wide. The ore is free-milling gold quartz, and a mill test made upon it at Vancouver gave a return of \$7 to the ton. This location is considered by miners of experience to be a valuable property. Work is still in progress.

The *Wheal Tamar* is situated at Jacko lake, and last summer a shaft was sunk 30 feet on the vein, while a quantity of cross-cutting was done. The ore body carries \$4 in gold, \$2 in silver, and 5 per cent. copper.

The work performed on the *Truth*, one of several claims known as the Truth Group. *Truth Group*, and situated about 6 miles south-west of Kamloops, since my last report is as follows:—Shaft, 4½ by 6 feet in the clear, extended 40 feet deeper; a cross-cut from the shaft, 102 feet long, 7 feet high, 4½ feet wide; a drift on vein, 26 feet; a drift, 12 feet long, 18 feet north of the shaft. The ore carries copper pyrites and yields small values in gold.

#### CHERRY CREEK.

On the *Copper King*, a shaft 46 feet in depth has been sunk, and from the bottom of this a drift has been run for 35 feet in a north-easterly direction. The ore body contains bands of high-grade chalcopyrite and bornite of from 1 to 2 feet in width, and assays from \$6 to \$8 in gold. About 15 tons of rich ore have been sacked for shipment, and some 60 tons of a medium grade are lying on the dump. The property is in charge of Mr. Redman.

*Glen Iron Mines.*—The Glen Iron Mining Company is engaged in carrying out a contract for 1,000 tons of ore for the Hall Mines smelter at Nelson.

#### BIG SHUSWAP LAKE.

The *Iron Mask Group* consists of the *Iron Mask*, *Le Roi*, and *Iron Mask Group*. *Cap* claims, and is situated on the east shore of an arm of Big Shuswap lake, about 6 miles north of Sicamous Junction, on the Canadian Pacific Railway. The first two claims possess a well-defined vein of pyrrhotite from 35 to 40 feet in width, carrying copper pyrites.

On the *Iron Mask*, two shallow shafts have been sunk, one on the hanging wall, the other near the foot-wall of the lode. Samples representing the average value of the pyrrhotite at a depth of from 6 to 10 feet assayed respectively \$1.78 and \$8.24 to the ton. Samples taken from several layers of copper carbonate in the sides and bottom of the shaft yielded high assay values.

These properties have been bonded to a company represented by Mr. H. Lamont, of Ontario.

I am indebted to Mr. A. J. Colquhoun for the following information regarding the claims in the neighbourhood of Savonas:—

#### CRISS CREEK.

The work done this year on the *Mersey*, at Skomallis, has been but little; it has, however, sufficed to show a streak of ore about 2 feet wide, yielding from several assays \$10 in gold, \$23 in silver per ton, and 5% of copper. There are a large number of other veins, yielding values of \$10 and \$12 per ton, on the property; these carry little copper and will pay to treat on the ground by cyanide or other chemical process.

This claim has some very large quartz veins on it; little has been done, however, beyond assessment work, to prove them.

This claim shows an ore deposit 5 feet wide, yielding \$14 to the ton in gold and silver, and which can be easily treated. This property, which has not been developed to the same extent as the *Mersey*, is—like the latter—situated in the bottom of a canyon, thus rendering preliminary development expensive. It is hoped, however, that a waggon road will be built to these properties next year (1901).

On the *Spey*, situated on Criss creek, about 16 miles north of Savonas and about 1,200 feet above the creek bed, there occurs in dolomitic limestone a showing of cinnabar about 2 feet wide and carrying  $1\frac{1}{4}\%$  of quicksilver. Only surface work has been done so far, but the owners contemplate pushing development in a systematic manner next spring. Very rich float has been found below the property and cinnabar can be panned out from the débris in the creek.

#### COPPER CREEK.

During the past season there has been unusual activity in the neighbourhood of Copper creek.

About 400 feet of work has been done on the *Tenderfoot* this year, consisting of tunnelling, drifting and shaft sinking. This work shows up an ore body about 18 feet wide, which will average about 6% copper, gold \$2, and silver \$1.20, per ton. There are about 200 tons of ore on the dump.

The assessment work done on this claim during 1900, consisting in open-cutting and trenching, exposed a large quartz vein on a basalt and porphyry contact, yielding \$11 and \$16 per ton in gold, silver and copper. It is proposed to tap this vein at a depth of 80 feet by means of a tunnel.

*El Progreso, Newark and Stirling.* The tunnel on the *Progreso* has been pushed ahead and a fair amount of good ore has been added to the dump.

#### CINNABAR CLAIMS.

The *Columbian* is situated on Hardie mountain. The tunnel has been extended for about 60 feet to represent the assessment work on the group of claims owned by The Hardie Mountain Cinnabar Mining Company.

On the *Idria* a shaft and several open-cuts were put in this year, exposing a large body of cinnabar ore averaging  $\frac{1}{2}\%$  to 1% quicksilver.

*Martel and Barnato.* The assessment work has been carried out this year with good results.

A tunnel has been driven on this claim for a distance of 32 feet, exposing a large body of cinnabar-bearing rock of a low grade.

On this claim a tunnel over 60 feet long has been run in on a vein of dolomite, the width of which has not been ascertained. The tunnel is in ore for the whole distance, cinnabar and antimonite occurring in solid massive bands throughout the vein rock. On the dump are several tons of picked ore which probably contains 20% to 30% of quicksilver. A 12-foot open-cut and 4-foot tunnel were also put in further up the gulch showing high-grade ore, which I believe is an extension of the vein in the first mentioned tunnel.

It is to be trusted that the coming season will see more interest taken in quicksilver mining. At present the world's output is not keeping pace with the demand for this metal and, with the exception of the New Almaden and Idria mines, nearly all the California cinnabar properties are closed down. There are, without doubt, large bodies of cinnabar ore in British Columbia, of low grade, it is true, but this should be no drawback when  $\frac{1}{2}\%$  ore is treated at a profit in Russia and 1% ore in the case of some Californian properties. The cinnabar deposits seem all to be grouped along one zone, running north and south from Kamloops lake; they can be traced throughout a section about 45 miles long and having a width

of 1 mile. Certainly the approaching exhaustion of the present supply of quicksilver necessitates new producers and it is a question of some interest whether these may possibly be in British Columbia.

#### MAMETTE LAKE.

The *Toon Kwa* is another cinnabar claim, situated 12 miles south of Kamloops lake and 3,900 feet above sea level. Last year's assessment work consisted mainly in surface development over the dolomite zone which occurs here and which is similar to the country rock of all the cinnabar locations in British Columbia. The width of the zone tested by the work done so far is only about 8 feet and carries  $1\frac{1}{2}\%$  of quicksilver. The cinnabar occurs mostly in well-defined streaks, but is also to some extent finely disseminated; streaks of massive cinnabar half an inch in width have also been met with. Here, as at Copper creek, it is noticeable that these rich streaks of ore are invariably found associated with stibnite.

#### NICOLA VALLEY.

Nicola river and lake as far east as Quilchena are regarded as the dividing line between those sections commonly known as North and South Nicola. The Kamloops Mining Division embraces the former, the Similkameen the latter.

Prospecting is being vigorously carried on in the Nicola district, and from surface indications there would appear to be a large mineral belt running through this section. About 170 claims have been located in the last 8 months.

In North Nicola the largest amount of development work has been done on the *Aberdeen Group*, in the vicinity of 10-Mile creek and owned by the Broomhead Syndicate, of London.

On the *Aberdeen* claim a tunnel 100 feet long has been run, disclosing high-grade copper ore, while a shaft about 30 feet in depth, sunk near the mouth of the tunnel, disclosed mineral of a similar nature. On the *Plymouth Queen*, owned by the same company, a tunnel about 60 feet in length disclosed ore of excellent quality, and a shaft of 30 feet in depth on the *Manchester* mineral claim also exposed well-mineralized quartz. The work which has been done gives indications of a hopeful character. Last October two very good houses were built close to the *Aberdeen Group* of claims to afford suitable accommodation for boarding and sleeping. During April, May and June, work was vigorously prosecuted and on the return of spring will be again resumed.

Quite a number of other locations have been made in the vicinity of the *Aberdeen Group* and a good deal of work has been done by the various claim-holders, all of whom seem well pleased with the results.

H. Mills, owner of the *Bengal* mineral claim, which is favourably situated for tunneling, has tapped the ledge by three separate tunnels, one 40 feet long and two of 25 feet each. The ledge can be traced on the surface over several hundred feet, and in the tunnels is found to be about 8 feet wide. Assays give high copper values, with an average of \$4 in gold and some silver.

On Mill creek, on a location owned by Thos. Hunter, there is a ledge of mineralized quartz yielding values in gold, silver and copper, and on the north side of Nicola lake assessments have been done on several locations from which good values in copper have been obtained.

In the neighbourhood of Stump lake, where a good deal of prospecting was done at one time, there has been a revival of activity recently.

#### NORTH THOMPSON RIVER.

The North Thompson river takes its rise in a small lake in the Cariboo range of mountains, whence it makes a bend to the north-east and thenceforward flows, with a few deviations, in a southerly direction, joining the South Thompson river at Kamloops; the distance is about 400 miles.

The principal affluents, in addition to numerous smaller streams, are the Barriere, Clearwater and Blue rivers. The North Thompson is navigable, at certain stages of water, for a distance of 125 miles, and the period of navigation could be made to embrace the whole summer season by the removal of the Heffy and Fish Trap rapids. This could be done with a comparatively small outlay, by dredging and confining the water to the channel thus made. Higher up, long navigable stretches exist which could be extended by similar means.

Extensive areas of open, fertile land are found at intervals along the river banks, as well as in the lateral valleys extending at right angles to its course: this land is unoccupied by settlers. The soil is a sandy loam, capable of producing cereals and vegetables of the best quality. The prevailing timber consists of pine, spruce, fir, cedar and cottonwood, large tracts of all which abound along the river banks and on the flanks of the mountain ranges. Crops can be grown without irrigation, as the rainfall is sufficient for all purposes. The climate is also described as being very favourable.

The upper part of the North Thompson is densely wooded and obstructed with fallen timber and this, in addition to the absence of feed for animals, has proved, so far, an insuperable obstacle to the prospector.

On the east side of the river a good waggon road exists for a distance of about 50 miles, from Kamloops to the "coal mine" in the vicinity of the Indian reservation, from whence about 200 tons of excellent coal were obtained. This coal seam was, however, found to be of insufficient thickness to prove profitable to work, and the company owning the property ceased further operations from lack of means to search for more extensive deposits which, in the opinion of experts, would be encountered at a greater depth.

On the west bank of the river outcrops of coal are visible on the benches at some distance from the water, and several prospecting licences have been issued to parties who intend to test their value, while some promising mineral claims have also been located.

Gold is found in the benches, bars and creeks, and was mined in the  
**Placer Mining.** early days to a limited extent on Jamieson, Dixon and other creeks, with small returns, however, in consequence of the fact that, although found over large areas, it was nowhere concentrated within a sufficiently narrow compass to reward individual mining. Ground of this character may be profitably worked by hydraulic, when the necessary conditions exist of an adequate supply of water and a sufficient fall to carry off tailings, but it is the method of dredging, which has been employed with unusual success in New Zealand, that is at present attracting attention on the North Thompson.

In the summer of 1899, Mr. H. R. Bellamy, of Nelson, spent several weeks determining the auriferous character of the gravels of the North Thompson. He and his partners subsequently obtained nine mining leases, which they afterwards disposed of to Mr. T. L. Boyd, of London, England, the properties having been first examined by Mr. F. J. Tytler, of Vancouver.



Mr. Tytler's report being satisfactory, the machinery for a dredge of large capacity was ordered, the construction being carried on under the superintendence of a dredge-master of experience, Mr. Satchell Clarke. The hull will be built on the east side of the river in the vicinity of Jamieson creek.

Every precaution has been taken to make the venture a success, and the approaching summer will see the first dredge in operation on the North Thompson river, and an industry inaugurated which, it is hoped, may prove profitable.

Mr. Bellamy last summer renewed his investigations of the previous year. The creeks and benches for a number of miles received a more critical examination, with such gratifying results as to induce him to make applications for a number of other leases.

He also, so far as the crude appliances at his disposal and the swiftness of the current permitted, tested the river and its principal tributaries, as well as the beds of conglomerate in the neighbourhood. The gold was found to be general in its distribution, and consists of small, flat scales, sufficiently heavy to be easily saved.

The Clearwater Placer Mining and Dredging Syndicate, consisting of some nine or ten employees of the Canadian Pacific Railway, with Mr. C. W. Gladwin as secretary, was formed last summer, and acquired several leases on the North Thompson river and one on the Clearwater.

In August last, this Company despatched a party of five men, under Mr. Geo. Brown, to proceed by canoe as far as the Clearwater river, 83 miles north of Kamloops, for the purpose of prospecting the leaseholds. Having reached their destination, the property was carefully prospected, samples of the black sand, which was found to contain grains of a white-looking metal, being retained for a further examination. The bars were also carefully prospected, and yielded returns of 33 cents per cubic yard.

The Clearwater river and a small stream tributary to it were found to yield the best returns, the gold being also coarser. The Thompson river was computed to have a width in this locality of 150 yards, the current flowing at the rate of 3 miles an hour, and being a good deal obstructed by rapids. The timber in the neighbourhood was large and of good quality, consisting of cedar and fir, while an extensive area of the country was covered with grass.

On the return of the party, samples of the black sand were sent to Messrs. Baker & Co., platinum refiners, of Newark, N. J. The returns lately received are: Gold, 16 oz., and platinum, 124 oz. per ton. This discovery has created some excitement.

The number of leases issued to date, covering the North Thompson and its affluents, is 43, classified as follows:—Creek, 5; river, 16; bench, 22. Next season I fully expect the greater portion of the river to be under lease.

I am indebted to Mr. Tytler for the following information regarding the Jamieson creek property:—

“The Jamieson creek and Thompson river property lies about 16 miles above Kamloops on the North Thompson river, and is owned by Mr. Thomas Lineham Boyd, of London, England, who is represented in Canada by Mr. C. C. L. Wilson, of Ingersoll, Ont. The property consists of 1½ miles of the North Thompson river, beginning at a point about 900 feet above Jamieson creek, and running to a point near Edwards creek; of about 1½ miles of Jamieson creek, beginning at its junction with the North Thompson and running to a point within the gorge; and also of four bench claims on the banks of Jamieson creek, two on either side, and near the upper

end of the creek claims. To these has lately been added a fifth bench claim on the banks of the North Thompson, in Lot 328.

"Only surface examinations of the value of the gravel have been made so far. The bench claims yield on the surface a little under 7 cents of gold per cubic yard, and, of course, higher returns are expected at lower depths. The creek claims have run on the surface from 16 cents to \$1.30 per cubic yard, and will probably carry higher values at lower depths, while the river claim yields from 16 to 55 cents on the surface.

"The gravel is fairly free from boulders, and is eminently suited for dredging.

"I have had the property examined by three New Zealand men, who are in close touch with dredging in that country, and each has independently pronounced the claims extremely similar to those on the Clutha, in New Zealand.

"Regarding the value of the sand on the North Thompson, as far as this property is concerned it has been carefully tested and yields a return of about 90 cents per ton.

"An order has been placed with the Wm. Hamilton Manufacturing Co., Limited, of Peterborough, Ont., and with F. Satchell Clarke, for a dredger of the true New Zealand type, slightly modified to suit the requirements of the claims. This dredger will have a theoretical capacity of nearly 3,500 cubic yards per diem, and is expected to be ready for work by the middle of April, 1901. Arrangements are being made to get New Zealand winchmen to operate the machine.

"Arrangements have also been made for the season's supply of fuel. This exists abundantly in the neighbourhood, and consists chiefly of pine, fir, and cottonwood."

Mr. Kingswell, who has been formerly occupied in dredging, and has spent several weeks examining the North Thompson river, has kindly supplied me with the following notes:—

The first stretch of the North Thompson river which appears suitable for dredging occurs about 11 miles north of Kamloops, where very fair samples of fine gold may be obtained by panning on the bars. Gold is also found in small quantity on the banks of the stream and as far back as the foothills, a distance of one mile, seeming to indicate that the precious metal has been derived from the range of hills on the west side of the river. So far, sinking has not shown that the values improve with depth but, as bed-rock has never been reached, it is impossible to estimate the value of the gravel.

At a distance of about 12 miles north of Kamloops, at Edwards point, the gravel has been worked far above low-water mark, and as much as \$2 per day may be taken out by cradling. The gold has here been deposited on the bars by high water, and is undoubtedly derived from Jamieson creek. The Indians work out these bars each year, and in the succeeding year fresh gold is regularly found deposited, with little variation in value.

About a mile above Edwards point, and where the main stream is fed by Jamieson creek, the property held by Mr. Boyd, of London, England, is situated. This is ideal dredging ground, having been thoroughly tested to a depth of 18 feet, and yielding 15 cents per yard. It has been favourably reported on by New Zealand experts, and a dredge is now being built to handle 3,500 yards of gravel per day. This dredge has 33 buckets, each with a capacity of 4½ cubic feet, and is capable of dredging to a depth of 45 feet; wood will be the fuel used. Operations are expected to begin in April next.

This leasehold comprises 1½ miles of the North Thompson river and 1½ miles of Jamieson creek, together with certain bench ground. The wash is very fine, almost too much so,

since, unless carefully managed, the dredge is likely to work over too much bottom without cleaning it thoroughly.

Above the last-mentioned property the river is too sandy for dredging operations for a distance of 5 miles, after which there is a stretch of some 10 miles, fed by Skull and other neighbouring creeks, along which good gold values are obtained. The Indians say that they have made as much as \$6 per day on the bars in this locality, and from test holes sunk in prospecting for dredging payable gravel has been taken.

Above Skull creek is the Canyon; the river here has been leased, although only about 2½ miles is suitable for dredging.

Above this, again, where Louis creek joins the main stream, is the Louis creek leasehold. Good values of 30 cents per yard have been obtained about two miles below the mouth of this creek.

Between Louis and Barriere creeks there are eight miles of dredging ground, from which good surface prospects are said to have been obtained. The river then becomes sandy again for a distance of 20 miles, when it narrows and shows payable bars and gravel banks as far north as the junction of the Clearwater river. All this latter portion has now been taken up by local investors.

The Clearwater river is a proven gold-bearing stream, and has no doubt been one of the sources of enrichment of the North Thompson; so far, however, no dredging ground has been taken up, owing to the difficulty of prospecting this river. Above the junction with the Clearwater, the North Thompson is wider and very sandy, and although water rights have been obtained, no dredging leases have been taken up, as the ground is not considered profitable.

OFFICE STATISTICS—KAMLOOPS MINING DIVISION.

Free miners' certificates .....	\$2,480 32
Mining receipts, general .....	5,452 95
	\$7,933 27
Claims recorded .....	285
Bills of sale .....	118
Certificates of work .....	355
Leases issued .....	33

## SIMILKAMEEN MINING DIVISION.

The history of the Similkameen Mining Division records many alternations of prosperity and depression during the days when the Tulameen and Similkameen rivers, with their tributaries, were being worked for the gold they contained. In favourable seasons the beds of these streams exhibited a scene of mining activity and bustle that is no longer evident since the exhaustion of their wealth. In the early days fluttering water-wheels, and men engaged in mining, could be seen for miles along the channels of these rivers, forming a novel and an interesting picture to the beholder. Occasionally, however, sudden cloudbursts in the mountains would send down a raging flood, sweeping away wing-dams, flumes and sluices—the work of many months—and filling in the diggings with the débris brought from above. Then followed periods of depression that lasted for a considerable time.

Of the amount of gold taken from these placer claims, unfortunately no record has been kept. The Chinese swarmed thither in large numbers after the Cariboo excitement broke out, and the white miners readily disposed of their claims for the purpose of proceeding to the new Mecca, which, at that time, attracted world-wide attention.

No estimate, then, can be formed of the gold obtained, more especially in consequence of a disposition to conceal information of that character; but enough is known to disclose the fact that it must have attained a large figure, as work was carried on over a wide extent of country which was assiduously mined with excellent results. Some large nuggets were also found, of which little knowledge has been obtained from the scanty reports that were made public.

I am indebted for the following statement regarding the principal mineral locations in this Division to Mr. Anderson of the Similkameen "Star":—

## COPPER MOUNTAIN CAMP.

Considerable development work has been effected in this, the most important camp in the Division. The *Sunset*, the pioneer location on Copper mountain, has been extensively developed, considering the drawbacks the Company owning the property has had to contend with. The absence of roads has prevented the erection of more powerful machinery and the small steam-hoist in use has proved efficient only to a certain depth. The incline shaft, which dips into the ore-body at an angle of 57°, was sunk to a depth of 192 feet when a large body of water encountered prevented further sinking. A cross-cut was then started at the 150-foot level and run in for a distance of 80 feet. All the workings are in solid ore, the grade of which varied in the shaft, but in the cross-cut was fairly uniform, the average value of the whole being about 5 per cent. copper and \$3 in gold. Arrangements have been completed for the sinking of a double-compartment shaft about 150 feet from the old one, and as soon as the waggon road from Keremeos to Princeton is completed the necessary machinery will be brought in.

The shaft on the *Sunrise* is now down 35 feet. The ore has improved considerably in the last 5 feet of depth obtained and will average 6 per cent. in copper and from \$4 to \$6 in gold, per ton.

This property was bonded late in the fall to Mr. J. Locke, of London, for \$35,000. It has one of the best surface showings on Copper mountain. There are several large open-cuts across the width of the ore body.

**Triangle.** This claim has been developed by means of an open-cut and tunnel 50 feet long, which gives a depth of 25 feet on the vein. The ledge is 5 feet wide and an average assay of the ore-body shows 14 per cent. copper. The ore is a close-grained chalcopyrite.

**Red Eagle.** The *Red Eagle* has two prospecting shafts, 18 and 12 feet deep, respectively, and an open-cut 60 feet long and 5 feet deep.

**Lost Horse.** The *Lost Horse* was formerly owned by Mr. Robert Stevenson, but is now being developed by the Lost Horse Mining Company. The work accomplished consists of a shaft 45 feet deep and a tunnel 120 feet long, the face of which is in a rich ore-body.

**Azurite Group.** This group is owned by the McRae Bros., and considerable work has been done with good results. A large body of ore which assays well in copper has been found on the *Azurite* and *Belle* mineral claims.

On the *Hidden Mystery Group*, owned by D. W. Morgan and others, a shaft 40 feet deep has been sunk on the *Mystery* claim.

**Other Claims.** Considerable work has been performed on the *Oriole*, *Jennie*, *Silkman*, *I. X. L.*, *Ada B.*, *Olympia*, *Jubilee*, *Home Rule*, *Copper King Group* and *Podunk* with good results, while the assessment work on numerous other locations proves the existence of extensive deposits of medium-grade copper ore.

#### KENNEDY MOUNTAIN.

Development work on the *Magnetic*, *Ingersoll*, *Belle*, *Red Buck*, *Olympia*, *Dewey*, *Princeton* and *La Reine* has disclosed quantities of heavy sulphide-ore carrying considerable values in copper and gold. A tunnel will be driven on the *Olympia* this winter to tap the lode at a depth of 100 feet.

#### ROCHE RIVER.

A number of prospectors have explored this district during the season and several new locations have been made. Some very rich quartz, carrying copper and gold, has also been found on this stream.

On the *Peysaton* claim, H. Kennedy has done some extensive work, while the *Red Star*, owned by Powalls and Bonivere, has 3 feet of solid ore exposed in the face of an open-cut, assay returns on which give a value of \$53 in copper and gold.

The *Ontario* and *Brunswick* claims are owned by Messrs. Powell, Lougheed and Stewart, and show up a high-grade quartz ore, carrying values in gold and copper.

#### FRIDAY CREEK CAMP.

**Gladstone.** On the *Gladstone* claim, owned by E. Wheeler and associates, there is a good body of ore, 5 feet in width, between well-defined walls of granite and diorite. Some of the highest-grade bornite found in the District comes from this claim; indeed one specimen was awarded a prize at the mineral exhibit of the Spokane Industrial Exhibition last October.

#### STIRLING CREEK CAMP.

This camp was opened up last spring and a number of locations have been made. The *Pollock* and *Lion's Head Groups* have both had development work done on them. The *Lion's*

*Head* is owned by William Wilson, and a shaft has been sunk a depth of 35 feet, which exposes 5 feet of ore between clean, smooth walls. Assays yielded \$13.22 in gold and \$13.86 in copper.

#### SUMMIT CAMP.

Summit camp is situated at the headwaters of the Tulameen river, and its inaccessibility has prevented claim-holders doing much beyond assessment work.

*Summit No. 1, Summit No. 2, Fairplay* and *Kenzas* mineral claims have had two years assessment work done on them, while the work done on the *Mountain View* shows an increase in the width of the ledge.

Some very rich quartz ledges have been found on the summit of Hope mountain, and also on Whipson creek; several claims have been taken up and high assays have been obtained.

#### ASPEN GROVE CAMP.

Mr. Geo. Murray, Deputy Mining Recorder, reports as follows on the Aspen Grove Camp:—

On the group of claims owned by Messrs. Ossen, Silverthorn and Rogers, two 6 by 8 shafts have been sunk, having a depth of 12 and 21 feet, respectively. The ore carries bornite and gray copper, and there is a showing of red oxide in the deeper shaft. A comfortable cabin, 16 by 20 feet, and a blacksmith's shop have been built.

In the immediate vicinity of the last-mentioned are three locations held by the Mira Monte Company of California. On this group a shaft 6 by 8 feet and 12 feet deep has been sunk, and a tunnel 100 feet long has been run. The ore assays well in copper, with fair gold values.

The *Cincinatti Group*, owned by Bates Bros., comprises six locations, *Cincinatti Group*, situated on an elevated ridge, and affording good facilities for tunnelling.

Careful prospecting has been done, and an incline shaft of 30 feet, reaching a vertical depth of 22 feet, has been sunk in ore of undoubted richness, and would have been continued had not water interfered. An open cut 35 feet long and 5 feet wide has also exposed high grade ore. It is intended to cut the ore body at a depth of 120 feet by a tunnel 200 feet long; this tunnel is now in about 180 feet.

On the *Portland Group* of four claims an open cut 5 feet wide and 18 feet long has been made, exposing ore carrying gray copper, while a prospect hole 10 feet deep has also shown high-grade copper ore.

The ore from this property, two tons of which are now sacked up *Golden Sovereign*, awaiting transportation, is heavily impregnated with native and gray copper, and the lead is traceable for some distance.

Adjoining this group are three claims, owned, respectively, by Mrs. Dodds, J. Bates and J. Thynne. The required assessment work has been done on these, and the indications are promising.

The *Big Sioux*, the first location made in the vicinity of Aspen Grove, and which, on account of its exceptionally rich copper ore, speedily attracted prospectors, has, as the result of two assessments, an output of about 100 tons of high-grade copper ore, yielding fair values in gold and silver.

The *Giant*, in the immediate vicinity of the *Big Sioux*, and having the same owner, is reported as yielding high assay values in silver and copper. The ledge is 14 feet wide, and can be traced the entire length of the claim.

Two assessments have been done on the *Maggie*, which adjoins the *Giant*, and excellent copper values have been obtained. There are about 40 other claims in this vicinity, on which assessment work has been done.

The work on other claims is summarised briefly:—

*Happy Jack and Little Lottie*—One assessment done and well mineralized rock exposed, improving with depth. Owners, Messrs. Lowe and Brown.

*Copper Bell and Blue Bird*—Same owners as above. Two assessments done, exposing ore assaying 15 % in copper.

*Pearl Group*, on Dodd's Mountain—Owners, Messrs. Allan, Augstadt and Murphy. A tunnel, 55 feet long, through a body of chalcopyrite, 30 feet in width.

*Vancouver Group*, on Dodd's Mountain—Same owners as last mentioned. Tunnel in well-mineralized ore body. Both these groups are said to have been bonded to Mr. E. Mansfield, of Nelson, for a good figure.

Assessments on two locations owned by Messrs. Wells and Pollonaire gave favourable results.

*Bare Mountain Group*—Owners are doing assessment work and prospecting with a view to driving a tunnel.

There are several other claims on which work is being done, but I was unable to visit them.

Claim-holders in the Aspen Grove camp have a good deal of confidence in the future of the district, and the amount of assessment work being done may be considered a very hopeful feature; the indications are that ore bodies of considerable size and value exist.

#### GRANITE CREEK.

The Boston & British Columbia Mining Company has an expensive plant erected ready for active work in the spring. This plant embodies several features invented by Mr. J. Coleman, of Boston, Mass., which will enable the ground to be worked on the Placer Mining syphon principle. The property is situated at the junction of Granite creek with the Tulameen river, and was formerly known as the "Mainland Flat." At one time it was occupied by an old channel of the creek, supposed to be rich from the fact that the workings in the vicinity paid well for drifting until the water interfered with further operations. The results will be watched with interest.

The ground belonging to the Granite Creek Mining Company, situated about 2 miles above the old town of Granite, has been idle since the litigation instituted by the Golden Gate Company to obtain damages for the deposit of rock on their leasehold, resulting from blasting operations necessary for the laying of a flume. Although \$3,000 was awarded for the injury done, the latter company, strange to say, made no effort to develop the property which was the cause of the trouble. The heavy expense entailed rendered the disposal of the plant and leaseholds owned by the Granite Creek Company necessary. These were purchased by Mr. Alexander Snowden, who has obtained extensive water rights, and made arrangements for beginning work next spring.

#### SLATE CREEK.

The Slate Creek Mining Company's leaseholds are four in number, and are under the superintendence of Mr. Alexander Swan. Work was begun last summer, but owing to unex-

pected slides from the hill, which carried away the sluice boxes and flume, no wash-up was made. A large body of gravel, which yields good prospects in gold and platinum, indicates the existence of an ancient channel of Slate creek, which formerly found its outlet into the Tulameen river at this point, a considerable distance below its present mouth.

Desultory work is still prosecuted by a limited number of Chinese and a few white men on 9-Mile creek, and at isolated spots on the Similkameen and Tulameen rivers; the individual placer miner will, however, soon be a thing of the past in this Division.

OFFICE STATISTICS—SIMILKAMEEN MINING DIVISION.

Mining leases . . . . .	4	
Free miners' certificates . . . . .	380	\$1,479 25
Location records . . . . .	515	
Certificates of work . . . . .	400	
Conveyances . . . . .	152	
Mining receipts, general . . . . .		\$4,567 55
		<hr/>
		\$6,046 80

SIMILKAMEEN MINING DIVISION.

NOTE.—The following general description of the Similkameen District has been kindly contributed by Mr. W. M. Brewer, M. E.:—

During September, 1900, the writer made a trip through the Similkameen District, going in *via* the stage route from Spences Bridge on the C. P. R. This route follows up the Nicola valley to the town of Nicola, at the junction of the Nicola river and Nicola lake, thence passing south across the summit or watershed between the Nicola river on the north and the headwaters of the Similkameen river on the south.

The impressions received on this trip were that from a point about 20 miles from Spences Bridge throughout the entire distance to Princeton, 125 miles south from Spences Bridge, the country is well adapted for agriculture, where irrigation is possible, as well as for stock-raising and fruit-growing, besides having mineral resources which include coal, copper and gold ores, gold-bearing quartz, pyritous or refractory gold ores, galena, zinc, and iron ores.

Apparently there are two distinct mineral-bearing zones in the District, each of which has its line of strike north-westerly, in conformity with the general trend of the mountains and country rock throughout British Columbia.

The first and most extensive of these belts or zones is intersected by the Fraser river between Hope and North Bend on the C. P. R., and has its line of strike south-easterly towards the International Boundary. The Tulameen and Similkameen rivers and Granite creek intersect this zone in the Similkameen Mining Division.

The other belt or zone appears to have been intersected by the Thompson river, in the neighbourhood of Spences Bridge, and its line of strike apparently conforms very closely with the course of the Nicola river, but beyond Nicola lake and between that and Okanagan lake the conditions are unknown to the writer.

In the mountains on the eastern side of the Nicola river metalliferous minerals have been discovered, while, on the opposite side, the valley in the neighbourhood of the town of Lower



Nicola is underlaid by coal measures, in which occur seams of bituminous coal of commercial value. For some years past this coal has been mined on a limited scale for local consumption. It is reported that laboratory tests have determined its adaptability for coking. Lack of railroad facilities has necessarily retarded development of this coal-field, which is apparently quite extensive. Possibly the occurrences of coal discovered near Otter Flat on the Tulameen river, at Princeton on the Similkameen river, and in the neighbourhood of Fairview, to the south-east of Princeton, may belong to the same field as the Nicola valley coal; but a geological survey in detail would be requisite to determine the relationship, if any, existing between these several coal-fields.

The metalliferous minerals so far discovered in the vicinity of the Nicola river are copper ores, embracing chalcopyrite, bornite and some gray copper. These occur in the mountains back from the river and discoveries are reported from the neighbourhood of Spences Bridge, Mammette lake, 10-Mile creek near Lower Nicola, from the vicinity of Nicola lake, and in the neighbourhood of Aspen Grove. At present these discoveries are only "prospects with possibilities." Many of the claims were only located during 1900, and on none has there been performed other development than that incidental to assessment work.

In the first mineral zone referred to and which really comprises the Similkameen Mining Division proper, there was a large production of placer gold and platinum from Granite creek and the Tulameen river several years ago. Naturally, when the placer claims became worked out, miners and prospectors turned their attention to lode and hydraulic mining, and several plants for winning gold by the latter method have been installed on Granite and Slate creeks and on the Similkameen river, although during the season of 1900 all of these were idle. Various causes have been assigned for this inactivity, but probably it may generally be ascribed to bad management or insufficient systematic prospecting.

#### COPPER MOUNTAIN.

During 1900 the Copper mountain camp was the centre of most of the activity in mining in the Similkameen Division. It is situated about 12 miles from Princeton, in a south-westerly direction, and is reached by pack trail or waggon road. The latter was built by the *Sunset* Mining Company, in order to haul hoisting machinery and supplies to the *Sunset* mine.

Geologically considered, Copper mountain is apparently of volcanic origin and is made up of an immense diorite dyke, flanked on the northern side by felsite (locally termed porphyry), and on the eastern by granite.

The line of strike of the mountain is north-westerly and prospecting has determined that several quite extensive outcroppings of copper carbonates and bornite ore occur at intervals throughout nearly its entire length, a distance of about  $2\frac{1}{2}$  miles. Later development has determined that, apparently, a very wide zone throughout the igneous dyke is mineralized, the igneous rock forming the gangue of the ore. A large percentage of this ore is bornite, in fact on the *Sunset* mineral claim, even to an inclined depth of 200 feet (about 150 feet vertically) nearly all the ore is bornite, a small percentage of chalcopyrite being found associated with it, especially along the cleavage planes. On the other hand, on the *Sunrise* mineral claim, adjoining the *Sunset* on the west, most of the ore is chalcopyrite. On both claims the ore is disseminated through the igneous rock in masses and particles of variable sizes, and its origin is evidently from replacement. Considered *en masse* the ore bodies on Copper mountain must be classed as low-grade but, apparently, of great extent. When treatment is attempted the problem to be solved will be a metallurgical one, viz.: as to whether it will prove more profitable to treat the ore *en masse*, or to concentrate previous to smelting.

Except at the *Sunset* mine, but little work other than assessment has been yet done on Copper mountain. On that property, which is located on the summit of the mountain, an incline shaft 200 feet deep has been sunk, and a cross-cut tunnel about 50 feet in length driven through from the 150-foot level. This work has demonstrated that the ore-body maintains its continuity to the entire depth of the shaft and through the ground cross-cut, with ore in the breast of that tunnel. No drifting has been done. The felsite which was encountered at the bottom of the shaft apparently forms a wall or boundary on the north-east side but, so far as can be determined at present, there is no well-defined wall on the south-west side. In fact the surface exposures point to a possibility of the mineralization of the entire dyke across the *Sunset* and on to the *Sunrise* ground. Towards the west side-line on the latter claim the writer found unaltered diorite, free from mineralization, but much of the surface of the summit of the mountain is covered with moraine deposit, so that it is difficult to find natural exposures of rock in place, and consequently impossible to determine the thickness of the mineralized zone until it is fully cross-cut in the underground workings.

The mineral claims on which the most work has been done on Copper mountain, in addition to the *Sunset* and *Sunrise*, are the *Helen H. Gardner*, *Oriole*, *Humboldt* and *King Solomon*, located to the south-east of the *Sunset*, and the *Vancouver*, *Copper Farm*, *Princess Mary*, *Red Eagle* and *Triangle Fraction*, to the north-west of the same.

All of these mineral claims are located along the summit of Copper mountain. On the westerly slope the ground was all staked in 1899 and 1900 as far as the Similkameen river.

Wolf creek flows on the easterly side of Copper mountain, and on that slope several locations have been staked, the most promising being the *Virginia*, *Lost Horse* and *Olympia*.

#### KENNEDY MOUNTAIN.

On the west side of the Similkameen river is situated Kennedy mountain. The mass of moraine deposit, resulting from glacial action, which covers that portion of Kennedy mountain visited by the writer, practically hides the geological features, but apparently they are very similar here to those of Copper mountain. Comparatively few mineral claims had been located, and on these the work performed was limited, so that but little can be said, except that the prospects have possibilities. The principal locations are the *Brooklyn*, *Magnetic*, *Princeton*, *Lorraine* and *Red Buck*.

#### FRIDAY CREEK AND ROACH RIVER.

Friday creek and Roach river, tributaries of the Similkameen, were attracting attention from prospectors during the writer's visit to the district. It was reported that gold-bearing quartz of good grade had been discovered, but no material facts could be gleaned. From the reports, however, there is no doubt but that these camps will attract a good number of prospectors during the coming season.

Other sections of the district from which good reports were brought to the writer were the Tulameen summit, Kelly creek and Slate creek. All of these camps are directly tributary to Otter Flat, on the Tulameen river, but little more than the merest surface prospecting had been done at the time of the writer's visit. He was shown many good specimens of galena and zinc ore, which prospectors claimed occurred in quantity, especially on the Tulameen summit.

#### BOULDER CREEK.

The Boulder creek camp, situated about six miles northerly from Otter Flat, was also visited. This camp is 1,700 feet higher than the flat mentioned. Prospecting was only com-

menced during the summer of 1900, but several locations had been staked, and a considerable amount of work, considering the newness of the camp, had been performed. Bodies of sulphide ore occur on several claims, the outcroppings of which give indications of considerable extent in so far as maintaining continuity along the line of strike.

The country rock enclosing these bodies of ore is of a schistose nature, and in the near vicinity occur extensive dykes of granite. Probable the schistose rocks are altered granite, deriving their schistosity from a shearing movement.

One of the most important features connected with the Similkameen Mining Division are the coal-fields discovered during the past summer near Otter Flat. These discoveries, taken in connection with the field in the Nicola valley, and that in the Similkameen valley at Princeton, should certainly aid materially in the development of the country as soon as railroad facilities are furnished and the fields are systematically exploited and prospected.

#### NICOLA VALLEY.

With regard to the Nicola valley coal-field, the full extent of the find was not known at the time of the writer's visit, but reliable authority reported a seam ten feet in thickness, analyses of samples from which showed:—

Volatile matter . . . . .	37.2%
Fixed carbon and ash combined . . . . .	62.8%
	100.0%
Ash . . . . .	4.81%

This coal is reported as possessing good steam qualities, and as being adaptable for coking.

In the vicinity of this coal-field extensive deposits of non-titaniferous magnetite have been discovered. The analysis of a specimen made by the Geological Survey of Canada yielded 54 % metallic iron.

The second coal-field mentioned, that in the Similkameen valley, has been prospected but very little, except near Princeton. There the rocks are sandstones, slates and shales, in which occur seams of lignite of variable thickness. In the bank of the Similkameen river, opposite Princeton, a coal seam about six feet in thickness has been opened by a tunnel about 100 feet in length. This seam has a good slate roof and sandstone floor; its dip is nearly flat towards the south, but as it occurs at the top of a local anticlinal fold, it dips also at about 30 degrees towards both the east and west.

The surface outcrops and for some distance under cover in this tunnel showed a poor quality of coal, but towards the breast of the tunnel the quality improved, as is shown by the following analyses of samples made by the Vermillion Forks Mining and Development Company, which owns a mile square of the field:—

Moisture . . . . .	5%	5%	4.8%	4.5%
Volatile matter . . . . .	39%	36%	39.2%	34.5%
Fixed carbon . . . . .	49%	53%	49. %	50.5%
Ash . . . . .	7%	6%	7. %	10.5%

## YALE MINING DIVISION.

## REPORT OF W. DODD, MINING RECORDER.

I have the honour to submit my report on the mining operations in the Yale Mining Division during the year 1900.

**Mineral Claims.** The *King Group* is situated at St. Elmo, west of Hope, and is owned by Wadleigh & Co. The work accomplished is a tunnel 50 feet long.

On the *Union Bar*, east of Hope, the Mackay-Murphy Mining Co. has been engaged running a tunnel to strike the vein.

On the *Gold Queen Group*, situated on Siwash creek, east of Yale, assessment work has been performed.

On the *Montrose and Dandy Group*, owned by Dunn & Co., 60 feet of tunnelling has been run.

The *Erb Group*, on Boothroyd mountain, is owned by Bonthron & Co. A shaft has been sunk on the ledge for 19 feet.

*Lady Frances Group*, on Gordon creek mountain, is owned by Heinze & Co. A rock tunnel 20 feet long has been driven.

## PLACER MINING.

I regret to say that this branch of mining has not proved satisfactory. **Dredging.** The "dipper" dredge in use in this division is not adapted to cope with the various stages of high and low water. The seasons, too, are never alike; the river has been unusually high for the past two years, so that operations have been confined to the side bars, and the yield of gold has been comparatively light.

**Hydraulic.** The Ottawa Hydraulic Mining Company, at Boston Bar, carried on operations from the 1st of April to the 30th June, when work was suspended, owing to the scarcity of water. I regret to say I have been unable to obtain any information concerning the yield of gold from this property.

The Pacific Northwest Corporation, of Siwash creek, has been engaged laying flumes, building water ditches and driving a tunnel in order to reach bed-rock, involving an outlay of \$20,000.

## FRASER RIVER.

The lateral bars on the Fraser, from Ruby creek to Keefer's, are exclusively worked by Chinese. The yield of gold from this source has decreased during the last two seasons, principally in consequence of high water.

The estimated yield of gold during the past year, after making allowance for the absence of returns from three of the principal purchasers of gold at Yale, and from the Ottawa Hydraulic Mining Company at North Bend, is estimated at \$28,617.69.

## OFFICE STATISTICS—YALE MINING DIVISION.

Free miners' certificates, 121 .....	\$ 843 44
Mining receipts, general .....	3,398 78
	<u>\$4,242 22</u>
Certificates of improvement .....	4
Certificates of work .....	33
Mineral records .....	50
Placer " .....	13
Water " .....	9
Conveyances .....	25

## ASHCROFT MINING DIVISION.

REPORT OF J. W. BURR, MINING RECORDER.

I have the honour to submit my report on the mining industry in Ashcroft Division.

In the neighbourhood of Ashcroft very little mining of any kind has been done. In the early spring and in the fall placer mining has been carried on along the main Thompson river, chiefly by Indians and Chinese, but very few white men are engaged in it. Regarding quartz mining, very few claims have been recorded in comparison with former years, and what little work has been done has been more in the way of prospecting. No ore has been shipped from any of the claims in this division.

In Highland valley some very good locations have been made and Mineral Claims recorded, and a certain amount of work done upon them, proving the extent of the veins, and showing that they carry good values in gold, silver and copper. These properties are situated about 20 miles from Ashcroft, in the direction of Nicola. The chief requirement of this section is a good road to enable machinery, &c., to be taken in. The indications are that this will be an important mining camp in the near future.

On the Fraser river, between the northern and southern boundaries of Placer Mining the Ashcroft Division, the principal part of the placer mining has been going on. This is also done by Indians and Chinese, who appear to reap a good harvest by washing out the rich gravel in rockers and sluice boxes. Although worked over year after year in the same places, every high water appears to bring down fresh deposits of gold.

I regret very much to have to report that the large bucket dredge, built by the Cobeldick Dredge No. 1 Company, Limited, at Lytton, and from which so much was expected, has so far not proved a success. The dredge, which is fitted out with the very best machinery to be obtained, was completed this spring, and had a short trial in the middle of the river opposite Van Winkle bar. Everything appeared to work perfectly, and a considerable amount of gravel from the bed of the river was put through the sluice boxes, from which a very fair percentage of gold was obtained; for some reason, however, the dredge was tied up after this trial and has been lying idle ever since at or near Lytton.

The value of the gold taken out last year in the Ashcroft Division, as near as I can learn, is about \$19,354.80, and has all been produced from placer mining.

### OFFICE STATISTICS—ASHCROFT MINING DIVISION.

121 F. M. Certificates .....	\$ 564 24
75 mining receipts .....	387 10
40 certificates of work .....	100 00
29 minerals claims recorded .....	72 50
5 placer " .....	12 50
	\$1,136 34

---

---

## LILLOOET DISTRICT.

---

---

REPORT BY F. SOUES, GOLD COMMISSIONER.

I have the honour to submit herewith mining and office statistics and my annual report for the District of Lillooet for the year ending December 31st, 1900.

The total amount of gold obtained from placer mining in this district during the year, as ascertained from reliable buyers and mine owners, is **Placer Mining.** \$30,754, showing a still further falling off from that source. Mr. A. W. Smith, of Lillooet, is the largest buyer of gold dust, and reports to me that he has bought 973 ounces, valued at \$15,400, most of which was taken from the Fraser river by Chinese. So often has the same ground been worked over that placer mining has now been practically abandoned by white men, as well as by the Indians, who can obtain good wages at other work, while even the Chinese only have resort to this occupation when there is nothing else to be done. Under the present conditions placer mining by individuals will soon be a thing of the past in this district.

**Leaseholds.** From the mining leaseholds worked during the past season an aggregate return of \$8,531 is reported.

The Dutch Hill Company, at Big bar, has assigned its lease to a Chicago company, and it is the intention of the latter to bring in a powerful head of water from Big Bar creek, through steel pipes, which will permit the handling of a very much greater amount of the auriferous gravels annually.

Messrs. Glen and Richardson have secured the assistance of American capital in working their leasehold at the mouth of Bridge river. Unfortunately a freshet destroyed the dam in June, but a large amount of work has since been done in readiness for next season.

The Bridge River and Lillooet Gold Mining Company has assigned its mining leases (14) on and near the Horse Shoe bend, on the lower river, to the Bridge River Developing Company, and energetic work has been commenced under the superintendence of Mr. W. W. Brown, acting for the last-named company. Twenty-five men have been employed in erecting buildings, excavating ditches, &c. The main ditch, when complete, will be about three miles in length, of which one mile is now finished, while a bunk-house, eating-house and cabins for the men have been constructed. There are 25,000 feet of lumber on hand, in addition to a large amount already used for flumes, &c.

Mr. Brown's own lease adjoins the above property, and on this 4,000 feet, lineal, of a ditch 7 feet wide by 3½ feet deep, have been constructed. Mr. Brown is confident of being in a position to work the company's property, as well as his own, early next season.

On other mining leases in the district no work has been done during the past year.

**Quartz Mining.** My official duties prevented my visiting, personally, any of the mineral claims in this District, and I am, therefore, indebted to the gentlemen whose names are mentioned for the information obtained.

## BRIDGE RIVER.

Mr. Robertson, Secretary of the *Bend 'Or* mines, Cadwallader creek, Bend 'Or Mines. informs me that about 1,500 feet of tunnelling, and a good deal of surface work, have been done on this company's property, and that, in addition to the mill, a manager's house, bunk-house, cook-house and warehouse have been erected, about forty men having been constantly employed during the summer. Power sufficient for twenty stamps is obtained from Cadwallader creek, a flume 400 feet long and giving a head of 25 feet at the mill having been built. The mine has been operated continuously since August, 1897. The following is a synopsis of the work done during the past year (March 19th to December 1st, 1900):—Mill run of 168 days 6 hours; ore crushed, 3,243 tons; yield by amalgamation, 2,100 ounces bullion, or 1,681 ounces fine gold; average assay value of tailings, \$4.49 per ton; cost of mining and milling per ton, \$5.13.

I am indebted to Mr. Gibbs, of Cadwallader creek, for the following information:—

The *Forty Thieves Group*, situated near the junction of the south fork of Bridge river, comprises the *Berta*, *Ural*, *Forty Thieves* and *Elephant* claims. The ledge is naturally exposed along the face of a rocky bluff; it has an average width of 4 feet and carries high values. The claims are held under Crown grants and no work has been done for the past two years, but it is the intention of the owners to place machinery on the property upon the completion of the road next year (1901).

Three claims adjoining the last mentioned are owned by Messrs. McDonald and Patterson, and a quartz ledge, 8 feet wide, has been encountered.

On the *Why Not*, lying east of the *Forty Thieves*, two ledges have been exposed carrying good values.

Mr. McLeary, part owner in a group of claims north-east of the *Why Not*, performed a large amount of work this summer on his properties and was successful in striking a very good ledge of free-milling quartz.

On the east of these claims is the *Black Jack*, on which the ledge has been stripped, high assays being obtained, and adjoining this claim on the south are the *Winnipeg*, *Brandon* and *Waterloo*, on all of which good ledges were found carrying gold values. Next to these, again, are the *Silver Plate*, *Silver Crown*, *Bilk*, *Royal* and *Duke*, and adjoining the *Duke* on the east side and between that and the *Lorne* is the *Maud S. Fraction*. Considerable work has been done on this latter claim, a 12-foot shaft having been sunk on a ledge which averages 4 feet wide, with free gold visible in the quartz.

North of the *Maud S.* are the *Casino* and *Cosmopolitan* claims, on both of which a good ledge has been exposed. On the east of these is the *Goldfield*, which has an excellent showing.

Adjoining the latter is the *Lorne Group*, celebrated, and justly so, from the fact that the owners, without the aid of outside capital, have by the primitive arrastra won some \$20,000 in gold during the last two seasons. A network of gold-bearing quartz exists on this property, which has now been bonded to an English syndicate for \$150,000. To the south-west of the latter is the *Woodchuck Group*. Two arrastras were operated on these claims this season, and they have also now been bonded to an English syndicate for the sum of \$75,000.

Adjoining the *Lorne Group* on the south-east are the *Alhambra*, *Night Hawk* and *Metropolitan* claims, on which a large amount of work has been done, exposing a good ledge carrying high values, while to the east of the latter are the *Hiram* and *Copeland* claims, on both of which good ledges have been exposed

North-east of the *Lorne Group* are the *Nellie*, *Goldleaf* and *Goldleaf Fraction*, on which there is a strong quartz ledge, and to the east of the *Hiram* is the *Blackbird* claim, on which a good deal of work has been done in stripping a very fine ledge. Adjoining, again, is the *Ida May Group*. No work has been done on this property for the past two years, it being held under Crown grant, some \$20,000 having been spent in development in the past, thoroughly proving the value of the property. It is the intention of the owners, as soon as the road is passable, to erect a mill and work the property.

East of the *Bend 'Or* is the *Countless* claim. Two ledges, 3 to 4 feet wide, extend across this property, with free gold visible in the quartz.

On the *Pioneer*, considerable work has been done in driving tunnels and stripping the ledge. The quartz on this claim will compare favourably with any in the District.

Lying next to the *Pioneer* is a group of six claims. On this property a ledge has been discovered which assays well, and a further strike of rich quartz has been made further east on the same property.

Comparatively speaking, very little work by way of actual prospecting has been done in this section this season; but with the improved means of access which the new road will provide, this portion of the District should attract more attention.

#### MCGILLIVRAY CREEK.

The *Brett Group* of claims on McGillivray creek has been sold to the Anderson Lake Anderson Lake Mining and Milling Company, and a 10-stamp mill was M. & M. Co. erected last spring. I am indebted to Mr. T. A. Brett, one of the original owners, for the following information:—

The property comprises two claims, situated on a mountain-side, at an elevation of 2,700 feet above Anderson lake and about  $2\frac{1}{2}$  miles up McGillivray creek. The mountain has an average slope of  $35^\circ$  and the ledge stands almost perpendicularly, the development being by tunnels, of which No. 1 is now in 375 feet, with an upraise from the 200-foot cross-cut to No. 2 tunnel or level, which is in a distance of 175 feet. No. 3 tunnel is in 80 feet and all are in pay-ore having an average value of \$5 per ton in free gold. The ledge is about 10 feet in width.

A 10-stamp mill has been erected and there is an excellent water-power sufficient for 40 stamps; a tramway has also been built.

It is intended to re-organize the Company with a view to adding additional stamps, concentrators, etc. The expenses of mining and milling are moderate.

#### CAYOOSH CREEK.

The Toronto-Lillooet Gold Reefs Co., Limited, head office, Toronto, Ontario, purchased during 1899 the whole of the property of the Golden Gold Reefs Co. Cache Co., together with the 10-stamp mill, power plant, tramway, etc. This Company has also acquired the *Ample*, *Whale*, *Monarch*, *Gladstone* and other properties, a total of 21 claims and 3 mill-sites.

The following information I extract from the report of Mr. Rives, Superintendent of the Company:—

Development has been confined to the *Ample* mineral claim, on which an inclined shaft, following the ledge, has been sunk to a depth of 140 feet, with drifts on each side, the two



longest of which are 80 and 60 feet, respectively, and are entirely in ore. In addition, four tunnels have been run in, cutting the ledge at various distances from each other and developing it for a length of over 400 feet, the vein showing a varying width of from 20 to 30 feet, with an assay value of about \$18 per ton in gold.

Substantial and comfortable buildings have been erected at the mine, comprising foreman's house, boarding-house, bunk-house, blacksmith shop, etc. The Company has upon its mill-site a large, high-speed, roller quartz-mill, capable of reducing 50 tons of ore per day, the gold being extracted by the cyanide process. This mill was only in operation during the month of August last, and the ore crushed had an average assay value of \$17.40 per ton in gold. Owing to certain defects discovered in the machinery during its running, operations were suspended to have these remedied and to instal additional rollers, etc. This work of repairing and adding to is still in progress, but it is expected that the mill will be in full operation again towards the end of December (1900). The ore can be mined and reduced at a cost of not over \$4 per ton. The mill is situated about a mile from the mine, which is at an altitude of 1900 feet above the former. The ore is brought down by a substantial aerial bucket tramway, recently erected.

The machinery is operated by compressed air, the large power plant owned by the Company being situated about a mile above the mill on Cayoosh creek and operated by water. The power is transmitted to the mill through a 4-inch air pipe.

In addition to the large cyanide quartz-mill, power-plant, tramway, and other buildings already mentioned, the Company has also erected a comfortable house and office for the general superintendent, mill-foreman's house, boarding and bunk-house for the men, large, assay office and chemical laboratory, blacksmith shop and other buildings.

#### BLACKWATER CAMP.

The claims in this portion of the District have had no development done on them during the year. The same remark applies to the mineral claims of the B. C. Development Co. on the Bonaparte river, the claims on the Big Slide and those at Mahood lake.

A number of mineral claims were located last summer on the west side of the Fraser river and opposite to Little Dog creek. The ore is said to contain gold and silver values and assays 12 to 17 % copper. No development work has been done, however.

Development work has been done on several of the locations on the Marble mountains west of Clinton, as well as on the mineral claims at Dog creek.

The ledge of sulphide of antimony on Cadwallader creek has apparently been abandoned for the greater inducements of the gold-bearing ledges in that neighbourhood. On the Natron lakes, north of Clinton, nothing has been done this year.

**Dredging.** This class of mining has been at a complete standstill. The property at Big bar changed hands a short time ago, and is to be worked now, I understand, on a different principle, and with improved means for saving the fine gold.

**Coal.** Several prospecting licences for this mineral have been issued in the past year to parties on the North Thompson river.

In conclusion, I may say that the falling off as regards placer mining is more than offset by the improved returns from quartz mining and the bright outlook in this direction for the coming year.

## BRIDGE RIVER SECTION.

The following report on the Bridge River Section of the Lillooet Mining Division is kindly contributed by Mr. W. M. Brewer, M. E. :—

As far back as the early days of the Cariboo placer mines, Bridge river, a tributary of the Fraser, was prospected by placer miners at least as far up as the mouth of the Tyauchon (pronounced Tyaxon) creek. One of the earliest constructed trails into the Cariboo District followed up the westerly bank of Bridge river, crossed that stream near the mouth of Tyauchon creek, and, following up the latter, crossed the divide to the Fraser river.

Between the Horseshoe bend of Bridge river and Tyauchon creek it is hardly probable that any prospects were discovered worth considering at that time; but reports from old Cariboo miners state that on Tyauchon creek good diggings were struck.

Later, prospectors discovered good pay on the south fork of Bridge river, about 20 miles above the mouth of Tyauchon creek. These facts led prospectors for lode mines to give a good deal of attention to this section of the Lillooet Mining Division in 1897 and the following years.

During the placer mining days, rich quartz float and a vein of gold-bearing quartz, from which several rich specimens were taken, were discovered above the mouth of the south fork of Bridge river, and a group of claims, known to-day as the *Forty Thieves Group*, was staked.

Inaccessibility rendered it impossible to work quartz claims at that time, because of the high rates charged for packing supplies—rates which would have rendered any attempt to take in heavy machinery out of the question. Consequently, the time for the commencement of working lode claims in this camp was deferred until 1898, although previous to that time a hydraulic mining lease, comprising the ground near the mouth of the south fork of Bridge river, had been granted to a syndicate and worked on a limited scale.

The discovery, during 1897, of rich float on Cadwallader creek, which flows into the south fork of Bridge river not far from its source, caused a stampede of about 300 prospectors into that locality in 1898, when the *Little Joe*, *Ida May*, *Lorné*, *Woodchuck*, and a large number of other claims were staked.

Wherever any natural exposure of the outcrop of a vein occurred, remarkably rich specimens of quartz were found, carrying particles of free gold, often as large as grains of wheat. But these natural exposures were of rare occurrence, because the surface of the ground is usually covered for a depth of from 10 feet upwards with the residue from decomposed gneiss or granite, the mica and feldspar having suffered by degradation, leaving a bed of particles of the insoluble silica which the earlier prospectors termed "cinder." The fact that the main vein of the camp outcropped a considerable distance below the summit of the first range of hills lying back from the north side of Cadwallader creek, and that, when prospected for with open cuts, it was found following the ramifications of this range of hills on a gentle slope or plateau rising at an angle of only about 20 degrees, rendered prospecting and developing quite expensive, and necessarily progress was slow.

However, during the summer of 1897 the attention of Vancouver investors was attracted by the rich specimens of free gold in the quartz, and the *Little Joe*, *Ida May* and *Forty Thieves Groups* were bonded by syndicates, development work being begun with vigour. This work has resulted, so far as concerns the *Little Joe*, which, with adjoining claims, to-day comprises

the *Ben d'Or Group*, in a production of nearly \$70,000 to date from amalgamation, with about 5,000 tons of tailings saved for treatment by the cyanide process, an average sample of which assays \$11.60 per ton.

Considering this section of the Lillooet Mining Division from a geological standpoint, it has apparently escaped many of the complications so general in other portions of the Province. From the mouth of the south fork of Bridge river, up that stream and up Cadwallader creek itself, there is little if any evidence of convulsions of the earth's crust. Severe degradation of the rocks is evident on every side, but this is attributable to weathering, erosion and partially at least, to glacial action. The work of erosion is being extensively carried on at the present day.

The surface, especially on the plateaux and on the slopes of at least the first range of hills lying back from the streams, is covered with the residue from the degradation of a feldspathic rock, probably gneiss or granite, while the beds of the streams are filled with immense boulders, mostly of granite, and the rugged bluffs, where such occur, are usually formed of a feldspathic rock slightly schistose in structure. These conditions indicate that the country rock is at least granitoid, though an examination with an ordinary lens fails to determine its exact classification. It is highly siliceous, and much altered, suggesting a theory, which is also warranted by the other features mentioned, namely, that the original country rock was either granite or gneiss.

The mountains lying back from the streams are precipitous, very rugged, and reach such altitudes that many of their peaks are always covered with snow. In fact, when crossing a pass near the summit between the upper Lillooet river and Bridge river on the 15th of June, 1898, the writer found nearly four feet of snow on the level, covering a park-like valley between two of these mountain ranges. The altitude of the outcroppings on the properties on Cadwallader creek is from 3,900 to about 4,200 feet above sea level, while the summits of the near-by mountains are at a much higher altitude. The plateaux, side-hills and valleys between the mountains are covered with bunch-grass, which affords excellent grazing for stock during the summer months, and enables the prospector to use pack and saddle horses, instead of packing on his back as he is compelled to do in many portions of the Province.

Timber, though plentiful, does not grow as large, nor is the underbrush as dense, as nearer the coast. Pine is the predominating variety in the mountains, with willow and cottonwood on the river bottoms.

The streams tributary to the upper Bridge river are usually of limited length, and rush down from the snow-clad mountains and glaciers with very strong currents, thereby affording ample opportunities for the development of water-powers sufficient to run the heaviest of machinery. In fact, on Cadwallader creek a power exceeding 100 horse-power could be developed about every half-mile, from its source to its mouth, so rapid is the fall. It is owing to this fact that stamp-mills can be run more economically in this camp than would otherwise be the case, since, by reason of lack of railroads or even waggon roads, it would be impossible to freight in coal for steam purposes, and the expense of wood for fuel would reduce the profits of milling operations very seriously.

The course of Cadwallader creek and the south fork of Bridge river is nearly a semi-circle, the former flowing southerly and making a turn westward to its junction with the latter, which flows westerly for some distance, then makes a turn to the northward and empties into the main Bridge river on the south side, and about 40 miles from the ferry on the northern side of Mission mountain, where the trail from Lillooet intersects the river.

A study of a map showing the locations staked in the Cadwallader creek camp reveals the fact that prospectors have followed the ramifications and curves of the first range of hills lying back from this creek, starting from the *Forty Thieves Group*, near the mouth of the south fork of Bridge river.

Nearly all the mineral claims staked are situated on the eastern side of the south fork of Bridge river and on the northern side of Cadwallader creek. The country on the opposite sides of both streams has hardly been noticed by prospectors yet. One reason for this is that, by following up Cadwallader creek to its source, it was found that McGillivray creek, which empties into Anderson lake to the south-west of Seaton lake, and which is only separated from the latter by a two-mile portage, also rises in the same chain of lakes as Cadwallader creek, and, as an Indian trail leads up the latter and down the former to Anderson lake, many prospectors followed this rather than strike out to the north-west and out their own trails, while another inducement was that, during the autumn of 1898, good prospects of free-milling quartz were located on McGillivray creek. The prospects referred to are known as the *Brett Group*, on which, during 1900, a 10-stamp mill was erected and the property opened up.

Specimens are often found on this group of claims of quartz showing free gold, both on the surface and in the vein in the workings, but internal strife in the management during 1900 retarded progress of the work, consequently it will be another season before the value of the property has been proven.

But to return to the Cadwallader creek camp and consider it from a mining standpoint with the development done to date.

Hydraulic mining will begin this year, in May, on the leases owned by a New York syndicate near the mouth of the south fork of Bridge river. This ground has already produced a good yield in placer gold, but during the present season it is the purpose of the owners to work it more systematically with heavy machinery. Above this ground, good prospects can be obtained, but the boulders in the stream cannot be handled at a sufficiently low cost to render the work profitable.

On the *Forty Thieves Group*, no work has been done since 1898, when a cross-cut tunnel was commenced to intersect the vein at considerable depth. This was abandoned before the vein was reached, and the bond on the property was forfeited. The quartz vein outcrops for at least 1,000 feet, and a drift could have been run which would have proved it up foot by foot, with the "backs" increasing rapidly.

On Cadwallader creek, the *Lorne* and *Woodchuck Groups* are being developed by the Mines Exploration, Limited, a company which holds a bond made on these properties last autumn. A 5-stamp mill is being erected to take the place of the 5 arrastras which were run on these claims during 1899 and 1900. The yield from the arrastras, which were run by water power, was as follows:—Gold sold to the United States Assay Office at Seattle, Wash., 661.97 ounces of retort, netting \$10,715.66. Some gold was also sold privately, the returns for which are unknown to the writer. The water for power purposes was brought in from a chain of lakes situated to the north of the claims, and which form the head-waters of Sucker creek, a tributary of Bridge river which flows nearly parallel to Cadwallader creek and empties into the river about two miles below the mouth of the south fork.

Both of these groups are being developed by a series of drifts run on apparently five distinct veins. Three of these veins occur on the *Lorne* and two on the *Woodchuck*. A cross-cut tunnel is also being run on the *Woodchuck* to intersect the main vein at a depth of about

200 feet. The lines of strike of these veins are about N. 40 degrees E. mag., except one on the *Woodchuck*, which apparently more nearly corresponds with the line of strike of the *Bend' Or* vein, which will be described later in this report. The dip of all these veins is about 70 degrees, and towards the north-west.

Mr. Leslie Hill, M.E., of Vancouver, reports that the average from 11 assays gave \$20.23 per ton.

Although no connection has been established between any of these veins and others in the camp, yet there is a possibility that such connection will be determined when sufficient development has been done on claims located to the west.

The theory is apparently warranted that a main vein extends through the camp, judging from the exposures in the open cuts, and drifts of the gold-bearing quartz vein on the claims easterly from the *Lorne* and *Woodchuck Groups*, notably on the *Hiram*, *Blackbird*, *Ida May*, *Little Joe*, and *Countless*, but the overlying material hides all natural exposures except at one point on the *Ida May* and another on the *Little Joe*, where the rocks have escaped the degradation and outcrop prominently for a short distance. The strike of the veins being unconformable with that of the country, and the walling being well defined, they present all the indications of fissures.

About 20 miners, besides workmen on the mill, are employed on these mineral claims.

On the *Alhambra*, adjoining the *Lorne* on the east, a vein, having its line of strike nearly parallel to the *Lorne* veins, is being developed by drifting. Its thickness averages about 2 feet 6 inches, its walls are well defined, and a talcose gouge occurs between the walls and quartz. This claim was purchased during the autumn of 1900, as a prospect, by a New York syndicate, with Mr. Milton Rathburn, of that city, as principal stockholder. The purchase price was \$30,000, paid within sixty days from date of bond.

On the *Hiram*, about 2,500 feet easterly from the *Alhambra*, a vein has been exposed in an open cut, having its line of strike nearly east and west. The work is not sufficient to determine material facts, but apparently the walls will prove to be well defined.

About 200 feet easterly from the last-mentioned exposure, on the *Blackbird*, *Blackbird*, the adjoining claim, the owners have uncovered a vein of gold-bearing, free-milling quartz, which appears to be an extension of that on the *Hiram*, having the same strike. It is enclosed between well-defined walls, with talcose gouge parting between the quartz and walls. This vein was uncovered by ground-sluicing, water from the head of Sucker creek being used for the purpose.

There also occurs another vein of quartz on this property, about 12 feet thick where it is exposed in an open cut. The values in this are low, and until transportation facilities are improved this ore body could not be worked to a profit. The strike is nearly E. and W., and the dip almost vertical, inclining towards the N.

Adjoining the *Blackbird* on the east is the *Ida May* claim. This was one of the earliest discoveries on Cadwallader creek, and about 500 feet of tunnels were run on the property during 1898. The ore is a free milling quartz, carrying values averaging about \$20 per ton near the surface on the main vein, the strike of which is nearly E. and W., the dip being at an angle of about 35 degrees towards the north. Another quartz vein has been cross-cut on this claim, and drifted on in both directions from this cut, but, as the drift was run in the country rock on the hanging-wall side instead of on the ore body, it is difficult to determine many material facts. The strike of the vein is

E. and W., the dip vertical, and its thickness is 3 feet 6 inches where cross-cut. This lead carries much lower values than the one first mentioned, and apparently is separate and entirely distinct from it. It occurs about 150 feet nearer to the creek, and appears to trend parallel with it; the over burden, however, is too heavy to permit any natural exposures of outcrop to be found on either vein. The work on the upper vein was started on the only natural exposure of outcrop the writer saw on the claim.

Both veins bear every indication of being fissures, and, as far as exposed by the work done, maintain unbroken continuity, while the walls are well defined with a talcose gouge parting.

The work on the upper vein is unique from the fact that an incline tunnel was started and a drift run off to the east, when the operators apparently concluded that the first tunnel was not at sufficient depth, and another was started on an incline, immediately under the first, so that the roof timbers of the second now form the floor of the first. Being on an incline into the mountain, of course all the surface water is held, and during the visit of the writer there were fully three feet of water in the under tunnel, which is apparently much longer than the upper one.

There are about 250 tons of gold-bearing quartz on the dump at the mouth of the upper tunnel.

The *Bend 'Or* group adjoins the *Ida May* on the east. This property **Bend 'Or.** has been developed by drifts on three levels, the lowest being about 200 feet below the apex of the vein. Nearly 1,800 feet of work has been done, and about 6,000 tons of ore mined and milled in the ten-stamp mill on the premises. This ore has yielded nearly \$70,000 from amalgamation, with tailings saved for treatment by concentration and the cyanide process. The underground workings prove that the walls of the vein are unbroken for nearly 800 feet, and outcrops have been exposed about 500 feet from the present face of the east drift. The thickness of the vein-filling which is stoped and sent to the mill varies from about 12 inches to 4 feet, and sometimes the vein has pinched to a few inches, although without any apparent break in the walls or gouge. This gouge carries about equal values with the quartz. Although the thickness of the vein is limited, yet the conditions of the walls and gouge admit of economical mining, because much of the stoping can be done with pick, without the aid of dynamite, and no timber, except short stulls, is required to hold the ground.

The strike of the vein is nearly E. and W. mag., and the dip 65 degrees to the north.

A magnificent water power has been developed on Cadwallader creek, and with this the stamp mill, which is located about 600 feet from the mouth of the lowest tunnel, and connected with the mine workings by a gravity tramway, is run.

The average value of the ore is about \$30 per ton, of which about 50 % is saved by amalgamation. The values in the mine vary from \$4.40 to \$158 per ton in gold.

The water power developed is quite sufficient to run a 40-stamp mill, together with mine machinery, if a larger water wheel is installed.

The *Countless* claim adjoins the *Bend 'Or* group on the east. This was the farthest claim up the Cadwallader creek which was visited by the writer. Assessment work only has been done on this property, and this has resulted in exposing a vein on the same line of strike as the *Bend 'Or* or *Little Joe* vein, five different open cuts having been made, the first being about 250 feet east from the side line of the *Bend 'Or* group. These open cuts are situated at

such distances from each other that the vein, while apparently maintaining its continuity an undetermined distance, has been proved for a distance of about 200 feet. It occurs in variable thickness of from 8 inches to 7 feet 6 inches, and assays show the values to vary from \$3.80 to \$31.20 on samples taken by the writer from sections through the vein material.

The walls and talcose gouge are well defined and promise permanency. The strike is nearly E. and W. mag., and the dip apparently about 65 degrees to the north.

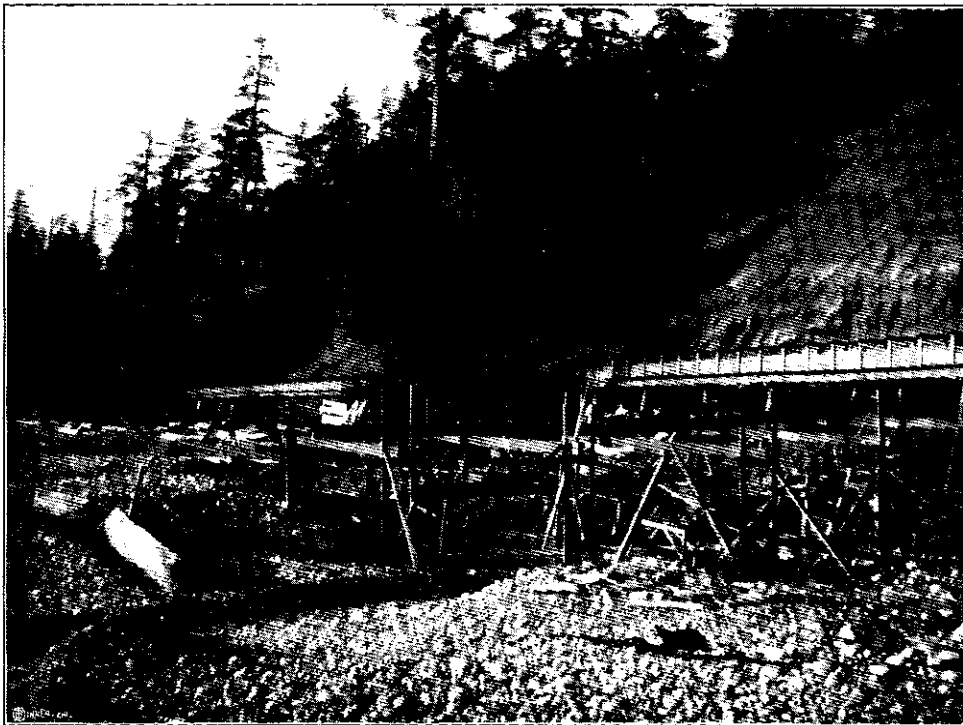
Up Cadwallader creek, above the *Countless*, is located the *Pioneer* claim, on which a one-stamp testing mill has lately been erected, and the owners are working to determine occurrence, extent and values of the ore body which has been opened up.

OFFICE STATISTICS - LILLOOET DISTRICT.

Mineral claims recorded .....	166
Placer " .....	2
Conveyances .....	76
Certificates of work .....	115
Placer claims re-recorded .....	3
Water grants recorded .....	6
Dredging leases in force .....	19
Mining " .....	40
Free miners' certificates .....	\$1,784 65
Mining receipts, general .....	3,881 35
Mineral tax .....	311 53



SHORE LINE--WRECK BAY PLACERS--W. COAST V. I.



FLUME--WRECK BAY PLACERS--W. COAST V. I. MINING DIVISION.



---

---

## VANCOUVER ISLAND AND COAST.

---

### ALBERNI DISTRICT.

---

#### ALBERNI MINING DIVISION.

In this Division the only lode mine that has shipped any ore during Monitor Mine. the past year is the *Monitor*. This property, consisting of the *John Bull*, *Uncle Sam* and other mineral claims, is situated at Monitor Landing on the north side of the Alberni canal, about 2 miles from its mouth.

The property was bought in 1899 by G. W. Maynard, of New York, acting for a syndicate known as the Monitor Copper Mining Co., Limited, with office at 20, Nassau street, New York.

The various claims included in the property extend upwards from the shore line and over the hill for some three-quarters of a mile. The actual development work has been confined to the two original claims already mentioned, which are situated about half a mile from the shore at an elevation of 600 to 800 feet.

The development work done consists of a tunnel which follows in a deposit of yellow copper ore, associated with magnetite and garnet and occurring in a highly metamorphosed or igneous country rock.

Up to the end of the year (1900) the tunnel had carried a full face of ore all the way for about 200 feet but, as no sinking has been done on the lead, the dip had not been demonstrated. In 1900 one shipment of about 200 tons of ore was made to the Tacoma Smelter, since when several other shipments have been made which gave on smelter returns about 10% copper, with from 1 to 1½ oz. of silver and a trace of gold.

Having about 600 or 800 tons of ore on the dump, the Company then erected an aerial tramway from the mine to the shore, where a dock was also built, as well as ore bins and temporary offices and buildings.

The prospect—for such it must still be considered—looked exceedingly encouraging and the development of the property will be watched with interest.

In addition to the above some prospecting work has been done and it is reported that this has revealed, much nearer the shore, another prospect of considerable promise. The property is under the local management of G. M. Maynard, while E. A. LeWald is superintendent. About 12 men are employed.

The most developed property in the Division is the *Three Jays* or, as J. J. J. Mine. it is best known locally, the *Hayes* mine. The property has not shipped this past year, but from 10 to 15 men have been steadily at work.

For the following description of the property I am indebted to Mr. Chester F. Lee, M. E., who has been employed in a professional capacity by the Company (Nahmint Mining Co.).

“The *Three Jays Group* is situated at an elevation of 1,750 feet above the sea level, two miles distant by waggon road from and on the west side of Alberni canal, and about 20 miles

by water from the Pacific ocean. It is owned by the Nahmint Mining Co., of Portland, Oregon; Col. G. H. Hayes, of Victoria, Manager.

"The group consists of the following claims: *Three Jays*, *Three Jays No. 2*, *Three Jays No. 3*, *Blue Jay*, *Viking* and *Norway Fractions*. All are Crown-granted. There are also eight acres at the landing, held by purchase. The veins show ore for a length of 5,000 feet.

"The early developments indicated a north and south vein, but it was soon found that the ore ran east and west, and when 1,000 feet or so of work had been done there appeared to be three parallel veins with spaces of 105 and 120 feet between them. Now, however, with over 3,000 feet of work, it is plain that all the ground explored is an ore-bearing zone in which ore may be found at any point. The trend of all the ore bodies is east and west and the chutes all dip about 80° south, pitching to the west. The limit of ore-bearing ground has not been found, but there is reason to expect ore beyond present developments for considerable distances in all directions, as there is no known change of formation to alter the conditions. The ore chutes as found vary in thickness from 6 to 28 feet, and in length from 65 to 148 feet. There are five known bodies of first-class ore and two of second-class. The ore is chalcopyrite with a neutral gangue. The first-class does not need concentration.

"The North Pacific coast of America has long been known to geologists as one of the most heavily glaciated areas of the world. This is notably the case with Vancouver Island. Its deep bays and arms of the sea have been compared to the fiords of Norway and the gougings and striations of the ice sheet are plain and abundant. The west coast of the island is near an axis of upheaval, and what is now the coast line appears to have been the crest of an anticlinal fold which broke at that point, leaving a rough upturned edge to be afterwards planed off by the ice sheet. It is in the older crystalline rocks near the coast that the copper deposits lie. At the *Three Jays* mine and for some distance in all directions the formation is an altered porphyritic rock, light and dark in alternate bands. A typical piece of the light has been found by microscopical examination to be "a sausserite-gabbro, containing augite and plagioclase, much altered by silicious infiltration in cavities formed by the decomposition of monoclinic feldspars." Most of the ore is found in the light porphyry. Limestone, more or less silicified, shows in bunches and irregular bodies throughout the workings and in an unaltered state in bluffs on the surface, but so far no definite relation between it and the ore has been found. The ore bodies show the characteristics of copper deposits in crystalline rocks and not those of lime deposits.

From the evidence at hand it is believed that the mineralization of this deposit took place subsequently to the alteration of the porphyritic rocks and limestones.

The work done to December 1st, 1900, is 3,118 feet, distributed as follows:—Shaft No. 1, 144 feet; shaft No. 2, 85 feet, with a 22-foot drift; tunnel No. 1, with its connections, 1,410 feet; tunnel No. 2 and connections, 1,392 feet; tunnel A, 55 feet. The work done during the year 1900 consisted of 786 feet of drifts, 193 feet of winzes, and 168 feet of raises; total, 1,147 feet. This is included in the above total.

The deepest workings are 400 feet below the outcrop. There has been no stoping, and all the ore shipped and on the dumps has been what was taken out incidentally in doing the above development. All the work in the mine is in excellent shape, and has been done in good, workmanlike manner.

During 1898 and 1899 trial shipments were made from ore taken out in the course of development, which included all parts of the mine. The amount shipped, 190 tons, was sent

to the Tacoma smelter. The average return was 13.27 % copper, 1.06 ounces silver, 65 cents gold per ton. The ore now on the dumps amounts to some 600 tons of a similar character.

On February 1st, 1900, there were 42,000 tons of first-class ore in sight in the mine and 30,000 tons of second-class. During 1900 the reserves of first-class were increased 50 %, and of second class doubled, being a total of 63,000 tons of first-class and 60,000 tons of second-class.

The first-class ore can be shipped to the smelters on Puget Sound at a profit, over all expenses, of \$9.60 per ton. If matted on the ground in sufficient quantity this profit could be increased to \$14.25 per ton, at least on the basis of present prices.

From 10 to 30 men have been employed continuously during the year, and the cost of development per foot of work has been kept down to a low figure.

The surface improvements consist of a fine dock and warehouse at Hayes Landing, on Alberni canal, with a house and office, stable, store-room, bunk-house and foreman's house at the same place. There is an excellent waggon road of two miles to the mine, where there are two ore-sheds, two blacksmith shops and a shaft-house, as well as accommodation for 30 men.

#### ALBERNI MINING DIVISION.

##### REPORT OF A. L. SMITH, GOLD COMMISSIONER.

I have the honour to submit my report of mining operations in the Alberni Mining Division for the year 1900.

The Nahmint Mining Co.'s property consists of four Crown-granted Nahmint Mine. claims and four Crown-granted fractions, comprising an area of 143 acres, and is situated about 13 miles distant from the town of Alberni, on the Alberni Canal, about two miles from deep water.

On the water front the company has a good wharf with storehouse, office, dwelling-houses and stables, while up at the mine there are large, well fitted bunk-houses and dining-rooms.

Development work on this property has been carried out continually since the spring of 1898, resulting in 3,370 feet of development work being accomplished up to date.

The average number of men employed on the property during the entire year was twenty.

The Monitor Mining Co.'s property, situate on the Alberni Canal, and distant from the town of Alberni about 18 miles, comprises a group of five claims, namely, the *Nahwhitka*, *John Bull*, *Uncle Sam*, *Monitor No. 2* and *Monitor No. 1*.

All the development work has been done on the *Uncle Sam* claim, which is distant from deep water a distance of 2,200 feet, and is connected by a double rope tramway (aerial) with the company's wharf. At the lower terminal of this aerial tramway an ore bunker, with a capacity of 400 tons, has been erected, and from this terminal to the wharf a trestle tramway has been constructed, fitted with a turntable and tipple so as to admit of the loading ore on to steamships with a four-ton car. The upper terminal of the tramway is fitted with a bunker having a capacity of 50 tons, and is connected with the mine by a part drift and part incline tramway.

Development consists of a tunnel 170 feet in length and a shaft 35 feet in depth, together with some stoping work. On the dump and stored in the bunkers there are 500 tons of ore.

During December, 1900, 178 tons were shipped to the Tacoma smelter, which, after the deduction of freight and smelter charges, yielded a profit of \$12 to \$15 per ton.

The Company have an office and six cabins on the water-front, the latter being utilized as bunk-houses, dining-rooms, kitchen, etc.

A force of from 12 to 15 men are steadily employed.

Adjoining the Monitor mine is situated the *Happy John Group*, consisting of the *Happy John*, *Happy John No. 1*, and *Happy John No. 2* claims. Outcrops of chalcopyrite occur on this property, and it is reported that specimens of the ore assayed 21 % copper, with additional values in gold and silver. The property is owned by Messrs. Jackson, Tubman and Frank, of Alberni.

A considerable amount of development work has been done on deposits of iron ore occurring on the shores of Barclay sound at three points, namely, Copper island, Sarita river, and Anderson's camp.

These properties are owned by one or two small syndicates, but are under bond at present to some Pittsburg capitalists, at the head of whom is H. H. Swaney, of that city.

Since August last, a force of over 30 men, including Chinamen, has been employed, running tunnels, drifts, etc., testing the area of the various bodies of ore. The ore, which is magnetite, outcrops in large masses over all the properties, and an analysis of that from Copper island, made by John Buchanan, A.I.C., of Glasgow, Scotland, is as follows:—

Iron .....	42.64 per cent.
Sulphur .....	.92 "
Phosphorus .....	<i>Nil.</i> "
Magnesium .....	.715 "
Manganese .....	.30 "
Alumina .....	2.675 "
Lime .....	9.875 "
Insoluble .....	15.58 "

Also traces of gold and silver.

I am informed that, since this analysis was made, ore carrying a larger percentage of iron has been disclosed.

This property comprises four claims, namely, the *Edith*, *Black Bear*, *Black Bear Bruin*, and *Roustabout*, and is situated on the east side of the Alberni canal, on deep water, and is almost opposite the Monitor Mining Company's property.

Sufficient prospecting has been done on this group to demonstrate that a lode carrying chalcopyrite runs through the property, and, in places, ore of a shipping grade has been exposed.

This property is situated on Granite creek, and consists of three claims, namely, the *Golden Slipper*, *Forget-me-not*, and *Snowdrop*. A shaft has been sunk for 16 feet, at that depth showing ore which is reported to carry an average value of \$40 per ton in gold, silver, and copper. The property is owned by C. Soll, H. McCoy, and H. S. Low, of Alberni, B. C.

The *Golden Rule Group* is situated on Granite creek, and consists of three claims, namely, the *Golden Rule No. 1*, *No. 2*, and *No. 3*. On this property a ledge, 2½ feet in width, is exposed, with an average value of \$17.50 per ton in gold, silver, and copper. The owners are H. McCoy, C. Soll, and H. S. Low, of Alberni, B. C.

The *Union Jack Group* is situated on the Alberni canal, about half a mile distant from deep water. A ledge, 3 feet in width, has been uncovered, which, I am told, has an average value of \$40 per ton. C. Soll and others, of Alberni, are the owners.

This property is situated on Copper mountain, on the east side of Alberni canal, and about 3 miles from the town of Alberni. It consists of two claims, namely, the *Copper King No. 1* and the *Copper King No. 2*.

On one of these claims a tunnel has been driven in on the ledge for a distance of 90 feet, and a sample shipment of ore taken from this working and forwarded to the Tacoma smelter gave the following return:—Copper, 18 per cent.; gold, \$6 per ton. The owners are James K. Wilson, A. McCoy, and H. S. Low, of Alberni.

#### OFFICE STATISTICS—ALBERNI MINING DIVISION.

Free miners' certificates issued .....	104
"    special .....	2
Mineral claims recorded .....	124
Certificates of work issued .....	193
Transfer bonds, etc .....	44
Certificates of improvements .....	9
Placer leases granted .....	4
Water rights granted .....	5

#### Revenue.

Free miners' certificates .....	\$ 477 25
Mining receipts, general .....	1,568 55
Mineral tax .....	212 79
	\$2,258 59

#### WEST COAST VANCOUVER ISLAND MINING DIVISION.

##### BLACK BEACH SANDS AT WRECK BAY.

The gold-bearing sands occurring at various places along the coast have been attracting considerable attention, and seem destined to produce a considerable yield of gold. So far the only serious attempt to work them has been at Wreck bay, a few miles north of Amphitrite point, on the west coast of Vancouver Island, and in the West Coast, V. I. Mining Division. Attention was drawn to these deposits in last year's Report, and the Provincial Assayer, who visited the properties during the past year, gives the following account of work done:—

*To the Provincial Mineralogist:—*

SIR,—I beg to report that I visited the beach placer deposits of black sand at Wreck bay during October of last year (1900).

These beach claims were located during the beginning of the year 1899 and have attracted a good deal of attention, as they are the first diggings of this description to be profitably worked. The whole of Wreck bay has been located in a series of 10 hydraulic claims, having a frontage of 500 yards, extending back 700 yards from high water mark, and running into the sea a distance of 100 yards.

Five of these claims, situated in the centre of the bay, have been consolidated as "The Ucluelet Placer Mining Company." Four other claims have been located to the north of this group, the first being known as the *Willipa*, and the three others being owned respectively by Messrs. Jacobsen, Talbot and Aytre, while to the south a claim has been located by Mr. Binns. In a small bay still further south there is an eleventh property, known as the *Frici* claim. The Ucluelet Placer Mining Co.'s property and the *Willipa* claim are being worked on a percentage basis by a local contractor, Mr. Jas. Sutton. The other properties are being worked by the owners.

About \$11,000 has been spent in plant and equipment on the Ucluelet Company's claims during the past summer.

Toward the northern end of the bay a creek, locally known as "Lost Shoe Creek," flows into the sea, and 5,200 feet from its mouth a timber crib dam has been built across the stream to divert the water into a flume 30 inches wide by 20 inches high, provision having been made for raising the sides, if necessary, another 20 inches. The planking of the flume is of dressed lumber, to allow of a good flow at the grade of 1 foot in 1,000 feet.

The flume follows the course of the creek till a point just above high water mark on the beach is reached, and then runs southerly along the foot of the bank a distance of 3,500 feet. It can be extended as much further as may be found necessary. This flume can be tapped at any point where sluicing operations are going on.

The apparatus used for saving the gold is a modified sluice fitted with amalgamated plates. This machine is 30 inches wide and has a large and a small compartment, with a means of deflecting more or less water into either. The larger compartment carries the gravel over the grizzly and does the washing, while the water in the small compartment acts as a carrier for the coarser tailings which fail to pass through the 6-mesh screen with which the apparatus is furnished. After passing through the grizzly and screen, the gravel travels over four amalgamated plates, each 30 inches by 16 inches, and then over a series of riffles and traps, the principal object of which is to prevent any loss of mercury.

In actual practice, on a clean-up of say \$300, \$250 has been found on the first plate, \$40 on the second plate, \$10 on the third, and nothing on the fourth. The gold, though fine, is particularly clean and free from that "rusty" character which has proved such an obstacle in other workings of a similar nature.

The tailings are delivered below high water mark, and as the ground is worked out the machines can be easily moved along and the flume tapped at a fresh place. For labour, each machine requires about  $5\frac{1}{2}$  men, as follows:—

- 1 man stripping off non-paying dirt;
- 1 " throwing up gravel to platform of machine;
- 1 " feeding machine;
- 1 " looking after machine and tailings.

The part time of one man prospecting ground.

The capacity of each 30-inch machine is a little over 25 tons per day of nine hours. There are now six machines on the ground, but practically only one was in working order before the bad weather set in, necessitating a partial suspension of the work.

From the Ucluelet Co.'s claim 600 yards of gravel have been put through the machine, giving a yield of \$9,400, or a little over \$15.50 per yard. This represents the yield of about one-tenth of a claim. An average section of the ground would appear to be as follows:—

1. Two feet of non-pay, which has to be stripped ;
2. Three feet of pay-dirt, the lower 8 to 18 inches of which is fairly rich ;
3. A fine barren sand, or sometimes clay, underlying the pay-dirt.

I was informed that the high bank had been somewhat prospected and yielded a little gold, colours being found a considerable distance back into the bush. From the prospecting done up to the present, it is impossible to say whether this bank has any future value or not, but at present it is not regarded as workable, operations being confined entirely to the beach.

At the time of my visit (in the end of October last) work was just being suspended for the winter, with the exception of a small gang of men who were to stay on the ground to keep the plant in repair and, if possible, run one machine. An average of 26 men have been employed during the summer, good bunk-houses having been erected for their accommodation just above high water mark. Before the spring the Ucluelet Co. will put in a retorting and gold-melting plant.

## WEST COAST VANCOUVER ISLAND MINING DIVISION.

### REPORT OF W. T. DAWLEY, MINING RECORDER.

I have the honour to submit my report on mining operations in the West Coast of Vancouver Island Mining Division during the year 1900 :—

The progress made, generally, during the past year has not fulfilled expectations and there has been a falling off both in the number of new claims recorded and in the development performed on the older properties.

#### SYDNEY INLET.

*The Indian Chief Group*, situated on Peacock mountain, Sydney inlet, and at present under bond to the Dewdney Canadian Syndicate, is the only property on which a force of men has been steadily at work throughout the year. Tunnelling and general development has been carried on and some good bodies of high-grade copper ore disclosed.

*The Prince Group*, consisting of eight claims, is situated near the *Indian Chief Group* and is owned by Dr. T. R. Marshall, of Glasgow, Scotland. The ore found on these claims is copper, that being the nature of most ores found in this District. I understand Dr. Marshall will be out in the early spring and will commence work in full strength.

#### BEAR RIVER.

Very little beyond the annual assessment work has been done in this section during the past year. Among other properties in this neighbourhood may be mentioned the *New York Group*, owned by the British Pacific Gold Property Co.; the *Castle Group*, owned by G. R. Talbot; the *Corona* claim, owned by P. A. Hovelaque *et al.*, and on which some work has been done, showing a vein of free-milling quartz; and the *Galena Group*, owned by Messrs. Brown *et al.*

#### TROUT RIVER.

*The Good Hope Group* has been worked during the greater part of the year, 4 men being continually employed. It is owned by the Helga Gold and Copper Mining Co., of Seattle, Wash., the ore being a mixture of copper pyrites and pyrrhotite in a quartzose gangue.

## DISAPPOINTMENT INLET.

On the *Kalapa* claim, owned by Messrs. Jacobsen *et al.*, a large amount of work has been done with very encouraging results.

On the *Rose Marie Group* assessment work only has been done, although a stamp-mill and buildings for employees had been erected during the previous year and satisfactory mill tests obtained.

There are several other promising claims in this vicinity, notably the *Iron Cap*; a good deal of prospecting has also been done and ore samples obtained which have assayed well.

The *Princess Group*, the *Superb Group* and the *American Wonder Group*, comprising 17 claims and situated on Tranquil creek, are owned by General J. M. Ashton, of Tacoma, Wash. A large amount of tunnelling has been done on these properties and Crown grants obtained for the two first mentioned.

On the *Hetty Green Group*, situated on Deer creek and owned by James Thompson, of Alberni, work was carried on during the summer with satisfactory results.

## HESQUIOT, KYUQUOT AND QUATSINO.

On Kokshittle river, Kyuquot sound, work has been carried on on a number of promising claims owned by W. J. Feker.

Work has also been begun on a group of claims, comprising the *Mohican*, *Hiawatha* and others, which has recently been bonded to F. S. Barnard, of Victoria.

## PLACER MINING.

The "black sand" placers at Wreck bay have given employment to a large number of men during the past year. The ground has been taken up in nine leases, most of which have been consolidated and are being worked by Messrs. Sutton and Graham, of Ucluelet.

Mr. Sutton informs me that \$12,584 have been expended, chiefly in the construction of a flume 9,800 feet in length and in the building of a dam across Lost Shoe creek. Until the first week in October only one small gold-saving machine was used, gold to the value of \$6,000 being recovered, while during the remainder of that month three larger machines were put in place and gold to the value of \$3,000 recovered. Altogether 700 oz., valued at \$10,639, have been taken out.

During the coming year it is intended to instal ten large machines.

## OFFICE STATISTICS—WEST COAST, V. I., MINING DIVISION.

Number of free miners' certificates issued	102
"    special.        "  "	3
"    claims recorded	86
"    certificates of work issued	157
"                    improvements issued	13
"    bills of sale and transfers	45
"    placer leases issued	9

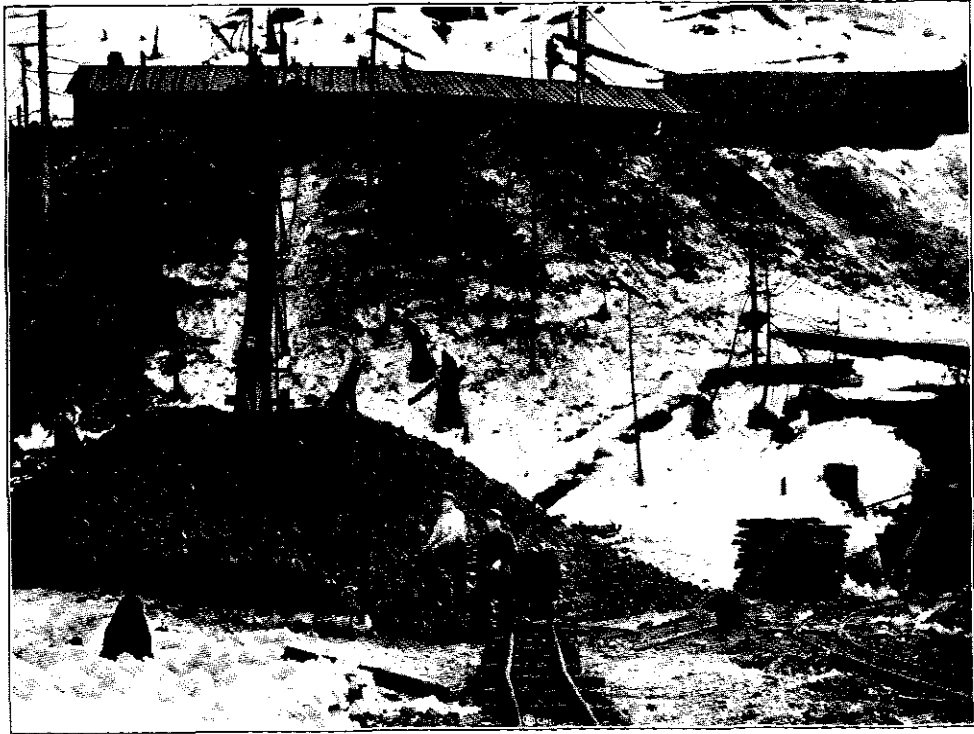
Revenue collected:—

Free miners' certificates	\$ 563 75
Mining receipts	1,093 15

---

\$1,656 90





LENORA MINE, Mt. SICKER—ORE SHEDS AND DUMP.



LENORA MINE—STEAM TRAMWAY CONNECTING WITH E. & N. RY.

## NANAIMO DISTRICT.

—o—

### NANAIMO MINING DIVISION.

#### REPORT OF MARSHAL BRAY, GOLD COMMISSIONER.

I have the honour to submit my annual report on the Nanaimo Mining Division for the year ending 31st December, 1900.

There were 650 mineral claims in good standing on the 31st December, 1900, in this Division, and there has been more development work done during the past year, in proportion to the number of mineral claims recorded, than in any previous year.

#### TEXADA ISLAND.

The Puget Sound Iron Company has done considerable development work during the year, and has opened up a large body of ore carrying a higher percentage of iron than any heretofore found on the property. Some 336 tons of iron ore were shipped during the year to the Van Anda smelter to be used as a flux, and a fine body of chalcopyrite ore, several hundred tons of which are now at the wharf ready for shipment, has been also opened up. Twelve men have been at work during the year.

The Van Anda Copper and Gold Company, Limited, has continuously worked its several properties during the year, but the principal work has been done on the *Copper Queen* and *Cornell* claims, which have been steady producers.

On the *Copper Queen* the main shaft has been sunk to the 500-foot level; winzes and upraises have also been made to a total extent of 200 feet, and drifts have been run for 525 feet. The general grade of the ore is bornite, with good values in gold and silver.

On the *Cornell* the shaft has been sunk to a depth of 260 feet, winzes and upraises made to an extent of 105 feet, and drifts run for 795 feet. A rich chute of copper ore has been opened up on this property, and an upright boiler and hoist have been installed.

The average number of white men employed by the company during the year was 109, together with 33 Asiatics.

The company has erected a new 75-ton smelter at the works, which, with the old smelter of 50 tons, gives a total capacity of 125 tons per day.

#### ORE SMELTED FOR THE YEAR 1900.

Van Anda Co—ores from their several properties .....	7,054.75 tons.
Purchased ores .....	2,472.75 "
Total smelted .....	9,527.50 "

#### CONTENTS OF ORES.

##### *Van Anda Co. ores:*

Copper .....	827,844	pounds.
Silver .....	10,563.04	ounces.
Gold .....	1,857.251	"

*Purchased ores:*

Copper .....	299,689	pounds.
Silver .....	8,740.42	ounces.
Gold ..	806.803	"

The purchased ores came from the *Lenora* (Mount Sicker), *Marble Bay*, *Jack Spratt* and *Black Prince*.

This property has been worked continuously during the year 1900, and **Marble Bay.** ore has been regularly shipped to the Everett smelter, and latterly to the Van Anda smelter. The main shaft was sunk 60 feet deeper, and a new hoist has been ordered, which will be put in during the coming year. There is a large body of ore in sight. An average of 50 men has been employed.

On the *Capsheaf*, the Duluth and Texada Exploration Company has done a good deal of work, 10 men having been employed in sinking the shaft. There is a quantity of good ore on the dump, and it is intended to continue development during the year 1901.

On the *Volunteer Group* the B. C. Agency has had 12 men at work with the intention of opening up the property, on which there occurs a heavy iron-capping. Boarding houses and other buildings are being erected.

The Treasury Mine Company has only done assessment work on its property.

On the whole the outlook for Texada Island during the coming year is very bright, and it seems that there is plenty of ore available to keep the smelter, with its increased capacity of 125 tons, at work steadily.

The Marble Bay lime kiln produces a fine quality of lime, which finds a ready sale, and the saw-mill at Van Anda supplies the lumber and timber necessary for mining purposes, as well as for building in the growing towns of Van Anda and Texada.

A considerable amount of work has been done during the past year on a great number of mineral claims owned by private parties, and in many places fine bodies of ore have been found.

#### SHOAL BAY, PHILIPPS ARM AND FREDERICK ARM.

The principal development work carried on in this section during the **Colossus Group.** year was performed on the *Colossus Group*, situated at Estero basin, on Frederick arm, and owned by the B. C. Exploration Syndicate.

The claims are at an altitude of 1,200 feet above sea level, and one mile distant from salt water. The lead has a strike E. and W., and dips to the north; the average width is about 40 feet, the ore being chalcopyrite in quartz, and carrying values in gold and silver.

Three tunnels have been driven on the vein, and a fourth, the length of which will be 800 feet, is now being run, with the intention of cutting the lead at a depth of 400 feet.

The plant comprises a 4-drill Rand air compressor and 60 h. p. boiler, and 12 men are at work. A large amount of ore is on the dump.

#### HORNE LAKE.

Considerable work has been done at Horne lake, Vancouver Island, during the year, with very gratifying results.

#### CAMERON LAKE.

The Cameron Lake Mining Company has done a considerable amount of work on its properties.

The principal development work done during the year in the Dunsmuir District has been on the eight claims owned by the Jubilee Partnership Company. The ledge has been tapped at a depth of 250 feet, and shows good values.

Other property owners in Dunsmuir District are preparing to do considerable development work during the coming year.

There has been no yield of gold from placer mining for the year 1900. A few claims have been recorded and some prospecting done. No prospects, however, have been discovered which will pay to work, unless by hydraulicizing if water can be obtained without too large an outlay.

The mineral claims located and recorded during the year ending 31st December, 1900, are situated in the following places throughout the Nanaimo Mining Division, viz.:—

Texada Island . . . . .	86
Lasqueti Island . . . . .	5
Cameron District . . . . .	8
Valdes Island . . . . .	15
Frederick Arm . . . . .	19
Theodosia Arm . . . . .	2
Toba Inlet . . . . .	4
Sayward District . . . . .	17
Loughborough Inlet . . . . .	4
Philipps Arm . . . . .	9
Nanoose District . . . . .	2
Dunsmuir District . . . . .	19
ThurLOW Island . . . . .	7
Comox District . . . . .	1
Bare Island . . . . .	1
Powell Lake . . . . .	3
Cracroft Island . . . . .	1
Rupert District . . . . .	2
Hanson Island . . . . .	1
Newcastle District . . . . .	1
	207

#### OFFICE STATISTICS—NANAIMO MINING DIVISION.

Free miners' certificates issued . . . . .	346
Mineral claims recorded . . . . .	207
Placer " . . . . .	5
Certificates of work recorded . . . . .	414
Paid \$100 in lieu of work . . . . .	7
Bills of sale recorded . . . . .	64
Abandonments recorded . . . . .	4
Grants of water right . . . . .	1
Certificates of improvement recorded . . . . .	14
Crown grants issued . . . . .	14
Annual taxes paid by Crown-granted mineral claims not working . . . . .	33

The revenue collected for free miners' certificates and mining receipts generally for the year ending 31st December, 1900, has been \$5,262.69, to which should be added the mineral taxes paid for the year, \$782.34, making a total of \$6,045.03.

## VICTORIA DISTRICT.

— o —

## VICTORIA MINING DIVISION.

## REPORT OF W. S. GORE, GOLD COMMISSIONER.

I have the honour to submit herewith my report of mining operations in this Division during the year 1900:—

I am indebted to the courtesy of the following gentlemen for reports on the various mining camps, viz.: Mr. J. J. Baird for San Juan valley, Renfrew District; Mr. James Phair for Mount Skirt, Goldstream District; and Messrs. Henry Croft, W. Pellew-Harvey and H. Rhodes for Mount Sicker, Chemainus District.

## SAN JUAN VALLEY.

On the *Kinsley Group* of claims, situated near the San Juan river, 1,000 feet above sea-level and about 1 mile from the harbour, 40 feet of shafting has been done. The ledge on this group runs through a slate formation and is 11½ feet wide, consisting of fine gray quartz. Assays made on the ore give good values in gold.

On the *Eldorado Group*, on the same lode as the *Kinsley*, 24 feet of tunnelling have been completed.

On the *Alberta Group* there are 60 feet of open-cut and shafting.

On the *Pachena* claim there are 10 feet of shafting.

On the *American Flag* 15 feet of tunnelling have been performed. The ledge on this claim is 8 feet wide, lying between walls of limestone and diorite and capped with magnetic iron carrying copper.

Several other claims in this camp have had the necessary annual work recorded.

## MOUNT SKIRT.

During the year 1900, work has been continuous on the *Ralph Group*,  
Ralph Group. 400 feet, consisting of drifts, shafts and cross-cuts, having been performed.

The greatest depth attained is 180 feet and all the workings show payable ore. Eleven men are now employed and an aerial tramway has been constructed from the mine to the Goldstream waggon road. Latterly shipments of ore have been made to the Tacoma Smelter with very satisfactory returns, and it is the intention to make small weekly shipments during the winter.

## MOUNT SICKER.

The Lenora-Mount Sicker Mining Company shipped, during 1900,  
Lenora Mine. some 7,000 tons of ore having an average assay value of \$20 per ton in gold, silver and copper. Development work has also been prosecuted, comprising a large amount of drifting and a lower tunnel 280 feet in length. In driving this tunnel a new vein was struck, from which remarkably high assays have been obtained. A cross-cut is now being run from the main tunnel to tap the new vein.

There is a large supply of ore in sight at the mine, while on the dump there are some 3,000 tons awaiting the erection of a concentrator, which is to be built next summer. There are also about 2,000 tons of sorted ore awaiting the completion of the railway.

During 1900 the ore shipped was conveyed by waggons to the foot of Mount Sicker, thence by wooden tramway to the E. & N. Railway, and from there to Ladysmith by rail. From Ladysmith it was shipped by steamer to the Van Anda, Everett and Tacoma smelters.

The railway which is being constructed from the *Lenora* mine to Osborne bay is completed as far as the Esquimalt and Nanaimo Railway, a distance of  $6\frac{1}{4}$  miles, and the grading is practically completed for the rest of the way, *i. e.* from the E. & N. Railway to Osborne bay, a distance of  $5\frac{1}{2}$  miles. The total length of the railway is about  $11\frac{3}{4}$  miles.

The terminus at the *Lenora* mine is 1,450 feet above sea level, and the railway rises to an altitude of 550 feet between the E. & N. Railway and Osborne bay. This altitude is reached by means of switch-backs, and the maximum grade on these is about 5%; the maximum grade on the whole line being  $9\frac{1}{2}\%$ . The engine used is a geared locomotive, built at Lima, Ohio, U. S. A.

It is the intention of the *Lenora* Company to put in an air-compressor and drills, power for which can be got from the steam-boilers of a saw-mill which has been erected at the mine.

A townsite has been laid out at Mount Sicker and there is little doubt but that 1901 will show great developments in this locality.

This property is situated on Mount Sicker at an altitude of 1,800 feet above sea level and about 5 miles from the E. & N. Railway at Somenos, connection with which is made by a waggon road. The claims are operated by the Tyee Copper Mining Co., of London, England, of which Clermont Livingston is local manager, and lie to the east of the *Lenora*. They comprise the *Tyee*, a full-sized mineral claim, and the *Maggie Fraction*.

The mineral-bearing zone, which is marked by a heavy iron-capping, has a strike east and west and dips to the north at an angle of  $70^\circ$ . The values are in gold, silver and copper, and are maintained at depth.

Before the formation of the Company, preliminary development was carried on to a depth of 200 feet and a shipment of 75 tons of ore made, which yielded a good margin of profit. Work is now being actively continued, several hundred feet of tunnelling and sinking having been performed to a depth of 233 feet, while a modern compressor plant, together with hoisting and pumping machinery, are being installed. It is intended to sink a double-compartment shaft to the 500-foot level.

While drifting to the east two lodes, having an average width, respectively, of 15 and 24 feet, were cut; from these high gold values have been obtained.

The Vancouver Mount Sicker Syndicate has performed the following work on the *Queen Bee* mineral claim on Mount Sicker, *viz.*: No. 1 shaft, 70 feet and 125 of feet drifting; No. 2 shaft, 35 feet and 80 feet of open-cut; and on the *Lord Roberts* claim, situate on Richards mountain, shaft, 55 feet and 11 feet of drifting.

#### BLACK SAND.

Black sand carrying fine gold has been discovered in several places along the west coast of Vancouver Island, within this mining division, and several applications for leases have been made. As no work has been done it is impossible to obtain a report as to the value of this discovery.

## OFFICE STATISTICS—VICTORIA MINING DIVISION.

	1899.	1900.
Free miners' certificates issued . . . . .	1,540	774
Mineral claims recorded . . . . .	259	158
Certificates of work issued . . . . .	197	209
"    improvements issued . . . . .	26	29
Grants of water rights for mining . . . . .	7	13
Conveyances recorded . . . . .	142	50
Abandonments recorded . . . . .	6	1
Revenue derived :—		
Free miners' certificates . . . . .	\$10,661 24	\$6,542 86
Mining receipts, general . . . . .	3,053 05	1,741 30
	\$13,714 29	\$8,284 16

## NEW WESTMINSTER MINING DIVISION.

The property on the coast which has created the greatest interest, and *Britannia Group*, which has been most talked about, is undoubtedly the *Britannia Group* of copper-gold claims. This group of claims is situated at an elevation of 3,500 feet above, and 3.8 miles by trail from, deep salt water on the eastern shore of Howe sound, and is about 28 miles distant, to the north, from the City of Vancouver.

The Provincial Mineralogist visited the property on November 6th, 1900, going from Vancouver to the nearest point on the beach in the steamer "Defiance," which makes two trips each week, stopping at the mine landing. A heavy fall of snow on the previous day had covered the ground above 2,700 feet elevation to a depth of nearly 3 feet, thus preventing effectually any examination of the surface showings, except on the exposed bluffs. The examination had, therefore, to be confined to the actual underground workings, which are sufficient to satisfy anyone that there is an immense zone in the schists which has been impregnated with an appreciable amount of copper, constituting an exceedingly large, low grade, concentrating proposition of very great importance, but requiring—aside from the price asked for the property by the owners, which has been variously stated at from \$750,000 to \$1,000,000—a very extensive plant and a large amount of capital to work the property, not less, probably, than \$1,000,000 being about what would be necessary to place these claims on a working basis. Naturally, such an undertaking requires a good deal of investigation and consideration, and, although this group has been repeatedly reported as sold, up to the present time nothing definite has been learned of such sale, though it is but a question of time before the property will eventually be worked. The situation of the claims is ideal for cheap working. A suitable site for a concentrator has been secured a short distance below the property, where an ample supply of water is available, and from which, both to the mine and to the shore, it is easy to construct any kind of tramway desired.

The property is owned by the *Britannia Copper Syndicate*, with head office in Vancouver, and the following has been extracted from the report of the Managing Director of the syndicate, Mr. E. C. Walters :—

## CLAIMS, AREA, TITLE, ETC.

Seven claims, the *Fairview*, *Edith Fraction*, *Jane*, *Clifton*, *Heather Fraction*, *William*, and *Mineral Creek*, containing 297.04 acres and covering over 8,500 feet of the lode, on its strike, are included in the *Britannia Group*. The title is absolutely perfect, Crown grants (the equivalent of U. S. Patents), having been duly obtained from the Government.

NOTE.—Under the law of the Province a full-sized mineral claim is 1,500 by 1,500 feet square, all lines descending vertically, thus summarily disposing of the vexatious "apex" question.

## VEIN CHARACTERISTICS, ETC.

The *Britannia* claims are traversed by a lode, or zone, of schistose silicious ore, 300 to 600 feet wide, impregnated with copper and iron pyrites and enclosed by a green, porphyritic rock on the south, and black slate on the north, the general strike being north-west and south-east, with dip to the south. Locally, this feature is known as the "*Britannia mineral zone*," and has been definitely traced for several miles in either direction from the *Britannia Group*, which appears to occupy the central position.

## ORE DISCLOSURES.

*No. 1, Jane outcrop and open-cut.*—Near the western end of the *Jane* claim are the *Jane* original workings. At this point the leached, silicious outcrop has been broken into by occasional shots and surface trenches for over 80 feet in width by 250 feet in length, revealing copper and iron pyrites in the schistose-quartz; also massive yellow-copper, (chalcopyrite); samples of this outcrop yielding 4 to 13% copper, with \$1.50 to \$2 in gold and silver per ton. On the north or foot-wall slope of this outcrop, an open-cut, 15 feet wide by 20 feet high on the upper side, has been driven 60 feet, following the strike, entirely in copper-gold ore averaging by careful, repeated, independent sampling, over 5% copper, with \$1.75 in gold and silver per ton, while much of the ore exposed on the hanging side of the cut, where chalcopyrite occurs most generously, will average 8% copper, and may readily be graded by rough-hand selection to 15%. The highest copper results obtained in the open-cut referred to range from 15 to 25%, large blocks of the massive yellow copper being tried.

*No. 2, Jane cross-cutting and drifting.*—About 100 feet (vertically) below the *Jane* open-cut, a cross-cut, prospecting tunnel has been driven 215 feet, entirely in low-grade, mineralized, vein-matter, which may be treated when the property is equipped on a scale proportionate with its known large ore bodies, but to which no attention has yet been given. Continued to the hanging side of the lode, this tunnel will open large bodies of ore visible on the surface. One hundred and fifty feet from the mouth of this cross-cut, a drift has been run west, turning gradually to the south until, at 100 feet from the initial point, the ore body was encountered and a 26-foot cross-cut was driven, entirely in massive ore, 20 feet of which will average better than 5% copper with \$1.75 gold and silver, the remainder averaging 8%, much clean, chalcopyrite occurring on the hanging side in a continuous streak of 2½ to 4 feet, clean blocks of which carry 15 to 25% copper, with the accustomed amount of gold and silver per ton. East and west drifts having been run from the 26-foot cross-cut on this ore-body, a combined distance of 138 feet, its continuity has been proven for that length, at an average depth of 130 feet from the surface, and despite the fact that at this level the evidences of local disturbances are plentiful, permanence of the ore-body is well assured. Although these workings were started in the *Jane* ground the west drift has penetrated the *Clifton* over 100 feet, and stands at present for the only development, aside from a short, open surface-cut, on the *Clifton* claim.



No. 3, *Mammoth Bluff outcrop*.—East of the *Jane* workings previously described, a small basin of erosive origin occurs, about 900 feet across, at the eastern extremity of which a great body of silicious ore is visible in the form of perpendicular bluffs, shaped like a huge, recumbent letter Z, 600 feet long, and having an average visible height of 200 feet from the exposed base, and an average visible width of 150 feet, all of which has been very conclusively proven to be pay-ore of most remarkably uniform general character, this having been determined by a 91-foot tunnel, driven crossing the ore-body at about 45°; a 17-foot cross-cut and by 24 shots, exposing a 45-foot vertical face of live ore; also a succession of shots, intended to be 20 feet apart, along the entire length of the great ore outcropping at its visible base, all of the workings and every effort at investigation of this phenomenal ore-body being entirely in ore, no bands of waste or intrusion of any character having thus far been encountered. Sampled and re-sampled by independent examiners, a fair exhibit of values present in this great ore-body, as indicated by the average results obtained from the working exposures, viz.: the 91 and 17-foot tunnels and the 45-foot vertical face, is,—Gold, 095 oz.; silver, .53 oz.; copper, 3.84%. This ore being very silicious, the pyrites finely distributed, will require water concentration, with fine grinding, and tests made indicate 6 to 1 as a satisfactory basis, if the concentrates were to be sold at a custom smelter, or 4 to 5 tons of crude ore to 1 ton of concentrates, if the product were to be smelted on the ground.

The visible tonnage in this body of ground, 600 feet long by 200 feet high by 150 feet wide, has been estimated by various examiners at 1,800,000 to 3,000,000 tons; the owners' estimate, upon which "a guaranty of \$5,000 was given, that \$10,000,000, gross value, would be found in sight," was based upon 1,500,000 tons of \$7 (or better) ore in sight, and this guaranty they were not obliged to pay.

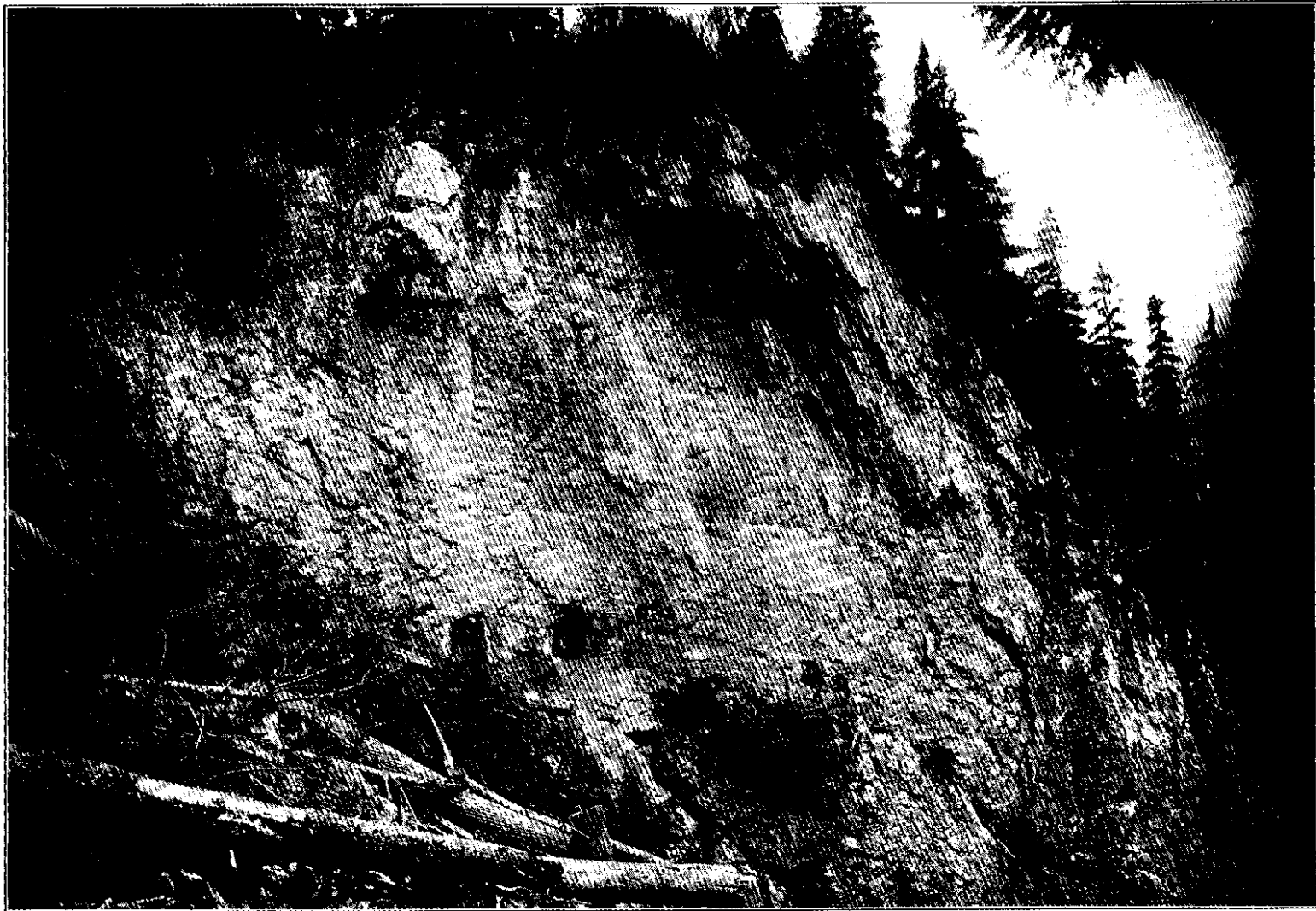
As this ore-body may be worked as an open quarry for many years, since from the eastern end of the *Mammoth* ore outcrop the vein-matter forms a huge "hogback" over 400 feet through at the base, and extends, continually rising, over 1,700 feet, to the eastern end of the *Britannia Group*, the mining costs may be reduced to the very minimum, and the daily tonnage output will, from the start, be limited only by the will of the operator and the capacity of the equipment provided.

No. 4, *Fairview showings*.—From the *Mammoth Bluff* outcrop, through the *Edith Fraction*, and cutting the *Fairview* from end to end, is the huge ridge, or "hogback" of outcropping vein-matter referred to in the preceding paragraph. Leached and weathered on the surface, often to great depth, investigation of this claim has, thus far, been confined to surface prospecting, with most satisfactory results; on and along both slopes of the outcrop good ore has been broken into in numerous places, across over 400 feet in width, a continuous "chute" of high-grade ore coming to the surface for some 300 feet along the northern slope.

That the *Britannia* lode is continuous, going eastward from the *Clifton*, through the *Jane*, *Edith Fraction* and *Fairview* claims, and that the high-grade ore disclosures in the *Fairview* surface openings are not only permanent but of great importance, is underwritten, as it were, by the fact that the owners of the *Empress Group*, adjoining the *Fairview* on the east, near the close of the season—the lode being covered in the *Empress*—succeeded in tracing the lode from the *Fairview* showings, over the divide and down the opposite slope to a point 800 to 1,000 feet below the *Fairview* east end-line, where they uncovered a section of the *Mammoth Britannia* lode and speedily drove a 20-foot cross-cut tunnel in splendid copper ore, a duplicate of the *Fairview* product.

#### GENERAL PHYSICAL FEATURES.

All natural features are as if designed by nature for the operation, at minimum cost, of a great mine. The *Britannia Group* lies parallel to and below the summit of the main range,



BRITANNIA MINE—HOWE SOUND—NEW WESTMINSTER M. D.—FACE OF MAMMOTH BLUFF

at an elevation of 3,500 feet above sea level. Britannia creek, the main water-course of the locality, rises east of and flows parallel to the *Britannia Group*, at an elevation of 2,000 feet above sea level, and at a point opposite (below) the *Jane* workings (basin) is 4,000 feet distant, surface measurement, therefrom. (NOTE.—These figures are approximately correct.) The main feeders of Britannia creek, also, chiefly have their sources in the *Britannia Group*, so that the abrupt descent from the *Jane* claim to Mineral creek, at or near the mouth of Jane creek, some 1,500 feet in 4,000, is all exceedingly favourable either for the development of water-power, the operation of gravity trams, or for access to deep levels of the *Britannia* lode by a tunnel, driven from any desired point above Britannia creek. From the mouth of Jane creek to deep salt water, where any ship may safely land, the grade is less precipitous, admitting of the operation of either waggon or railroad and yet affording sufficient head in feet for two or three additional water-power installations.

#### WATER SUPPLY, ETC.

The local water resources consist of the right, by lease from the Provincial Government, at a nominal rental per annum, to take the water of Britannia creek out of the channel three times (returning and picking it up again after use), between a point above the mouth of Jane creek, affording a head of 500 feet at the latter point, and mouth of Britannia creek at Britannia beach. At all times the volume of Britannia creek is abundantly equal to all ore-dressing requirements, and by estimate will afford 1,000 horse-power, minimum, for four months in the year, and up to 2,000 horse-power or more for the remaining eight months.

#### AN AVERAGE ORE VALUE EXHIBIT OF BRITANNIA GROUP DISCLOSURES OF ORE, IN WORKING QUANTITIES, AS DETERMINED BY STRICTLY INDEPENDENT EXAMINATIONS.

The following results were obtained from samples taken by two visiting engineers, who subjected all of the *Britannia Group* disclosures of ore, in working quantities, to most searching examination *in the interest of their principals*; being wholly independent, the results are worthy of credence and we believe the ore, when worked in quantity, will yield greater values.

#### WORKINGS SAMPLED AND CONTENTS PER TON OF 2,000 LBS.—MAMMOTH BLUFF ORE OUTCROP.

	Gold, ozs.	Silver, ozs.	Copper, per cent.
No. 1.—Main Tunnel, 91 feet, driven at visible base of western face, crossing ore body at 45°, five samples along entire length of tunnel; the fifth including "leached shell" at tunnel mouth, should not be included in average values	.034 .04 .12 .065 .13	.36 .44 .55 .52 .52	2.81 2.73 3.46 2.98 .63
No. 2.—Seventeen-foot cross-cut tunnel at visible base of northern face of outcropping ore, about 125 feet east of No. 1	.08 .14	.44 .30	3.16 3.20
No. 3.—Forty-five-foot perpendicular breast of live ore, at "Water Course," disclosed by 24 holes drilled and fired by men suspended over face of bluff by rope-ladders, in order that "leached shell" might be removed and fact demonstrated that the great <i>Mammoth Bluff</i> outcrop is ore from top to bottom, as well as from end to end of the visible dimensions, namely: 600 feet long, 150 feet wide and 200 feet average height, above the level of the main (91-foot) cross-cut tunnel; representing in all, 1,500,000 tons of visible ore	.104 .14 .14 .075 .1 .07	.82 .38 .80 .76 .82 .43	4.20 5.40 6.87 5.12 5.80 3.62
Combined totals, (13)	1.238	7.14	49.98
Average contents per ton	.095	.55	3.84

Adjoining the *Britannia Group* and extending from that property to Goldsmith Group. the shore are a series of 17 locations grouped under the title of the *Goldsmith Group*, and owned by the Goldsmith Copper Co., Ltd., of Vancouver;

Thomas Dunn, President. Compared with the extent of the property, but very little work has been done on the claims, which are supposed to be on an extension of the *Britannia* zone. The following are extracts from the report of the directors of the company—

“We have concentrated our work mostly on the *Hunter's Friend* and *Daisy* mineral claims. On the *Daisy* claim we have exposed the ore body by open cuts and stripping for about 400 feet along the bluff and across it for upwards of 100 feet. The ore is similar in character and grade, and the country rock is the same as that of the *Britannia*. The schist has eroded away and left the bluff nearly perpendicular for over 200 feet high, from the creek bed to the top edge. On top it is comparatively level for over 100 feet, where we have exposed the ore body. We are driving a tunnel from the creek bed to tap the ore at a depth of from 200 to 300 feet. We are also driving another tunnel about 700 feet east of No. 1 at a point where there is a big oxidation and mineralization in the schist, also on the *Daisy* claim.

“On the *Hunter's Friend* we have made a number of surface openings and are driving a tunnel, which is in 60 feet. We get some fair copper ore and expect with more development to open up a large body on this property. The property being so near tide water makes it a very interesting proposition. We have prospected by surface stripping and open cuts the *Hunter's Friend*, the *Eureka*, the *Copper Canyon*, the *Copper Dyke* and the *False Copper* claims, which are continuous from the beach on the main strike in this schist. There is a great oxidation and mineralization of the schist, which carries gold values. At present we are only economically prospecting our properties and opening up the ore that we have exposed, so as to better determine the amount of shipping grade and base our future operations. We have obtained two water grants on Mineral creek and one on Big creek.”

## NEW WESTMINSTER MINING DIVISION.

REPORT BY H. CARMICHAEL, PROVINCIAL ASSAYER.

*To the Provincial Mineralogist :*

SIR,—I beg to submit the following report on the New Westminster Mining Division, visited by me, under instructions, during the summer of last year (1900):—

The boundaries of this Division enclose a large area, the greater portion of which has not been surveyed or even prospected, due largely to the rugged nature of the country, while the southern part of the District is the only portion which is in any degree settled, owing, in the first instance, to the splendid water-way afforded by the Fraser river, and, later, to the advent of the Canadian Pacific Railway.

From the Fraser valley the means of travel are, to the south, by roads and trails, with which this portion is fairly well supplied, and, to the north, by the water communication afforded by Pitt river and lake, and by Harrison river and lake, these being navigable by light-draught steamers to their northern extremities, and forming excellent means for the cheap introduction of supplies.

The country rock along the coast line would appear to differ from that in the interior, both in character and in the occurrence of mineral, for while in the neighbourhood of Pitt and

Harrison lakes it seems to consist principally of quartzites, schists and granitoid rocks, with slates more in evidence along the southern boundary; and while the mineralization, with hardly an exception, as far as the properties visited are concerned, is contained in quartz veins, on the coast, on the other hand, traps and greenstones form the principal country rocks, and the ore bodies occur as heavy sulphide deposits or associated with magnetite. Small areas of sedimentary rocks exist in the Fraser valley and along Burrard inlet. In the latter neighbourhood bore-holes have been driven to prospect for coal, but nothing of value appears to have been encountered.

The Division is well timbered throughout, and there is plenty of water-power capable of utilization.

Harrison lake is a body of water extending some 36 miles north and south and about 6 miles wide. It empties by the Harrison river into the Fraser river at Agassiz, a station on the Canadian Pacific Railway, from which point the southern end of the lake is reached by a stage drive of 5 miles over a good road.

In the early days of the placer excitement in Cariboo, Harrison lake, together with Lillooet, Anderson and Seaton lakes, formed connecting links in the line of travel to Lillooet and Cariboo, until the stage roads from Ashcroft and Lytton diverted the traffic, leaving the older route abandoned save by the Indians who annually flock from the interior for the salmon fishing on the Fraser.

A number of mineral springs occur around the lake, the best-known **Mineral Springs.** being two at the south end and a third at the northern end, a few miles up the Pemberton road. The former have become noted throughout the Province as the "Harrison Hot Springs," the waters of which are believed to have valuable medicinal properties. Here a sanitarium has been established, together with two commodious hotels.

The *Money Spinner*, one of the *Fire Mountain Group* and owned by **Money Spinner.** the Canadian Fire Mountain Mines, Ltd., is situated near the summit of Tepella or Fire mountain, and is about 16 miles north-west from the head of Harrison lake. The mine is reached from Fort Douglas by a rather rough trail, which crosses the Lillooet river by a good bridge and zig-zags up the mountain side, Tepella lake being reached at an altitude of 3,500 feet. The trail then rises rapidly to the *Money Spinner* mill, at an altitude of 4,000 feet. No work was in progress at the time of my visit. The mill is a substantial frame structure, built from lumber sawn on the ground, and is connected with the mine, which is 650 feet further up the mountain, by an aerial tramway. The tramway discharges into an ore-bin situated above a small rock crusher, which feeds a sectional Huntingdon mill. On a still lower level are two Frue vanners. The plant is operated by a small water-power during the summer months, and it was proposed to put in a steam plant for use during the winter season.

The upper terminal of the tramway is situated below an ore-bin, the top of which is on a level with the main tunnel. The mountain at this point is practically free from timber or underbrush, and a small but well-defined quartz vein can be easily seen running into the hill-side, and having a dip of 60° to the west and a strike of N. 10° W. On the surface this vein has a width of about 3 feet, with a distinctly banded structure. The quartz carries a little copper and iron pyrites, but I understand that the principal values are free milling. I was informed that there had been a large loss of amalgam through the sections of the Huntingdon mill. A tunnel had been driven on the vein directly into the mountain, but at some distance

from the mouth it appears to have cut across some felsitic matter, which has decomposed since operations were suspended and has caused several caves, which prevented further examination of the workings. The walls of the vein are formed of a porphyritic greenstone, while lower down the mountain the country rock is more schistose in character.

For the following further information I am indebted to Mr. John R. Brown, of Vancouver, who is interested in the property:—

The tunnel (above mentioned) was driven in for 280 feet on the vein, which at this point had been cut off by a porphyry dyke. Here a winze was sunk for 18 or 20 feet, the vein increasing in width with depth, and a seam in the dyke was also followed for 200 feet; the lead, however, has not been recovered. At a point 75 feet within the tunnel a winze was sunk for 94 feet, and at a point 20 feet further in a raise of 80 feet was made, both in quartz.

The sectional Huntingdon mill proved very defective and was unsuited to the work required. The great centrifugal force of the rollers opened up all the joints, in some instances stripping the belts, causing an endless leaking and loss of quicksilver.

These are two full-sized, Crown-granted claims owned by the Providence and Silver Bell. Providence Mining and Development Company, of Vancouver, and at present under bond to J. B. MacLaren. The property is situated on the west shore of Harrison lake, and 28 miles from its southern end. Work was begun on a 12-inch quartz vein, having a strike north and south and a dip nearly vertical, and yielding high assay values at the surface. A shaft had been sunk on this lead for 34 feet vertically, thenceforward dipping slightly to the north and attaining a total depth of 135 feet, the vein increasing in the first 30 feet to a width of 4 feet 6 inches, and afterwards alternately pinching and expanding, having a width in the bottom of the shaft of 10 inches. Work at this point had been then discontinued.

On the shore of the lake and 400 feet north-west of the above, two outcrops of quartz carrying high values were discovered. These outcrops being covered at high water, a shaft was started 100 feet inland, with the intention of sinking below the lake and then drifting to tap the leads. While sinking this shaft and at a depth of 40 feet, another vein was struck, having a north and south direction. This vein was about 2 feet wide, but not well defined, and more or less mixed up with the country rock, which is a diabase largely interspersed with small veins of calcite. Sinking was continued and a cross-cut made at a depth of 55 feet, showing a mixed vein-matter of about 2 feet wide. I was informed that this gave values in gold and silver of \$12 per ton.

From the bottom of the shaft the drift towards the lake was then run in the direction of the outcrops mentioned, and at a point 40 feet below these and 70 feet from the shaft it turns at right angles to the east, and has then been continued for 55 feet. The leads supposed to exist were not discovered, the drift being in a greenstone largely impregnated with calcite, and work in this direction had been discontinued.

While drifting to the east for the outcrops on the beach, and at a distance of 10 feet from the turn of the drive, a quartz vein 3 feet wide was cut, and a drift had been run on it in a northerly direction for 34 feet. Work was then stopped, as fears were entertained of tapping the lake. The vein had been observed in the main drive, but was more broken and not considered worth following.

Again, from near the shaft, a tunnel is being driven in a southerly direction to tap two veins which outcrop on the hillside about 600 feet distant. This tunnel, at the time of my visit, was in 400 feet, and the work was progressing, with the aid of an air drill, at the rate of about 5 feet per day.

At 92 feet within the tunnel a cross-cut had been run to the east for 50 feet, and another, at 123 feet in, to the north for 35 feet, neither disclosing any veins, however, the entire work being carried on either in a greenstone or diabasic rock, interspersed with small stringers of calcite. On the day I visited the property quartz had been struck in the face of the main tunnel, but the direction yet remained to be determined. The outcroppings of the two veins which it is intended to tap by the tunnel have a width of 14 and 20 inches respectively, and the leads will be cut, if found, at a vertical depth of 254 feet.

The property is being worked by 12 men, under the direction of Mr. Fritz Cirkel, C. E. The machinery consists of a 4-drill Rand compressor working two drills and run by a Pelton wheel of 60 horse-power, fed from a creek on the property. There are also two Duplex pumps and a machine hoist, all run from the compressor.

This group comprises the *Rocket*, *O. K.*, *Champion* and *Cromwell* Golden Ears mineral claims, the first two of which Crown grants have been applied for. Group. The owners are parties in New Westminster, and are represented by H. A. Eastman. The property is situated on the foot-hills of the Golden Ears mountain, on the east side of Pitt lake, a short distance from its outlet and at an altitude of 900 feet above the lake level. The workings are about a quarter of a mile from the lake shore, and are reached by a fairly good zig-zag trail. There is a good grade for an aerial tramway.

Over a bluff on the *Cromwell* claim a well-defined quartz vein runs almost perpendicularly, with a general direction a little south of east. A tunnel has been run in on the lead, following the strike of the vein which, at about 101 feet in, gradually swings round to the north and is followed by the tunnel, so that towards the face, a distance of 480 feet in, the direction is nearly at right angles to the 100 feet first driven. The approximate width of the vein is 4 feet 6 inches; it is fairly well defined, showing up strongly in the face of the tunnel, and although in places the walls are frozen, there is in general a slight gouge parting. The walls are of diorite, the usual country rock in this district, and while at 250 feet within the tunnel feldspathic rock appears, it soon gives place to diorite again. At the point where the feldspathic rock occurs a cross-cut had been run to the left, without disclosing anything.

Beyond the same bluff, before mentioned, and on the northern boundary of the same claim, outcrops a quartz vein with an approximate north-easterly strike, and dipping, although almost vertically, to the south-east. A shaft has been sunk on the lead, showing it to be from 3 feet to 3 feet 6 inches in width, the walls in places not being very well defined. Forty feet down the vein takes a much flatter dip, and has been prospected to a depth of 110 feet by an incline, the end of which is vertically above the tunnel first mentioned, and, at a point 270 feet from the mouth of the latter, an upraise of 45 feet has been made, connecting the two.

The vein matter in all these workings is a white quartz, fairly well mineralized with copper and iron pyrites, and reported to me as having given assay values, on shipments, of from \$20 to \$30 per ton.

A short distance south-west of the shaft another quartz vein outcrops, having the same strike (north-easterly), but with a flatter dip. A tunnel has been run in along this lead for some 50 feet, with the vein cutting across the roof diagonally. At the end of the tunnel some ore has been stoped, and another vein, having a north-westerly strike, comes in. In this a winze had been sunk for 38 feet, at the top of which the vein is distinctly seen, but the bottom being full of water and foul air, I was unable to investigate it further. It is probable that the main vein in this tunnel and that in the shaft are one and the same.

A small amount of work has been done on several other showings on the property, all of which are of the same nature, viz., small quartz veins in a diorite formation. The ore is

suitable for concentration, and there is a small water-power available. This property is well situated for easy and cheap transportation.

This group is situated on the west side of Pitt lake, near the outlet, **Jubilee Group.** and is owned by J. Clynne Smith, of New Westminster. The property is on the lake shore, and the principal work has been done a few feet above the water level. At this point a shaft has been sunk some 30 feet on a small and ill-defined quartz stringer, slightly mineralized with iron and copper pyrites. No body of ore of any size was visible. About 20 yards to the west of the shaft and slightly to the north, a few shots have been put in on some ill-defined and frozen quartz stringers, but nothing of any value has been disclosed.

This group consists of four claims, viz.: *Clover No. 1, 2, 3* and the **Clover Group.** *Blacksmith*, and is owned by J. F. Bateman and others, of Lowell, Mass., U. S. A., who are represented on the ground by R. Farrington. The claims are situated on the east bank of Pitt river, six miles above the railway bridge. A few hundred yards from the river bank a mass of syenite and diorite rises abruptly from the "Pitt Meadows." Through this mass of rock there appears to run a slightly mineralized zone, with a strike about north and south and a vertical dip. A few shots on the strike have disclosed a sparse mineralization of copper pyrites and molybdenite, but no vein or well-marked wall is apparent.

At the southern end of the mineralized zone a rocky cliff, distinctly marked with green copper stain, stands out. Below this a short cross-cut tunnel had been driven and a winze sunk. The work, which I was told had been done some 16 years ago, had then evidently been abandoned.

This is a full-sized mineral claim situated on the west shore of Pitt **St. Paul.** lake, five miles from the outlet, and located and owned by David Bailey. A quartz vein, into which a few shots have been put, runs vertically down a steep bluff on the lake shore, with a strike N. 55° W. Some 20 or 30 feet above the water this vein has a width of from 1 foot to 18 inches, but lower down is split in two by what appears to be a "horse," although it is still divided as it enters the lake. The lode walls are of diorite and well defined. The mineralization consists of iron pyrites and a little copper pyrites, and selected samples are said to have given values of \$18 in gold per ton and 5 % copper.

This is a full-sized location owned by E. F. Holt, of New Westminster, **St. John.** and situated on a mountain at the head of Widgeon slough, the latter connecting with Pitt river on the west side, near the outlet of Pitt lake. The property is 1,500 feet above the river, a height which is attained in the short distance of less than a quarter of a mile. A few shots have been put in on a small quartz vein, two to four inches wide, much decomposed and mineralized with copper and iron pyrites, and having a strike a little west of north and a nearly vertical dip. Sufficient work has not been done to prove the value of the claim.

New Westminster Mining Division is bounded on the south by the 49th parallel of north latitude, and owing to the exceedingly rough nature of the country, the International Boundary has not been clearly enough marked to enable the locator of a mineral claim to state definitely on which side of the line his property is situated. In consequence of this, many disputes have arisen.

A good deal of prospecting and mining has been carried on, during the last few years, to the south of the International Boundary, in the State of Washington. Prospectors, gradually extending their trips northward, have found it more convenient, owing to the high altitude of



the divide (8,000 to 10,000 feet), to get into the Mount Baker District, although on the American side of the line, by coming round into British Columbia and entering the section mentioned from the north. Thus a part of the Mount Baker District is rendered tributary to New Westminster Mining Division and more particularly to Chilliwack.

These groups, situated near the boundary line, 38 miles from Chilliwack, are on Bear mountain at an altitude of 6,000 feet. The property is owned by the Mount Baker Mining Company, of which Mr. W. J. Connors, of Chilliwack, is agent.

The principal work done is on the *Lone Jack* claim, where occurs a quartz vein 18 inches to 7 feet in width, the average being about 4 feet, having a strike north-west and south-east and dipping 35° west. The vein-matter is a white quartz carrying coarse, free gold and tellurides, the values being from 1 to 1½ oz. per ton. The walls are slate and the country rock in the district is reported to consist of slate diorite and schists.

A cross-cut tunnel has been run for 315 feet to cut the vein, which was reached as expected, giving backs of 350 feet. An upraise of 70 feet has also been made and the vein drifted upon for 200 feet, while a considerable amount of surface stripping has been done, showing the continuity of the lead for 2,000 feet on the surface.

The *Gold Basin Group* is situated, at an altitude of 6,000 feet on Red mountain, 34 miles from Chilliwack. There are several quartz veins on the property from 6 inches to 7 feet wide, and on these a considerable amount of work has been done.

The *Anderson Group* is situated on Red mountain at an altitude of 5,500 feet. Here there is a quartz vein from 18 inches to 4 feet wide, having a strike north-west and south-east with an easterly dip, and carrying free gold and tellurides. A tunnel has been driven on the lead for 70 feet.

## NEW WESTMINSTER MINING DIVISION.

### REPORT OF D. ROBSON, MINING RECORDER.

I have the honour to submit my report of mining operations in the New Westminster Mining Division during the year 1900. These have not resulted in any conspicuous success, but the opinion seems to have been confirmed that the Howe sound copper properties are far more extensive and valuable than anything hitherto discovered in this District.

The revenue derived from mining for the year has been less by about one-third than that of 1899. This decrease is wholly due to the smaller number of free miners' certificates issued, the revenue from general mining fees having increased by \$946.

The new claims located are situated principally on Howe sound, and are a result of the excellent showing made on the *Britannia Group*. In the Pitt lake district 21 claims have been located during the year, 34 in the Harrison lake district, and 40 in the Chilliwack district. The expenditure in mining operations in the whole District may be set down at about \$75,000 for the year.

On the *Providence Group*, Harrison lake, some \$10,000 has been expended, about 700 feet of tunnelling having been driven. The main tunnel has been run from near the edge of the lake to strike a lead supposed to lie beneath outcrops occurring on the hillside, from which very

good assays were obtained. No body of ore of any permanence or size has yet been met and this lack of success makes it very doubtful whether anything more will be done on the property by the present owners. The plant consists of a 3-drill Rand air-compressor operated by a 6-foot Pelton water-wheel. I understand that there is very little prospect of the work being continued further at present.

The *Britannia Group* on Howe sound has attracted a great deal of attention during the year. The additional work done has revealed a very much more extensive body of ore than appeared at the close of 1899. As this property has been examined lately by the Provincial Mineralogist and its position and capabilities are very fully set out in the report of Mr. Howard C. Walters (Managing Director), dated the 15th December, last, it will be unnecessary for me to mention any details. The sum expended on the property in development during the year is about \$18,000. Several months ago the Britannia Copper Syndicate (owner of the property) gave an option to Mr. Valentine, of London, on a basis of something like \$2,000,000 in cash and stock, the cash consideration being over \$500,000. Mr. Valentine sent an engineer to examine the property, but before he reached London with his report Mr. Valentine died, and the option was allowed to default. The report of the engineer, I am informed, was favourable, and Mr. Valentine's heirs are now endeavouring to come to an arrangement with the Syndicate for the purchase of the property on a cash basis. There are a number of other individuals and companies negotiating for the property and it is believed a transfer quite satisfactory to the Syndicate will be effected. The property has been examined by a great many engineers and mining experts, and it is stated that not one adverse report has been made.

The Goldsmith Copper Company is the name of a company which has secured a number of claims adjoining the *Britannia Group*. The ore-body on this property is claimed to be a continuation of the *Britannia* lode. The work of the Company has been confined almost entirely to the *Daisy* and *Hunter's Friend* claims, where a large body of ore is said to have been exposed, giving a uniform assay of about 5% copper and \$2 in gold and silver. The Company has spent about \$6,000 in development work during the year.

A large number of other claims have been located in this region, and it is generally believed that the mineral zone running through the *Britannia Group* extends for many miles.

On the *Lynn Group* of claims, situated on and adjacent to Lynn creek, 9 miles from Moodyville, about \$5,000 has been expended in development during the year. The property consists of 6 claims, and is owned by Mr. Lee J. Pitner, of Boston, and Mr. T. J. Vaughn-Rhys, of Vancouver. This is a copper-gold proposition, and is believed to be on a continuation of the *Britannia* zone. Assays and mill tests are said to have been quite satisfactory, and it is expected that development work will be continued next year.

A number of other claims adjacent to the *Lynn Group* are reported as promising well.

On Pitt lake very little work has been done during the year. About 20 new claims have been located and assessment work has been done showing good prospects. On the Golden Ears Group, Pitt lake, no work has been done during the year, although there is every reason to believe that there exists a large body of ore carrying copper and gold values. This group has recently been bonded for a considerable sum and active operations may be expected next season if the terms of the option are carried out.

Very little work has been done in the Fire Mountain district during the year. It was expected that the Canadian Fire Mountain Mines, Ltd., would instal machinery and resume active work on its property, the *Money Spinner*, but this has not been done. The ore is of low grade, carrying gold averaging about



HARRISON LAKE - NEW WESTMINSTER M. D.



MILL—MONEY SPINNER MINE - NEW WESTMINSTER M. D.

\$8 to the ton, and the district is not easy of access. When transportation facilities have been materially improved it is probable that operations will be resumed.

In the Chilliwack District there has been a good deal of activity in what is known as the "Mount Baker Mines District," lying near the International Boundary, but none of the claims have yet been developed. The prospects of this district are most encouraging, but the lack of roads has been a serious drawback. A waggon road is now being constructed in the direction of the claims in this vicinity (which lie on both sides of the International Boundary), and when this has been completed it is expected that several of these properties will be developed. The ore from this district carries free-milling gold, and in many samples the metal is quite visible to the naked eye.

The number of mineral claims on record at this office at the end of the year was 4,344, but the majority of these are not in good standing now.

OFFICE STATISTICS—NEW WESTMINSTER MINING DIVISION.

	1899.	1900.
Free miners' certificates issued .....	2,315	1,439
Quartz claims recorded .....	240	483
Placer claims " .....	..	14
Certificates of work issued .....	211	278
" improvement recorded .....	13	27
Conveyances recorded .....	81	81
Revenue derived:—		
Free miners' certificates .....	\$16,654 00	\$10,488 00
Mining receipts, general .....	1,490 00	2,436 00
	<u>\$18,144 00</u>	<u>\$12,924 00</u>

---

---

## REPORT ON THE INSPECTION OF METALLIFEROUS MINES.

— o —

### REPORT OF JAMES MCGREGOR, INSPECTOR.

I have the honour to submit my annual report for the year 1900, as Inspector of Metalliferous Mines.

All the shipping mines have been carefully inspected, as well as many that have not as yet developed into the shipping stage.

I am pleased to state that all available precautions are being taken for the safety of the workmen, and that, as will be seen from the list appended to this report, the fatal accidents are less numerous than formerly. In many of the larger mines, where permanent skip-ways or cages are used, all modern safety appliances have been adopted, and I am glad to note that powder is no longer stored in the mines.

In the Slocan District I find all the mines well timbered, and there is an evident desire on the part of the management of the various properties to comply as nearly as possible with the provisions of the Act.

In the Rossland and Nelson Districts I also notice that every precaution is being taken for the prevention of accidents, especially as regards travelling and ladder-ways. The ladder-ways in all the mines are in good condition. The ventilation is principally natural, or by air pipes supplied by compressed air blowers.

Several mines in the Boundary District are now shipping, and there is every prospect of a large increase in the output. On my last visit I found all the operating mines in fairly good condition as regards safety. At Camp McKinney only two mines have been operating until within the last few months.

In East Kootenay the principal mines which were in operation last year are still being worked, with the exception of those at Moyie lake, which have been temporarily closed down for the last month. Many prospects are also being worked; the distance from railway transportation, however, prevents many of them from shipping.

In the Kamloops District a number of prospects have been more or less developed. On my last visit I found that all the properties being operated were well and carefully timbered when necessary.

In conclusion, I beg to state that there has been a marked improvement last year throughout all the Kootenay District, especially in the working appliances, such as boilers, ropes, guides, buckets, etc.

I again beg to draw your attention to the accidents which occur from what is termed unexploded powder, and would suggest that the Government appoint a Commission to investigate the matter, as it is undoubtedly a source of great danger.

---

## REPORT OF ARCHIBALD DICK, INSPECTOR.

I have the honour to submit my report for the year 1900 as Inspector of Mines.

As my appointment was made late in the year, I made only one inspection, namely, of the Texada island and Mount Sicker mines. During the month of December I went to Texada island and examined the mines then at work, which were the following:—

I made an examination of all the works on the surface, including the Marble Bay Mine. machinery of the same. There is at this mine a steam hoist, with substantial head gear, as well as houses and sheds for the protection of workmen, etc., from the inclemency of the weather. An engine bed has been built, in readiness to bear a new engine to replace the one at present in use for hoisting ore and rock from the shaft.

On going to the shaft, I was pleased to see that there was a cage in use, and although it was made of timber it was strongly bolted together, so as to be safe. The manager informed me that an iron cage has been ordered and is expected to arrive shortly. For hoisting and lowering the workmen and rock a large steel wire cable is used. Everything in the machinery department is in excellent order.

The shaft is timbered from top to bottom with 3-inch plank, framed inside with 8 by 8-inch timbers. This shaft is about 5 by 8 feet, and is now down to what is known as the 200-foot level. I was in all the workings now in operation, examined them, and was satisfied that they were in miner-like order, safe and well timbered. The ventilation was good.

At this mine I met Mr. Thos. Kiddie, the manager, who took me round the works. They are well laid out on the surface, and the comfort of the workmen and their protection from the stormy weather is well provided for, all being housed over. There is a steam hoist, with steel wire cable and strong head gear, together with an air compressor, all well fitted and equipped for the work of active mining. A very useful adjunct on the surface consists of a building fitted up for the service of the employees of the mine, provided with water for hot or cold baths.

At the shaft, which is about 8 by 5 feet, I got on a bucket and was slowly lowered down, in order that I might examine the timbering thoroughly. The bucket is guided in the centre of the shaft by a strong frame, travelling on guides, and appeared to be safe in operation. The mine is not yet provided with a cage. On reaching the bottom of the shaft at the 500-foot level, I had ascertained that it was planked from the top with 3-inch planks, having a strong frame inside, well and substantially constructed. I inspected the workings now going on in this shaft, and found all in good order, well timbered and apparently safe for the workmen. The ventilation was good, and there is a separate connection with the surface.

At this mine, as at the *Copper Queen*, Mr. Thos. Kiddie is manager. The property was first opened by a shaft, but is now in connection with a tunnel 60 feet down from the surface. The mouth of this tunnel is where the ore is taken out, and where all the outside work is done, principally in the assorting and packing sheds. At the back end of the tunnel there is a large room in which is the steam hoist, and where the landing from the shaft now is. Here all the ore and rock is taken off and run out of the tunnel in cars. All round about this station is heavily timbered, and the surface water, which is collected here, runs out of the tunnel of its own accord. The tunnel is a great advantage in this respect, as it would take a large pump to handle the accumulating water, more especially during the winter, when it is in considerable volume.

I went down the shaft in a bucket, fitted up similarly to that of the *Copper Queen*. The shaft is also of the same size and finished in the same style. At the bottom, at what is called the 200-foot level, stoping is now being carried on, and work is also progressing at the 140-foot level.

The ventilation of the mine is good. The 140 and 200-foot levels have not yet been connected, but a winze is now being sunk, and when this is completed there will be two separate connections with the surface.

I also visited the following properties at Mount Sicker:—

This mine is situated about  $7\frac{1}{2}$  miles from Westholme, on the E. & N. Lenora Mine. Railway. On my arrival I met Mr. Buxtom, the manager, who conducted me all through the mine. We went in by a tunnel, this being the lower floor, where the ore is run out and from which the stoping is being done. From this tunnel they have been rising until they have now got up to the thirteenth floor. From the floor of this tunnel they are putting down a winze to connect with a tunnel which has been drifted in on to the ledge about 100 feet down the mountain. Everything in and about the mine is in excellent order. The ventilation of the mine is very good, a shaft previously put down being the return airway and a travelling way for the workmen if required.

The *Tyee* is situated near the *Lenora* mine. A shaft has been put down for some hundred feet, and hoisting machinery and pumping apparatus were being installed at the time of my visit.

#### LIST OF ACCIDENTS IN METALLIFEROUS MINES DURING THE YEAR 1900.

##### LE ROI MINE.

January	27—Thos. Gossett, killed; fell down winze 20 feet deep, at the 500-foot level, sustaining injuries to the spine which resulted in his death on February 20th.
February	25—Chas. Bourne, slightly injured; let a plank fall on his foot while loading timber.
"	25—H. Downing, slightly injured; while at work in stope over 600-foot level, a car ran over his foot.
March	9—James Miles, sprained ankle.
"	22—Hugh A. McDonald, small ankle-bone broken; moving timbers at surface with a team when horses started, causing a log to roll over his foot.
April	22—A. E. Hickman, hand severely injured, being caught between timbers and skip while he was at work as cage-tender.
May	30—John Mickson, killed; was employed as shoveller in 600-foot level, and, contrary to instructions from foreman and shift-boss, began to work in an ore chute, trying to start the broken rock with which it was filled; the dirt slipped away, carrying him with it and covering him, so that he was suffocated before help could reach him.
June	22—Wm. Hawton, internally injured; while running car between bins at shaft to bins at top of tramway, it struck a piece of timber, left on the track by himself; the car left the track, dragging him over the trestle.

- " 28—John McPhee, both legs broken; while pulling up hose to 6th floor above 700-foot level, he stumbled and fell into an ore chute.
- July 31—Dan Caldwell, Nels Anderson, killed; Aug. Bross, slightly injured: cave occurred on 6th floor of 7th level.
- August 16—Alex. Chisholm, hand severely injured; J. J. Hand, slightly injured: were fixing chute on 500-foot level without having provided the usual means of preventing car-men dumping into it; the track having been removed a loaded car ran over the level and fell into the chute.
- September 14—W. L. McKelvey, seriously injured, having one leg broken in two places, one wrist broken and body cut; Owen Bigley, groin badly cut; C. M. Hensley, slightly injured; Mack Seifick, ankle sprained. This accident was caused by the over-winding of the electric hoist, the engineer, through some mistake, raising the skip into the sheaves; the sheave-wheel broke, the rope parted and the cage fell down the shaft, carrying away the bulk-head at the 800-foot level and thus having its fall broken, but passing on, nevertheless, to where the men were at work below the level mentioned.
- November 14—Norman J. McDonald, killed; while working at 700-foot level he placed a piece of timber, on which to work, across one of the compartments and falling from this, a distance of 100 feet, was injured internally and died in three hours.

## WAR EAGLE.

- February 6—Wm. Palmer, badly bruised by falling one floor in stope; being without a light, he walked into an opening leading to the floor below.
- August 6—Dominick Querio, leg broken by machine falling on it.
- " 30—Mike Callistro, leg crushed between shaft timber and skip through attempting to leave skip before it had come to rest.
- September 20—Albert Westfall, killed; while looking into the hoisting shaft his head was caught between the descending skip and the shaft timbers, his neck being broken.

## CENTRE STAR.

- February 5—Pat Forin, back strained; fell 10 feet, from first to sill-floor of stope on second level.
- June 26—Thos. Conway, leg badly bruised; while working on timber in shaft he lost his footing and rolled down the foot-wall for about 25 feet.
- September 13—Jas. D. Welchell, foot crushed; while engaged in standing square-sets in stope, one of the members fell on his foot.
- October 31—Jas. Paull, leg broken by fall of ground.
- December 8—Richard Smitherane, leg bruised and sprained. The stage, on which he was at work standing square-sets, fell, carrying a set of timber with it, one of the pieces falling on his leg.
- " 19—Paul W. Webster, leg broken by rock falling down the shaft and rebounding into the station.
- John Penrose, finger broken by being caught in machinery.
- Geo. Rosso, bruised and hurt internally (?) by car falling upon him while he was helping load it into a waggon.
- October 29—Miles McNeil, killed by fall of rock in stope.
- N. Green, thighbone fractured by fall of rock in stope.



## B. C. MINE.

- November 1—Matt Herman, arm crushed, not broken, by cage.  
 December 5—Jas. Gibbon, rib broken, probably by rock falling from the dirt pile from which he was shovelling.

## CAMP MCKINNEY M. &amp; M. Co.

- January 9—Thos. W. Jones, ankle sprained by rock falling from side of drift.  
 September 9—Robert Graham, killed by falling 200 feet, from cage to bottom of shaft. It is supposed that, through neglecting to fix his car properly to the cage, it must have struck side of shaft, knocking him off.  
 August 16—Harry Williams, scalp cut by steel falling about 12 feet in stope.  
 Walter Hunter, lacerated hand; Ed. Shears, six scalp wounds. Temporary staging gave way, letting them fall with machine drill to platform below, a distance of 6 feet.

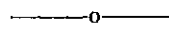
## MISCELLANEOUS.

- January 1—Sunset mine: Alex. Morrison, killed by explosion; verdict at inquest, accidental and through his own negligence.  
 " " 18—Ruth mine: John Kennedy, killed: fell down a chute, breaking his neck; no inquest.  
 February 11—Van Anda mines: Robt. Elliot, left arm and left leg broken; piece of timber accidentally dropped by another man fell 100 feet to the 400-foot level, striking Elliot.  
 May 7—Marble Bay mine: Henry Warrington injured by stepping into the bucket without giving the signal. The bucket went to the bottom of shaft but was partially checked by the engineer.  
 July —Green Mountain claim: Lou Funet, killed by falling down shaft while carrying on the work by contract.  
 August 18—North Star mine: D. F. McIntosh, one eye injured. He returned to his drift before all the shots he had put in had exploded.  
 October 12—Knob Hill mine: Reed Ramsey, right leg fractured by being caught in rope-rigging used for dumping ore-cars.  
 " 26—St. Eugene mine: Thos. Munn, killed by the breaking of an ore-chute.  
 November 26—Ivanhoe mine: Wm. Bryant, killed; no inquest.  
 December 3—Knob Hill mine: Thos. Davern, one eye destroyed in an explosion caused by his picking into powder in a muck pile.  
 " 20—Idaho Basin: Ole Oleson, killed by snowslide; no inquest.

TABLE OF ACCIDENTS IN CERTAIN ROSSLAND MINES DURING 1900.

Name of Mine.	Average number of men employed.	Total shifts worked.	Number of fatal or serious accidents.	Percentage of accident per shift.
Le Roi Mining Co.....	655	156,876	11	.007
Le Roi No. 2— <i>Josie</i> mine.....	47	15,345	.....	.....
" " <i>No. 1</i> .....	45	14,208	.....	.....
Kootenay Mining Co.— <i>Columbia-Kootenay</i> .....	35	12,773	.....	.....
Rossland Great Western Mines— <i>Nickel Plate</i> .....	114	20,382	2	.0098

## COAL MINING IN THE PROVINCE.



The working coal-fields of the Province are, as yet, only the Vancouver Island coal fields and the Crow's Nest Pass coal-fields—the former, as the name implies, on the Pacific coast, and the latter on the western slope of the Rocky mountains, our eastern boundary.

With the expectation of railways through new sections of the country, there has been, this past year, unusually energetic prospecting for coal, particularly throughout the Yale District, and it is reported, unofficially, that a number of locations have been made which show workable coal of good quality. On these showings nothing but preliminary prospecting work has been done as yet. In the neighbourhood of Babine lake similar prospects are reported, but no serious work has been done on them.

### VANCOUVER ISLAND COLLIERIES.

While considerable prospecting for coal has been going on in this section, it has been more of the nature of testing the extensions of known coal-fields, as appears in the Report of the Inspector which follows. The principal market for the Vancouver Island collieries is abroad, and it is to be noted that the export trade continues to increase.

Last year the coke output of Vancouver Island fell to about 5,000 tons, consequent on the supplying of the Kootenay market by the Crow's Nest collieries. This year, however, the output has risen to over 12,000 tons, proving that an almost unlimited market is available for this product.

### CROW'S NEST PASS COLLIERIES.

These collieries have this year begun serious shipments, as will be seen from the statistics, and the quality of the product is such that it seems entirely probable that as soon as a further outlet for the coal is provided, the output will be very largely increased. The Crow's Nest Pass Coal Company has been suffering from those many inconveniences incident to all new enterprises of this sort, and the property cannot as yet be said to be thoroughly equipped, a matter which is gradually being remedied. The Company is at present opening up new mines at various points, and will be in a position to meet the expected increase in trade.

The following are the official returns from the Crow's Nest Pass Coal Company, the only one working in this District:—

### COAL MINES REGULATION ACT.

*Returns for the year ending December 31st, 1900, from COAL CREEK COLLIERY, FERNIE TOWN, SOUTH-EAST KOOTENAY DISTRICT.*

Operated by THE CROW'S NEST PASS COAL CO., LTD.; head office at Toronto, Ont.

### OFFICERS.

Hon. George A. Cox, President, Toronto, Ont.

Robert Jaffray, Vice-President, Toronto, Ont.

Wm. G. Jaffray, Secretary, Toronto, Ont.

E. R. Wood, Treasurer, Toronto, Ont.

W. R. Wilson, General Manager, Fernie, B.C.

Capital of Company, \$2,000,000.

Value of Plant, \$

SALES AND OUTPUT FOR YEAR.  (Tons of 2,240 lbs.)	COAL.				COKE.			
	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada.....	89,841	.....			27,065			
" export to U. S.....	7,968	.....			38,958			
" " to other Countries.....								
Total Sales.....	97,809	.....	97,809		66,023	.....	66,023	
Used in making Coke.....	96,350	.....						
" under Colliery Boilers, &c.....	2,678	.....						
Total for Colliery Use....	99,028	.....	99,028					
Stocks on hand first of year.....					465			
" last of year.....					357			
Difference taken from Stock during year.....					108		108	
Output of Colliery for year.....			196,837				65,915	

## NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &amp;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.....	3	\$4 00	7	\$5 00	10	\$4 70
Whites—Miners.....	220	3 00			220	3 00
Miners' Helpers.....						
Labourers.....	100	2 50	40	2 25	140	2 42
Mechanics and Skilled Labour.....	1	2 75	8	3 00	9	2 97
Boys.....	6	1 50	10	1 00	16	1 19
Japanese.....						
Chinese.....						
Indians.....						
Totals.....	330		65		395	\$2 77

Name of Seams or Pits—No. 1 seam and No. 2 seam 6 and 8 feet thick, respectively.

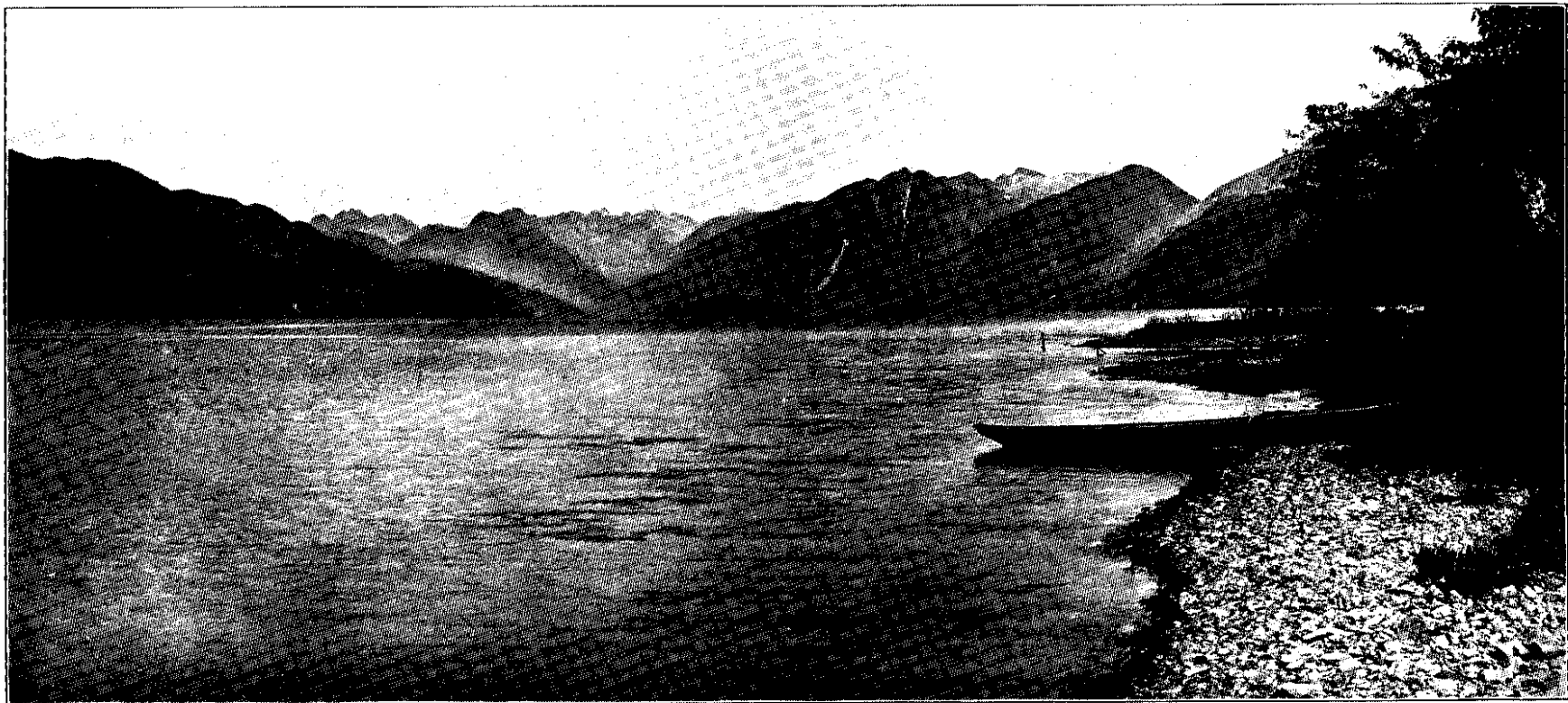
Description of seams, tunnels, levels, shafts, &c., and number of same—Each is opened by drifting. No. 1 seam is now developed back 2,300 feet from the front of the mountains. No. 2 seam is developed back 3,000 feet from front hills. There are now three outlets to each seam.

Description and length of tramway, plant, &c.—The haulage is done in each seam of coal as above referred to, the main roads of which are now being relaid by 50-lb. steel rail, by electric haulage. The electric power embraces the application of one Cooper engine, 175 horse-power, with 150 Eddy generator. We are now installing a Robb engine with a capacity of 375 horse-power, which will operate two Eddy generators, each with a capacity of 150 horse-power. Two electric motors are now hauling the coal.

W. R. WILSON.

The Minister of Mines is hereby authorised to publish these returns.

W. R. WILSON.



PITT LAKE--NEW WESTMINSTER M. D.--LOOKING NORTH.

## COAL MINES REGULATION ACT.

Returns for year ending December 31st, 1900, from MICHEL COLLIERY, MICHEL TOWN,  
SOUTH-EAST KOOTENAY DISTRICT.

Operated by THE CROW'S NEST PASS COAL CO., LTD.; head office at Toronto, Ont.

## OFFICERS.

Hon. G. A. Cox, President, Toronto, Ont.

Robert Jaffray, Vice-President, Toronto, Ont.

Wm. G. Jaffray, Secretary, Toronto, Ont.

E. R. Wood, Treasurer, Toronto, Ont.

W. R. Wilson, General Manager, Fernie, B. C.

Capital of Company, \$2,000,000.

Value of Plant, \$

SALES AND OUTPUT FOR YEAR.  (Tons of 2,240 lbs.)	COAL.				COKE.			
	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada.....	3,085	....						
"    export to U. S. ....								
"    "    to other Countries. ....								
Total Sales.....	3,085	....	3,085					
Used in making Coke.....	6,681	....						
"    under Colliery Boilers, &c. ....								
Total for Colliery Use...	6,681	....	6,881					
Stocks on hand first of year.....								
"    last of year.....								
Difference added to Stock during year.								
Output of Colliery for year.			9,966					

## NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &amp;c.

CHARACTER OF LABOUR.	UNDERGROUND.		ABOVE GROUND.		TOTALS.	
	No. Em- ployed.	Average Daily Wage.	No. Em- ployed.	Average Daily Wage.	No. Em- ployed.	Average Daily Wage.
Supervision and Clerical Assistance.....	2	\$4 00	1	\$4 00	3	\$4 00
Whites—Miners.....	50	3 00			50	3 00
Miners' Helpers.....						
Labourers.....			25	2 25	25	2 25
Mechanics and Skilled Labour.....			4	3 00	4	3 00
Boys.....						
Japanese.....						
Chinese.....						
Indians.....						
Totals.....	52		30		82	\$2 81

Name of Seams or Pits—No. 3 Defective, 12 to 22 feet thick ; No. 4 seam ; Nos. 5, 6 and 7 seams ; No. 8 seam ; No. 9 seam ; No. 10 seam.

Description of seams, tunnels, levels, shafts, &c., and number of same—No. 3 seam prospected for 450 feet, found defective. No. 4 seam now being developed by drift tunnel, 10 feet thick. Nos. 5, 6 and 7 prospected from 75 to 120 feet, proving that each vein is going to have a good commercial quality. No. 8 seam about 10 feet thick, now being developed by drift tunnels which have gone 1,100 feet. No. 9 seam changes from 8 to 16 feet in thickness over the lines of prospect tunnels driven 800 feet.

Description and length of tramway, plant, &c.—It is the Company's intention to open up the eight seams of coal above referred to by the installing rope haulage for dip plane workings, and electric haulages for level plane haulages. The Tipple improvements which are now being installed are outlined to handle 4,000 tons of coal per day.

W. R. WILSON.

The Minister of Mines is hereby authorised to publish these returns.

W. R. WILSON.

## REPORT ON THE INSPECTION OF CROW'S NEST COLLIERIES.

BY ARCHIBALD DICK, INSPECTOR.

I have the honour to make the following report as to the coal mines of the Crow's Nest Coal Company, recently inspected by me in pursuance of your instructions.

I left Nanaimo on November 18th, 1900, arriving at Fernie on the 20th. On the 21st I proceeded by the cars, 5 miles, to what is known as the No. 1 Tunnel, which enters the mountain on the right side of Coal creek. I went into this tunnel, which is 9 by 5½ feet, as far as the face, examining it carefully as I went along. Near the face there was some water, where there was a fault in the coal. Going past this and close to the face, in the first place that I got in, the gas flashed in my safety-lamp. I then went to the next place—to the rise going out—and there found that the atmosphere (or air) of the mine was heavily charged with gas, there being a blue flame or cap, 2 inches long, burning on the flame of my lamp. This was the last place in this mine where I found any trace of gas. All along this division the men were working with safety-lamps.

On going into the other district, and examining it, I found it was clear of any accumulation of gas; at the same time I had not the least doubt that the coal was giving off gas. In this division the ventilation was fairly passable. The miners here were using open (or naked) lights. In the first division and the places mentioned in that district it was not safe, in my opinion, for men to work, unless they were experienced hands accustomed to working with safety-lamps, and work should be done there, under the present conditions, only in case of emergency, in order to make connection with other places to give relief. It appeared to me that this was not the case at the time of my examination of the mine.

In the tunnel and the divisions of the mine, seventy (70) men are at work, viz.: In the first, or level split, there were 30, and in the upper division (found by me to be clear of accumulated gas), there were 40 men working. This includes all hands, both on the mine roads and at the face of the coal.

This mine is ventilated on the separate split system, by a Chandler Fan, 14 feet in diameter and 4 (four) feet wide. This fan was keeping in motion and was passing 20,000 cubic feet of air per minute, being an inadequate quantity of air to dilute and render harmless the noxious gases given off in the mine, to keep up a supply of fresh air, and to make the working places in a fit state for 70 men to work in. In this mine I found them very negligent with the brattice. In the course of my examination I noticed that the brattice was, in some places, 12 yards away from the face, and in testing those places, although I did not always find gas, I observed that there was too much smoke, most of which, however, came from the miners' lighted lamps.

In my interview with Mr. Wilson, the Superintendent, I was informed by him that he had been East, and that he had ordered a new and powerful fan for this No. 1 Tunnel, which would be at the mine and erected as soon as possible. Judging from the description which the Superintendent gave me of the machinery which he stated that he had ordered, I feel quite safe in saying that, when the new ventilating fan is put up and working, no further trouble will be experienced from gas in the mine.

On November 21st, the readings of barometer and thermometer were: barometer, 26° 10. and thermometer, 10° below zero.

This mine is dry but not dusty and there is very little powder used. Coal is brought out of the mine by electric motors. The cars when loaded form a square front of about 4 by 4 feet, and this presents quite an obstacle in a main intake which only measures 9 by 5½ feet; but the enlargement of this road and other parts of the air-way, which I noted as being small, would improve the ventilation with the present fan at work.

Being satisfied that I had viewed the workings of No. 1 Tunnel, I then went to what is known as

#### No. 3 DEEP (DIP).

This mine is on the side of Coal creek opposite to the No. 1 Tunnel. This No. 3 Deep is, I estimate, about 200 yards in length. The coal appeared to me to be good. The workings at the coal face vary from 6 to 8 feet in height, having a good roof of very strong, hard rock. I examined this mine (or division) and found that the place was in good order, except that in all the places, or stalls, they seemed to be trying to do without brattice—in some places I saw that the brattice was 18 yards from the face; in other words, they were trying to work by leaving pillars 12 yards square, without using any brattice. This division is wet, both top and floor. I pointed out to the Manager that brattice must be put in and that the "Coal Mines Regulation Act" provides, "that all working places shall be bratticed up within four yards of the face." The Manager said he would have it attended to.

This mine is ventilated from the surface, the main hauling road being the intake. All this mine appears to me to need is that the air-ways should be made larger—in several places the air-way is small—and that the brattice should be taken further towards the face.

On going through No. 3 Mine I got into the workings of what is here called the

#### No. 2 DEEP (DIP).

This mine is worked (as far as ventilation is concerned) in connection with No. 3, the same fan being the motive power for ventilation of both mines, the intakes of both being the main hauling-way, where the coal is taken out to the surface. The coal is similar to the No. 3, the rock overhead being also the same. The roofs being very strong and hard, there is nothing falling in the old workings; they are, therefore, open, and any place into which I went was dry, with considerable dust.

When in the No. 1 stall of this deep I found gas—there was a blue cap fully 2 inches long on the flame of my safety-lamp. Two men were at work in this place by the light of safety-lamps. There was very little air entering the place, although the brattice (cloth) was not far from the face. I then went out about 60 yards and upon making a test, saw the blue cap on the flame of my safety lamp. From thence I went into the main return airway, and there I again saw the blue cap on the flame of my lamp. While there I saw some person come into the air-way—not far from where I was—with an open light burning on his head; I called out to him, but he went back, so that I could not find out who he was. This would tend to show that there is a want of discipline in the mine.

On the intake the anemometer registered 37,000 feet compared with 40,000 taken on a previous inspection by Mr. McGregor, Inspector of Mines. From the intake I went to the return, where the same instrument registered 27,500 feet. This goes to show that there is leakage somewhere. Mr. Smith, the Manager, was present when the air was taken by me.

This No. 2 Deep has its main road of 9 by  $5\frac{1}{2}$  feet in area; but when it is taken into consideration that there is a motor working on the road, taking along 10 cars of coal each trip and forming a train 60 feet long, the area of the end of the train being about 4 by 4 feet—which, for the time of its running, almost stops the current of the intake—it is evident that, in order to overcome this obstacle, there should be a larger or a counter air-way. I expressed my views on the matter to the Manager.

Both No. 2 and No. 3 Mines have, for the motive power of ventilation, what is known as a Murphy fan, of a diameter of 8 feet, giving the result which I have mentioned, being 37,000 feet on the intake and 27,500 on the return. This is for the use of 106 men and boys on the separate split system, as follows: 46 men in the one division, and 60 in the other. It will be noticed that owing to the leakage between the intake and the return air-way, much of the air gets into the old workings; no doubt it helps to keep them clear, but it is all wanted at the face where the miners work.

From information which I received from Mr. McGregor, it appears that ventilation has much improved within the past two months, but it is to be hoped that it will continue to keep getting better, since there is room for improvement in this respect at the mines which I examined. Some of the improvement effected was by putting in a better class of stoppings, that is to say, they are building up the old places with rock. This is the means used for conducting the air to the face of the working places.

There are a great many foreigners in this mine who seem to think that if they have a safety-lamp in their hand everything is all right, whether they understand it or not. In this much danger lies, which, however, may be overcome soon.

I may mention that, after the mine has been stopped for only one day, they cannot find any gas; but when it is at work the gas is liberated so that the atmosphere of the mine becomes heavily charged with it. There is one general complaint with the men at the mines, and that is in reference to the oil, which is said to be very bad for illuminating purposes in a mine; it gives off, when burning, a thick, black smoke, with a strong odour, which makes it very disagreeable, besides being heavy to breathe; it is desired that those who furnish the oil will provide an article that will not make so much smoke, nor be so offensive.

As in No. 1 Tunnel, Mr. Wilson stated that there is also a new fan ordered for Nos. 2 and 3 Deeps, with the capacity of keeping in motion 220,000 feet of air per minute; but he could not guarantee that the fan will be running before next spring (1901). With a fan of this description in operation it will be a rare thing to find gas in any of the mines.



I should state that No. 2 Mine is where the most danger lies at present, mainly owing to its being dry and dusty, and also because it gives off much gas when the mine is at work. As, also, No. 2 is in connection with No. 3 Mine, any serious explosion going off in No. 2 might affect No. 3, although it is wet. However, by proper use of the ventilating fan now in use, enlargement of the air-ways, keeping the brattice close into the face, and continuing to put good stoppings where required, and maintaining good discipline in the several mines, there should result a fair exemption from danger; and if what I have pointed out be complied with, I cannot see where there would, ordinarily, be any danger of a serious accident of any kind; provided, as I have said, that the management and workmen carry out the above suggestions on their respective parts and comply with the "Coal Mines Regulation Act," and the Special Rules of the mines.

---

## REPORT ON THE INSPECTION OF VANCOUVER ISLAND COAL MINES.

THOS. MORGAN, INSPECTOR OF VANCOUVER ISLAND COLLIERIES.

I have the honour to submit my annual report for the year 1900.

The aggregate output of coal from all the Vancouver Island mines under operation during the year ending 31st December, 1900, amounted to 1,383,374 $\frac{1}{2}$  tons, as against 1,203,199 $\frac{1}{2}$  tons produced in 1899.

There has been a steady demand both in the home and foreign markets for the hard bituminous coal produced by the Vancouver Island mines, and work has been constant at all the collieries.

The following collieries have been operated on Vancouver Island during 1900, viz.:—

NEW VANCOUVER COAL MINING AND LAND Co., operating the *Nanaimo Colliery*, comprising No. 1 Shaft, Esplanade (in the City of Nanaimo); Protection Island Shaft; No. 5 Shaft, Southfield (near Nanaimo river); and the Harewood Mine.

R. DUNSMUIR & SONS, operating the *Wellington Colliery*, comprising No. 5 Shaft, at Wellington.

THE WELLINGTON COLLIERY Co., LIMITED, operating the *Wellington Colliery* in Douglas District, known as "Extension Mine," and comprising No. 1 Slope, No. 2 Slope, No. 3 Slope, and the Tunnel Mine.

THE UNION COLLIERY Co., OF BRITISH COLUMBIA, LIMITED, operating the *Union Colliery*, comprising No. 4 Slope, No. 5 Shaft and No. 6 Shaft, in the Comox District. This company also manufactures coke and bricks at Union Bay.

The *Alexandria Colliery* in Cranberry District is also operated by the Wellington Colliery Co., Limited.

---

## AGGREGATE SUMMARY OF RETURNS FROM VANCOUVER ISLAND COLLIERIES FOR THE YEAR 1900.

TONS OF 2,240 lbs.	Tons, Coal.		Tons, Coal.	
	cwt.		cwt.	
Sold for consumption in Canada .....	276,867	6		
" export to other Countries .....	906,215	13		
Total Sales .....			1,183,082	19
Used in making Coke .....	47,352	10		
" under Colliery Boilers, &c .....	162,613	....	209,965	10
			1,393,048	9
Stocks on hand first of year .....	37,650	14		
" last of year .....	27,977	1		
Difference taken from stock during year .....			9,673	13
Output of Collieries for year 1900 .....			1,383,374	16
Coke sold for consumption in Canada .....			3,476 tons.	
" " export to United States .....			12,799 "	
" stock on hand last of year .....			2,959 "	
Output of Coke at Comox Mines .....			19,234 "	

## NUMBER OF MEN EMPLOYED.

CHARACTER OF LABOUR.	NUMBER EMPLOYED.		TOTAL NUMBER EMPLOYED.
	Under Ground.	Above Ground.	
Supervision and Clerical .....	40	35	75
Whites—Miners .....	1,593	.....	1,593
Miners' Helpers .....	480	.....	480
Labourers .....	426	127	553
Mechanics and Skilled Labour .....	36	202	238
Boys .....	123	20	143
Japanese .....	48	3	51
Chinese .....	110	458	568
Totals .....	2,856	845	3,701

Coal was exported to San Francisco and the southern ports of California, to the Hawaiian Islands, and to Alaska. The China and Australian steamships are also large consumers of fuel. The sources of supply of coal for the State of California from 1897 to 1900 are shown in the following table:—

	1897.	1898.	1899.	1900.
	Tons.	Tons.	Tons.	Tons.
British Columbia .....	558,372	651,208	623,133	766,917
Australia .....	281,666	201,931	139,333	178,563
English and Welsh .....	107,969	75,115	93,263	54,099
Scotch .....	4,081	5,056	.....	.....
Eastern (Cumberland and Anthracite) .....	21,335	37,560	38,951	17,319
Seattle, Washington .....	220,175	283,963	271,694	250,590
Tacoma, " .....	286,205	348,474	355,756	418,052
Mount Diablo, Coos Bay and Tesla .....	115,150	172,506	189,507	160,915
Japan and Rocky Mountains, .....	6,587	26,560	28,390	42,673
Total .....	1,601,540	1,802,373	1,740,027	1,889,128

---

Of the above coal there was delivered in 1900 by water at the southern ports of California, viz., Los Angeles and San Diego, 165,965 tons, principally from British Columbia. During 1900 the State of California imported 41,741 tons of coke, about 12,000 tons of which are credited to British Columbia (being the product of the Comox coke ovens), against about 4,000 tons exported from Comox in 1899.

I regret to have to report the increased number of 77 accidents in and about the coal mines of Vancouver Island during the year 1900. The fatal accidents were 14 in number, 12 only having actually occurred in the mines, and none being due to explosions of gas. Two of the deaths were from falls of coal and four from falls of rock, in working places. Mine cars caused three deaths; powder explosion resulted in one fatality; one man, a carpenter, met his death by falling off a cage in No. 6 Shaft, Union; and a pump man was scalded so severely in a water sump that death resulted. On a surface railway two Chinamen were run over by cars and fatally injured.

In every fatal case an inquiry was made by a coroner, and, where necessary, inquests were held. The evidence taken at the inquests is filed in the office of the Attorney-General.

Thirty-nine serious accidents occurred during the year, as follows:—Two from gas explosions; 14 from falls of coal, and 14 from falls of rock in working places; five men were seriously hurt by mine cars, three from explosion of powder in the mine, and one by being struck by a piece of timber. Twenty-four slight accidents were reported, 13 of which were caused by gas explosion, three by falls of coal, three by falls of rock in working places, and one by a mine car. Three men were slightly burnt by explosion of their powder in the mine, and one man was slightly hurt by a fall of timber.

With regard to the above serious and slight accidents, in nearly every instance they occurred through want of thought and care on the part of the workman; and even in the cases of burns from gas, the persons injured have mostly brought the trouble upon themselves, by knocking down canvas and brattice with shots in their working places, and neglecting to report and have the same made secure before returning to their work.

I have made thorough examination of the different mines every month, as required by the "Coal Mines Regulation Act," and have taken steps whenever necessary to have any needful amendments or alterations made.

## NANAIMO COLLIERY.

The following are the Official Returns from this Colliery for the year 1900:—

## COAL MINES REGULATION ACT.

Returns for the year ending December 31st, 1900, FROM NANAIMO COLLIERY.

Operated by New Vancouver Coal Mining & Land Co., Ltd.; head office at London, England.

OFFICERS.	ADDRESS.
J. Galsworthy, Chairman.	12, Old Jewry Chambers, Old Jewry, E.C. London.
Joseph Ramsden, Secretary,	" " " "
Samuel M. Robins, Superintendent,	Nanaimo, British Columbia.

Share capital of Company, \$1,075,000; debenture capital, \$250,000;  
Value of Plant, \$350,000.

SALES AND OUTPUT FOR YEAR.  (Tons of 2,240 lbs.)	COAL.				COKE.			
	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada .....	55,802	9						
" export to U. S. ....	428,578	—						
" " to other Countries. ....	11,880	—						
<b>Total Sales</b> .....			496,260	9				
Used in making Coke .....								
" under Colliery Boilers, &c. ....	78,525	16						
<b>Total for Colliery Use</b> .....			78,525	16				
Stocks on hand first of year .....	9,418	14						
" last of year .....	13,984	1						
Difference added to Stock during year .....			4,565	7				
<b>Output of Colliery for year</b> .....			579,351	12				

## NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &amp;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 .....	16		17		33	
Whites—Miners .....	511	\$3 to \$4.50			511	
Miners' Helpers .....						
Labourers .....	290	\$2.50 to \$3	57	\$2.50	347	
Mechanics and Skilled Labour .....			94	\$3 to \$4	94	
Boys .....	79	\$1 to \$2	8	\$1 to \$1.50	87	
Japanese .....						
Chinese .....			163	\$1.12½ to	163	
Indians .....				[\$1.25		
<b>Totals</b> .....	896		339		1,235	

Names of Seams or Pits—Southfield No. 2, Southfield No. 5, No. 1 Esplanade Shaft, No. 1 Northfield Shaft, Protection Island Shaft.

Description of seams, tunnels, levels, shafts, &c., and number of same—Southfield No. 2, worked by slope; seam 6 to 10 feet. Southfield No. 5, worked by shaft; seam 5 to 10 feet. No. 1 Northfield Shaft, worked by shaft; seam 2 feet to 3 feet 6 inches. Protection Island Shaft, worked by shaft; lower seam 4 feet, upper seam 6. No. 1 Esplanade Shaft, worked by shaft, seam 5 to 12 feet.

Description and length of tramway, plant, &c.—Railway to Southfield, 6 miles, with sidings; railway to No. 1 Shaft, 1 mile, with sidings; railway from Northfield Mine to wharf at Departure Bay,  $4\frac{1}{2}$  miles; rails are of steel, 56 lbs. per yard of standard gauge, viz., 4 feet  $8\frac{1}{2}$  inches; 11 hauling and pumping engines, 24 steam pumps, 6 locomotives, 271 coal cars (6 tons), besides lumber and ballast cars; bunkers with capacity of 10,000 tons; fitting shops for machinery repairs, with turning lathes, boring, drilling, planing, screw-cutting machines, hydraulic press, steam hammer, &c., &c.; diamond boring machinery for exploratory work (bores to 4,000 feet); 150 horse-power electric plant, engines, boilers, dynamo; 4 30 horse-power 8-ton locomotives, and one 15 horse-power locomotive; hauling and lighting equipment; wharves, 2,000 feet frontage, at which vessels of the largest tonnage can load at all stages of the tide.

NEW VANCOUVER COAL MINING & LAND CO., LIMITED,  
SAMUEL M. ROBINS, *Superintendent.*

The Minister of Mines is hereby authorised to publish these returns.

NEW VANCOUVER COAL MINING & LAND CO., LIMITED,  
SAMUEL M. ROBINS, *Superintendent.*

The New Vancouver Coal Mining & Land Company has been working the following coal mines at the Nanaimo colliery during the year 1900, under the management of Thomas Russell:—

No. 1 Shaft, Esplanade in Nanaimo, Jos. Randle, overman; Protection Island Shaft, Thos. Mills, overman; No. 5 Shaft, Southfield, Richard Gibson, overman; Harewood Mine, near Extension Mine, Geo. Bradshaw, overman. The Northfield Mine, near Wellington, has continued idle. Descriptions of these mines, excepting Harewood, appeared in the Report for 1898. Any important additions or changes made since are mentioned in the following report.

#### NO. 1 SHAFT, ESPLANADE, NANAIMO.

A new diagonal slope has been driven south-east of the main slope from a point about 600 yards down. This slope is 10 feet wide, with counter about the same, and extends about 800 yards. It varies in height with the seam from 5 to 10 feet, and the Company is still driving the slope in good coal.

On the north side of the diagonal slope there are two levels with counters, all the same size as the slope. Stalls are turned at right angles off the levels in good coal, and the whole forms one district of the mine. The coal from this District is gathered to the sidings of the main slope by winches driven by compressed air, but the Company is preparing to instal an endless rope system for haulage on the slopes. The double winding engine at present in use is being replaced by a powerful double engine, 12 by 14, geared  $14\frac{1}{4}$  to 1. This system will enable the expeditious haulage of a large output.

The ventilation of the diagonal slope district is by intake from the No. 1 Shaft. On the 3rd of December, when the air was last tested, a volume of 28,000 cubic feet was passing, per minute, for the use of 65 men and 9 mules on a shift; this supply of air is ample to clear off any gas in the workings, while the natural dampness of the seam, as well as the special sprinkling done when required, prevents any danger from dust. Opposite the new diagonal, and north of the main slope is the No. 3 north level district, where the mining is extracting of pillars and pillar and stall work. About 500 yards further down the main slope, a level is being driven to the north towards the main slope of Protection, through about a mile of the seam which has not hitherto been explored.

A narrow drift from No. 3 level is going down to intersect the prospecting level.

The air goes into the No. 3 level district from No. 1 Shaft; and at the last test there were 15,000 cubic feet per minute, for 26 men and 4 mules on a shift. Gas has not been a trouble and the places are damp. The total quantity of air at the return air-way (counter of main slope) for the side of the mine south of the fan, was 57,600 cubic feet and, after deducting the air passing in the diagonal slope and No. 3 level district, there is a leakage of 14,600 cubic feet for the workmen round the pit bottom and to supply 20 odd mules in the stables at the entrance of No. 1 south level.

Two hauling winches and 4 pumps, including 1 pump about 1,200 yards down the main slope, are supplied with power by 3 air-compressors, viz.: 1 Rand duplex, diam. of cylinder (steam and air) 14 inches with 22-inch stroke; 1 Rise duplex cylinder, steam 12 inches, air 13 inches, stroke 16 inches; and 1 Ingersoll, single cylinder 12 inches, stroke 18 inches.

No. 1 level has been connected with the new shaft sunk by the Company on the north-east side of Newcastle island and described in the Report of 1899. The connection is made by way of Lamb's incline and by a level on the north of the incline. The distance from No. 1 level to Newcastle Shaft is about a mile. This shaft is an upcast for the inside workings off No. 1 level. Lamb's incline starts off No. 1 north level at a distance of about  $2\frac{1}{2}$  miles from the bottom of No. 1 Shaft, and is the terminus of the electric tramway.

There are workings above and on both sides of the incline, which extend from the level about 1,000 yards up the seam, both in pillar and stall and extraction of pillars.

The workings on the north side of Lamb's incline form a separate split or district and were supplied with 24,800 cubic feet of air per minute (when last tested, on 9th December), for 17 men and 4 mules on a shift. The south side workings off Lamb's incline and the long wall workings of Spear's incline together, form another district for which there were 21,550 cubic feet per minute, for 42 men and 10 mules. The air for the last-mentioned district comes in by way of Protection Island Shaft and, after ventilating the workings, goes up the new shaft at Newcastle (on the head of which shaft is a Guibal fan, 5 by 14 feet) in a volume of 57,600 cubic feet per minute, at 95 revolutions with  $1\frac{1}{2}$ -inch water gauge. A deduction of 46,350 feet being the total of air supplied to both sides of the inclines shows a leakage of 11,250 cubic feet per minute, by way of doors, stoppings and curtains, of which leakage the old workings have the benefit.

The "Big Incline" workings on the north side were supplied with 6,900 cubic feet of air per minute, for 20 men and 6 mules; and on the south side of the incline, with 8,400 cubic feet per minute, for 25 men and 3 mules. These workings also derive their air from Protection Shaft, but the return is by way of No. 2 upcast shaft on the Esplanade. The "Big Incline" starts off this No. 1 level at  $1\frac{1}{2}$  miles distance from the bottom of No. 1 Shaft and nearly in a line with Protection Shaft. The incline extends from the level about 1,500 yards up the seam, and the mining done off the incline is in extraction of pillars and pillar and stall work.

The electric motors still prove successful means of haulage both in No. 1 and No. 3 levels; no accidents therefrom have been reported.

The No. 1 pit-head and its loading apparatus, which had been in use for about 17 years, were dismantled by the Company last summer, and a new pit-head, 60 feet high, was constructed of massive timbers, tapering from 2 feet square to 18 inches. The frame was furnished with new pulleys and steel-wire cables, and the wire-ropes and guides for the cages were overhauled and made safe. Two new cages were provided and the pit is now efficient for heavy work for many years to come. The pit landing and top works are all housed in. The size of the landing is 110 by 41 feet, with a wing 43 by 60 feet, the platform being 32 feet above the surface. Full cars (average weight of coal 15 cwt.) are run by gravity from the cage to the weighing scales and, when weighed, the cars are allowed to run on to revolving tippers which discharge the coal into shaking screens. The empty mine-cars run by gravity down an incline, from which they are elevated by an endless chain to a height sufficient to allow the cars to run to the back of the shaft ready to be placed on the cages for lowering down the shaft.

The coal is separated by the shaking screens into different sizes and at the same time the nut coal, fine coal and dross are screened out and delivered into their respective railway cars.

The larger sizes of coal are delivered by the screens on to a travelling table, arranged so as to allow of the removal of any rock (that may happen to have become mixed with the coal) as it travels along towards the car into which the coal is gently discharged. This travelling table is divided into sections, one side for large sizes of coal, the other for smaller sizes, and the middle for carrying any rock that may be picked out.

The pit-head and pit-bottom and stables are illuminated by arc and incandescent electric lights. The boiler service has been added to and now numbers 16 Lancaster and other boilers.

#### PROTECTION ISLAND SHAFT.

The mining in this shaft has been in the extraction of pillars, and pillar and stall and long wall work. There are three districts, of which the shaft is the intake for ventilation. In the main slope district, on 11th December, there were 19,500 cubic feet of air passing per minute for 35 men and 2 mules. No standing gas has been found in this or any other part of Protection Mine, and there is no danger from dust.

In long wall workings, for which there is a split, 18,240 cubic feet of air passed per minute for 28 men and 3 mules. This volume of air, after going through the long wall workings, returns back to the intake which goes up to No. 1 level of No. 1 Shaft, and has been accounted for in the air given for the other four different splits in No. 1 north level, but it bears only the small proportion of about one-tenth to the total quantity going in that direction. This long wall has been worked very successfully, no fatal or serious accidents having happened there during the year.

The diagonal slope was supplied with 5,000 cubic feet of air per minute for 18 men.

There are 220,200 cubic feet of air per minute descending No. 1 Shaft and Protection Shaft, of which 57,600 ascends Newcastle Shaft, and 162,600 ascends No. 2 upcast shaft on the Esplanade, with Guibal fan (12 feet by 36 feet) running 42 revolutions, and 1 $\frac{3}{4}$ -inch water gauge. Out of the total of 220,200 cubic feet, 129,150 feet were passing in the eight different splits in Protection and No. 1 Shafts, leaving 91,050 to be accounted for as leakage, which supplied the old workings and travelling ways, and was available for 80 odd mules in the mine stables.

The lower seam in Protection Mine is to be tapped by a tunnel, now in course of driving from No. 3 north level of No. 1 Shaft from a point opposite and near Protection workings. A level and workings are also going from the main slope of Protection Mine towards the main slope in No. 1 Shaft, to open up the large area between the slopes that has not yet been fully proved.

On the surface the machinery of the mine has been supplemented by a Rix duplex air compressor, cylinder 12 inches by 13 inches, stroke 18 inches. This and another compressor drive three hauling engines and two pumps in the mine. Great improvement has been made to the outside facilities for loading and shipping the coal from Protection Mine. A new coal-bin of 4,500 tons capacity has been erected, affording with the bunkers a total storage of 7,500 tons.

#### SHIPPING AND LOADING APPLIANCES AT PROTECTION MINE.

A new loading system of novel design, invented by W. H. Wall, the Company's mechanical engineer, has been constructed, by means of which full railroad cars are run by gravity from the mine, and also from the bunkers and bin, to a loading staith at the front of a new wharf; there the cars are elevated by hydraulic lifts to a height of 38 feet above extreme high tide, where they are discharged into chutes arranged to suit any height of vessel. The empty cars are returned by gravity along a track of the same height (38 feet) directly above the track for full cars, graded down to enable the empty cars to run to the back of the switches at the mine and bunkers, for re-loading. The hydraulic lifts are arranged one on each side of the chute, so that as the loaded car is ascending the empty cage is descending, and this allows the full car to be placed on the cage at the lower landing while the upper one is being discharged into a ship. The number of cars (containing about 6 tons of coal each) which can be handled by this newly-invented system for loading vessels is 100 cars, or 600 tons per hour. The approach to the staith and wharf for carrying the railroad tracks is a piece of trestlework about 600 feet in length.

#### NO. 5 SHAFT, SOUTHFIELD.

During the year pillars have been extracted and pillar and stall work has been done in this mine. On the 4th of December, on testing the air, 65,000 cubic feet per minute passed for the service of 52 men and 10 mules. There has been a considerable quantity of black damp encountered where pillar work is going on, but it is being carefully watched and kept well under control by the supply of a strong current of air. A new air-compressor has been added to the surface machinery, consisting of a Rand duplex, 12-inch cylinder and 18-inch stroke, which drives one hauling engine and four pumps below in the mine. The coal varies from 6 to 30 feet in height in this Southfield seam.

#### HAREWOOD MINE.

This mine is situated about  $3\frac{1}{2}$  miles S. W. of Nanaimo. Work was actively carried on during 1876 and 1877, and a considerable quantity of coal was mined and transported, by means of an aerial tramway, to bunkers on Cameron island, from whence ships were loaded for the foreign markets. The New Vancouver Coal Company acquired the Harewood mine and coal-field of about 9,000 acres, and allowed it to remain idle for future operation. The Company is now energetically developing the mine and putting out coal. A railroad track will connect the mine with the Southfield railway near Chase river. The mine was originally opened by a tunnel driven in a southerly direction, level-free, for 700 yards. The Company has re-opened and timbered this level for about 400 yards, where a slope and counter are being driven easterly to the dip, in very good coal. A hauling engine is used at the head of the slope,



and mules draw the coal cars along the level. Steam for this engine and a pump inside, as well as for an engine for a ventilating fan of Guibal type, is supplied by boiler service on the outside. This fan runs at 50 revolutions per minute, producing 6,900 cubic feet of air per minute for seven men and one mule on a shift. The speed of this fan can be increased to 250 revolutions per minute whenever required. The intake is on the level, and the return goes through an airway up the pitch to the outcrop. The mine has so far been clear of gas, and no accident has occurred to the workmen.

The Company has used diamond drills in prospecting the coal-fields belonging to it, boring to a great depth with a view to the early development of its properties.

The loading wharves of the Nanaimo Colliery have been improved and largely extended. There are three shipping staiths fitted with "Wall's" apparatus, from which coal can be poured into a vessel's hold at three hatches simultaneously. The long trestle-work approaches, new bunkers (of 10,000 tons capacity) and other additions, are very complete and up to date. The wharves are furnished with ample lighting power by improved electric lamps, that facilitate night operations and secure the safety of the workmen.

#### WELLINGTON COLLIERY.

The following are the official returns from the colliery for the year 1900:—

#### COAL MINES REGULATION ACT.

*Returns for year ending December 31st, 1900, from WELLINGTON COLLIERY, WELLINGTON TOWN, NANAIMO DISTRICT.*

Operated by R. DUNSMUIR & SONS; head office at Victoria, B.C.

Not incorporated. Mine closed.

SALES AND OUTPUT FOR YEAR. (Tons of 2,240 lbs.)	COAL.				COKE.			
	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada .....	13,284	13						
" export to U. S. ....								
" " to other Countries.....	76,708	—						
Total Sales.....			89,992	13				
Used in making Coke.....								
" under Colliery Boilers, &c .....	10,800	—						
Total for Colliery Use....			10,800	—				
Stocks on hand first of year.....								
" last of year .....								
Difference added to Stock during year .....								
Output of Colliery for year .....			100,792	13				

## NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &amp;c.

CHARACTER OF LABOUR.	UNDERGROUND.		ABOVE GROUND.		TOTALS.	
	No. Em- ployed.	Average Daily Wage.	No. Em- ployed.	Average Daily Wage.	No. Em- ployed.	Average Daily Wage.
Supervision and Clerical Assistance .....	1		2		3	
Whites—Miners .....	186	\$3 to \$4.50			186	\$3 to \$4.50
Miners' Helpers .....	24	\$2.50 to \$3			24	\$2.50 to \$3
Labourers .....			7	\$2 to \$2.50	7	\$2 to \$2.50
Mechanics and Skilled Labour .....	9	\$3 00	10	\$2.50 to \$3	19	\$2.50 to \$3
Boys .....	7	\$1.50 to \$2			7	\$1.50 to \$2
Japanese .....			2	\$1 00	2	\$1 00
Chinese .....			27	\$1 to \$1.50	27	\$1 to \$1.50
Indians .....						
Totals .....	227		48		275	

Mine shut down.

R. DUNSMUIR & SONS.

The Minister of Mines is hereby authorised to publish these Returns.

R. DUNSMUIR & SONS.

Of the Wellington Colliery, at Wellington Town, near Nanaimo, which for many years was successfully operated by the firm of R. Dunsmuir & Sons, there was only working during the past year the No. 5 Shaft, from which the pillars of coal were extracted until it was finished in the autumn of the year.

It is understood that the mines opened in Cranberry District by the Wellington Colliery Co., and called the "Wellington Colliery" are an "extension" of the old Wellington mines.

## WELLINGTON COLLIERY COMPANY.

The following are the official returns of this Company for the year:—

## COAL MINES REGULATION ACT.

Returns for year ending December 31st, 1900, from THE WELLINGTON COLLIERY COMPANY,  
COMOX DISTRICT.

Operated by WELLINGTON COLLIERY Co., LIMITED; head office at Victoria, B. C.

## OFFICERS.

James Dunsmuir, President,  
John Bryden, V.-President,  
C. E. Pooley, Secretary,  
R. W. Dunsmuir, Treasurer,  
F. D. Little, Superintendent,

## ADDRESS.

Victoria, B. C.  
"  
"  
"  
Ladysmith, B. C.

Capital of Company, \$1,000,000; value of plant, \$150,000.

SALES AND OUTPUT FOR YEAR. (Tons of 2,240 lbs.)	COAL.				COKE.			
	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada.....	118,757	—			3,476	—		
" export to U. S.....	139,927	—			12,799	—		
" " to other countries.....								
Total Sales.....			258,684	—			16,275	—
Used in making Coke.....	36,938	—						
" under Colliery Boilers, &c. ....	41,540	—						
Total for Colliery Use.....			78,478	—				
			337,162	—				
Stocks on hand first of year.....	27,432	—						
" last of year.....	13,793	—					2,959	—
Difference taken from Stock during year.....			13,639	—				
Output of Colliery for year.....			323,523	—			19,234	—

By products, none; clay (tons), 1,739; fire-brick (1,000), 197,550.

NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &c.

CHARACTER OF LABOUR.	UNDERGROUND.		ABOVE GROUND.		TOTALS.	
	No. Em- ployed.	Average Daily Wage.	No. Em- ployed.	Average Daily Wage.	No. Em- ployed.	Average Daily Wage.
Supervision and Clerical Assistance ...	18	\$3 to \$5	6	\$3 to \$6	24	
Whites—Miners.....	296	\$3 to \$5	None.	None.	296	
Miners' Helpers.....	158	\$1.50 to \$2.50	None.	None.	158	
Labourers.....	68	\$2.25 to \$2.75	46	\$2.50 to \$2.75	114	
Mechanics and Skilled Labour	19	\$3 00	41	\$3 to \$3.50	60	
Boys.....	8	\$1.50 to \$2	12	\$1 00	20	
Japanese.....	48	\$1.25 to \$1.50	None.	None.	48	
Chinese.....	110	\$1.25 to \$1.50	74	\$1 00	184	
Indians.....	None.	None.	None.	None.		
Totals.....	725		179		904	

Name of Seams or Pits—No. 4 Slope, No. 5 Shaft, No. 6 Shaft.

Description of seams, tunnels, levels, shafts, &c., and number of same—No. 4 Slope with air-ways and levels; No. 5 Shaft with air-ways and levels; No. 6 Shaft with air-ways and levels.

Description and length of tramway, plant, &c.—12 miles, 4 feet 8½ inches gauge; 4 locomotives, 150 coal cars (22 tons each), 1 second class passenger car, 1 combination passenger car; 1 Diamond drill, 5 stationary engines, 5 steam pumps, 5 electric pumps, 1 dynamo, 1 steam saw-mill, 1 Luhreg coal washer, 200 coke ovens (bee-hive pattern), 2 wharves, and 1 pile-driver.

JAMES DUNSMUIR.

The Minister of Mines is hereby authorised to publish these returns.

JAMES DUNSMUIR.

## COAL MINES REGULATION ACT.

Returns for year ending December 31st, 1900, from ALEXANDRIA COLLIERY, SOUTH WELLINGTON TOWN, CRANBERRY DISTRICT.

Operated by WELLINGTON COLLIERY Co.; head office at Victoria, B. C.

OFFICERS.	ADDRESS.
James Dunsmuir, President,	Victoria, B. C.
Chas. E. Pooley, Secretary,	"
R. W. Dunsmuir, Treasurer,	"
A. Faulds, Manager,	South Wellington.

Value of plant, \$20,000.

SALES AND OUTPUT FOR YEAR.  (Tons of 2,240 lbs.)	COAL.				COKE.			
	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada .....	57,072	4						
" export to U. S. ....	47,756	13						
" " to other Countries. ....								
Total Sales .....			104,828	17				
Used in making Coke at Comox .....	625	—						
" under Colliery Boilers, &c .....	7,300	—						
Total for Colliery Use .....			7,925	—				
			112,753	17				
Stocks on hand first of year .....	800	—						
" last of year .....	200	—						
Difference taken from Stock during year .....			600	—				
Output of Colliery for year .....			112,153	17				

## NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &amp;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 ..	1	\$4 00	3	\$2.50 to \$6.50	4	\$2.50 to \$6.50
Whites—Miners .....	89	\$3 to \$5.50			89	\$3.00 to \$5.50
Miners' Helpers .....	19	\$2 50			19	\$2 50
Labourers .....	68	2 50	2	\$2.50 to \$2.75	70	\$2.50 to \$2.75
Mechanics and Skilled Labour .....	4	2 50	10	\$2.50 to \$3.00	14	\$2.50 to \$3.00
Boys .....	1	2 00			1	\$2 00
Japanese .....						
Chinese .....			30	\$1.00 to \$1.50	30	\$1.00 to \$1.50
Indians .....						
Totals .....	182		45		227	

Name of Seams or Pits—Alexandria.

Description of seams, tunnels, levels, shafts, &c., and number of same—No. 1 Slope with airways and levels.

Description and length of tramway, plant, &c.—Hoisting engine and boilers, Sheppard washer, 1 mile of siding.

JAMES DUNSMUIR.

The Minister of Mines is hereby authorised to publish these returns.

JAMES DUNSMUIR.

COAL MINES REGULATION ACT.

Returns for year ending December 31st, 1900, from WELLINGTON COLLIERY,  
CRANBERRY DISTRICT.

Operated by WELLINGTON COLLIERY Co.; head office at Victoria, B. C.

OFFICERS.

ADDRESS.

James Dunsmuir, President,  
C. E. Pooley, Secretary,  
R. W. Dunsmuir, Treasurer,  
Andrew Bryden, Manager,

Victoria, B. C.  
"  
"  
Wellington Extension.

Value of plant, \$200,000.

SALES AND OUTPUT FOR YEAR.  (Tons of 2,240 lbs.)	COAL.				COKE.			
	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
Sold for consumption in Canada .....	31,051	—						
"    export to U. S. ....	201,366	—						
"    "    other countries.....								
Total Sales .....			233,317	—				
Used in making Coke at Comox .....	9,789	10						
"    under Colliery Boilers, &c .....	24,447	4						
Total for Colliery Use.....			34,236	14				
			267,553	14				
Stocks on hand first of year .....								
"    last of year .....								
Difference added to Stock during year .....								
Output of Colliery for year .....			267,553	14				

## NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &amp;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 .....	4	.....	7	.....	11	.....
Whites—Miners.....	511	\$3 to \$5	.....	.....	511	\$3 to \$5
Miners' Helpers .....	279	\$2.50 to \$3	.....	.....	279	\$2.50 to \$3
Labourers .....	.....	.....	15	\$2 to \$2.50	15	\$2 to \$2.50
Mechanics and Skilled Labour .....	4	\$3 00	47	\$2.50 to \$4	51	\$2.50 to \$4
Boys .....	28	\$1 to \$2	.....	.....	28	\$1 to \$2.00
Japanese .....	.....	.....	1	\$1 50	1	\$1 50
Chinese.....	.....	.....	164	\$1 to \$1.50	164	\$1 to \$1.50
Indians.....	.....	.....	.....	.....	.....	.....
Totals.....	826	.....	234	.....	1,060	.....

Name of Seams or Pits—Wellington.

Description of seams, tunnels, levels, shafts, &c., and number of same—No. 1 Main Tunnel with air-ways and levels; No. 1 Slope with air-ways and levels; No. 2 Slope with air-ways and levels; No. 3 Slope with air-ways and levels.

Description and length of tramway, plant, &c.—5 miles railway with sidings; 4 locomotives; 200 Gondola coal cars, capacity 25 tons; 150 coal cars, capacity 3 tons; 4 stationary engines; electric power house with 2 generators; electric tramway with 2 locomotives; wharves and bunkers at Ladysmith, Oyster Harbour.

JAMES DUNSMUIR.

The Minister of Mines is hereby authorised to publish these returns.

JAMES DUNSMUIR.

## COAL MINES OF THE WELLINGTON COLLIERY CO., LIMITED.

President of the Company, the Hon. Jas. Dunsmuir.

Secretary, C. E. Pooley, Esq.

General Manager, Francis D. Little, Esq.

The Company has been working the following mines in the year 1900:—

Comox Mines (Union), John Matthews, Manager.

No. 4 Slope, Richard Short, Overman.

No. 5 Slope, David Walker, "

No. 6 Slope, Wm. Walker, "

Alexandria Mine (South Wellington), Alex. Faulds, Manager.

Wellington Mines (Extension), Andrew Bryden, Manager.

No. 1 Slope, Alexander Bryden, Overman.

No. 2 Slope, David Wilson, "

No. 3 Slope, John Johns, "

No. 1 Tunnel, James Sharp, "

Detailed descriptions of these mines were published in the Report for 1898.

## COMOX MINES.

*No. 4 Slope (Union).*

During the year 1900 the following advances have been made in this mine:—The main diagonal slope is extended 150 yards, through a “want” of a hundred yards, and is now driving in a good field of coal. This slope is 5,650 feet down. Off this diagonal, on the east side, the following levels have been extended: No. 10 has gone through a want of 100 yards, and is in 300 yards of good coal; No. 11 the same; No. 12 has reached the boundary of No. 5 Shaft workings; No. 13 has advanced about 400 yards, and was in a fault during December; No. 14 was driven about 35 yards (this level has been in much troubled ground in the course of the year, but is now in good coal); and No. 15 has been started. On the west side of the main diagonal slope, extracting of pillars has been the work mostly done. In the old slope workings, on the east side, in Nos. 11, 12 and 13 levels, pillars have been extracted. No. 14 level has advanced about 100 yards, and No. 15 level about 225 yards; the latter is now in most excellent coal. On the west side of the old slope, No. 11 level has advanced about 100 yards through a fault, and has just struck the coal. No. 13 level has gone about 100 yards. No. 1 incline, off No. 11 level, was suspended during the greater part of the year, but is now going in good coal. No. 2 incline—about 450 yards in No. 11 level—has been driven about 200 yards, and having gone through troubled ground, is now in good coal. No. 2 level, off the No. 2 incline, is finished, and No. 3 level has gone about 300 yards, in good coal all the way. No. 10 east diagonal slope (turned off the main slope about a mile down and near No. 10 east level, running N. 20° E.) has been driven about 250 yards further through a fault about 100 yards thick, 2,050 feet down to the dip, and is now in good coal.

The air was last tested in the four districts of the mine on 13th December, with the following results:—On the east side of the old slope there was a volume of 12,600 cubic feet of air per minute, for 60 men and 8 mules. On the west side there were 21,000 cubic feet per minute, for 69 men and 11 mules. On the east side of the main diagonal slope there were 16,400 cubic feet of air per minute, for the use of 68 men and 7 mules. On the west side of the diagonal there were 18,000 cubic feet of air per minute, for the use of 33 men and 4 mules. In the main return, near the upcast, there were 84,000 cubic feet of air per minute, which shows a leakage of 16,000 cubic feet.

This seam is discharging at the pillar workings considerable quantities of gas, and locked safety lamps are used exclusively where gas is given off at all freely. The old fan of 5 feet by 15 feet has been removed, and a new Guibal fan, 11 feet by 30 feet, substituted. This was moving during the test at 50 revolutions per minute, with  $1\frac{1}{2}$ -inch water gauge, showing favourably for the airways. Two new Lancaster boilers have been installed, for the supply of the engine driving the new ventilating fan.

The pit-head arrangements are the same as formerly in use at this mine. Coal is weighed and tipped into railway cars (hopper pattern) of 25 tons capacity.

The electric power-house contains two dynamos, which furnish electricity for driving hoisting engine and also operate six or seven large pumps down in the mine. Various places in the slope are lighted by incandescent lamps. The pit-head, engine-houses, etc., are also lighted by electricity.

A railway of standard gauge connects with this mine and with Nos. 5 and 6 Shafts, running a distance of about 13 miles to the port of shipment at Union bay, on Baynes sound.

*No. 5 Shaft (Union).*

The workings of this mine have been by pillars and stalls. On the west side of the slope (driven N. 34° E. from a point a short distance from the shaft) No. 1 west level starts, about

200 yards down the slope, and is driven about 450 yards. No. 2 west level—about 100 yards below No. 1—is driven 150 yards. In this district, when the last test was made in December, there were 12,000 cubic feet of air per minute, for 45 men and 4 mules. The heading from No. 5 Shaft in the direction of No. 6 Shaft, driven S. 72° E., is through to No. 6, a distance of 4,600 feet, and connects the two shafts. This heading is used partly as an incline, and also for hauling. The intake is along the heading, and supplies the men working in the district comprising both sides of this heading. The workings are by pillar and stall and long wall on both sides of this heading.

On making a test of the ventilation, 14,520 cubic feet per minute were passing, for 25 men and 2 mules in this district. The total quantity of air at the upcast was 42,000 cubic feet per minute, the fan (5 feet by 15 feet) running 80 revolutions, 1½-inch water gauge. The leakage was 15,480 cubic feet per minute, through old workings and curtains. This seam is making a little gas, which is, however, carefully watched. The ventilation is good.

The pit-head of this mine is of a substantial character, and is provided with modern appliances. The pit-head frame is 70 feet high. The height of the landing is 26 feet, its length 80 feet, and its width 42 feet, all roofed in. The screen is of solid bars, and there is a travelling table for conveying the coal into railway cars and removing rock and foreign substances on the way.

#### *No. 6 Shaft (Union).*

Since this mine was connected with No. 5 Shaft, in October, mining has been briskly carried on. No. 1 incline, north 5° east, is driven 230 yards up from the main level, starting about 30 yards in from the pit bottom. Off this incline, about 20 yards up, a No. 2 incline is driven south 80° west, and is 750 feet up. No. 3 incline is started about 100 yards up, off No. 2 incline north 35° west, and is through and forms part of the heading to No. 5 Shaft. Levels are started on both sides of these inclines and stalls turned off.

There are two districts. On the east side of No. 1 incline there were 22 men and 2 mules, for whom 20,000 cubic feet of air, per minute, were being supplied, last December. On No. 2 incline there were 20,000 cubic feet of air per minute for 26 men and 1 mule.

The total in the main return was 40,000 cubic feet of air per minute, a 5 by 15 Guibal fan making 70 revolutions per minute. This seam makes a considerable quantity of carburetted hydrogen gas, but the large supply of air in the small compass of the workings is at present a sufficient safeguard, with the careful watching exercised by the mine officials. A Worthington duplex pump (18½ inches by 7 inches by 10 inches) driven by steam is stationed at the shaft bottom.

The pit-head is completed, the height of the frame being 66 feet, of the landing 28 feet, the length 106 feet and the width 40 feet, all covered over.

The screen is of solid bars, and attached to it is a travelling table as at No. 5 Shaft.

#### *Union Bay Works.*

The coal washer, coke ovens and brick kilns are at work producing excellent articles of washed coal, coke and bricks.

The shipping facilities are the same as reported in 1898.

#### ALEXANDRIA MINE (SOUTH WELLINGTON).

The main slope running east has been extended about 100 yards, and is now about 800 yards in length. Off this slope (about 600 yards down) are the main north and south levels. The north level has been driven several hundred yards to a limit of about 1,200 yards



has stood for some time. Off this north level are inclines, levels and stalls. The south level is opposite the north level and has been driven about 300 yards, making a total length of about 600 yards. Off this level also are inclines, levels, and stalls, both to the rise and dip. The coal here varies from 4 feet to 20 feet in height. There are separate splits to the north and south sides of the main slope. The total quantity of air supplied for these splits was 53,525 cubic feet per minute for 140 men and 10 mules.

The motive power of ventilation is a Guibal fan, 5 feet by 15 feet.

A coal washer having a capacity of 200 tons per day is used at this mine.

Sidings connect with the E. & N. Railway.

#### WELLINGTON MINES.

##### *No. 1 Slope (Extension).*

In Nos. 1 and 2 west levels, pillars are being extracted, and No. 2 level has been driven, water free, to the outside for drainage. In Nos. 1 and 2 east levels, both pillar and stall work, and extraction of pillars are being done. At 240 yards down the main slope, a diagonal slope is driven in a south-east direction to the dip for 100 yards. The seam is from 5 to 18 feet thick in good coal. The ventilation is very good. On 7th December a test was made yielding 32,400 cubic feet per minute for 43 men and 5 mules. The motive power of this ventilation is a 7-foot double Murphy fan.

##### *No. 2 Slope (Extension).*

This mine was idle from May, 1899, until the summer of 1900, when work was re-commenced. Nos. 1, 2 and 3 east levels, with counters, have been driven off the main slope, and stalls opened to the rise, all in excellent coal. On the 20th December there were 36,190 cubic feet of air per minute supplied for 40 men and 1 mule in this district.

On the west side of the slope is No. 4 west level, which connects with No. 3 Slope mine. Off the level, stalls are driven to the rise, all in good coal.

In this split there were 23,520 cubic feet of air per minute for 20 men and 3 mules.

The motive power of the ventilation of this mine, and also of No. 3 mine, is a Guibal fan, 5 feet by 15 feet.

##### *No. 3 Slope (Extension).*

This slope has been extended for 700 feet and is now down 1,400 feet to the dip, in the same excellent coal. Levels to the east and west run from this slope. On the east side Nos. 1, 2 and 3 levels form a district; the work is pillar and stall. The air supplied for the use of 17 men and 1 mule was 12,150 cubic feet per minute.

On the west side are Nos. 1, 2, 3 and 4 levels, off which there are pillar and stall workings, employing 23 men and 1 mule. The air supplied to these levels, and also for the No. 4 east and No. 4 west of No. 2 Slope, is identical with the volume of 23,520 cubic feet of air already mentioned as passing for use in the workings off No. 4 west level, of No. 2 Slope.

The return of the ventilation of this mine is by way of the Guibal fan at No. 2 Slope.

##### *The Tunnel (Extension).*

This tunnel has been continued through to No. 4 level in No. 2 Slope, a total distance of 5,145 feet in a south-westerly course, water free for haulage and drainage of Nos. 2 and 3 Slope workings, and also for the workings of the Tunnel mine. The tunnel will be ready in January to take out all the coal from Nos. 2 and 3 Slopes, as well as from its own workings, by electric motor.

There is a double track, which runs in a direct line about 7 feet by 14 feet in the clear, all the way through the tunnel. The sidings are lighted with incandescent electric lamps. Two 10-ton electric motors are provided for use in performing the haulage. The mine cars are usually loaded to about 15 cwt.

There is an incline on each side of the tunnel. Levels are driven off the inclines and the workings are all long wall. The air is split for each incline. On the east side there were 15,300 cubic feet of air per minute passing for 30 men and 3 mules. On the west side there were 14,300 cubic feet of air per minute for 3 men and 3 mules.

The total quantity of air in the tunnel was 90,300 cubic feet per minute. A large portion of this fresh air goes into the workings of No. 2 Slope. The tunnel is ventilated by a 10-foot double Murphy fan, working at 180 revolutions per minute.

At a convenient distance from the mouth of the tunnel there are most complete arrangements for handling the mine cars, on the principle of W. H. Wall's car-handling apparatus, which certainly is very efficient and speedy in its operations.

The screening and separation of the coal is effected by shaking screens and a travelling table, somewhat of the same type as previously described in this report. The coal is loaded into railway hopper-cars of 25 tons capacity, which are hauled by very powerful locomotives to the Ladysmith shipping wharves. The coal brought from Nos. 1, 2 and 3 Slopes by locomotives on a narrow gauge railway is also screened at the tunnel.

A building 1,779 feet in length by 18 feet wide, at the mouth of the tunnel, is provided to cover the tracks along which the motors haul the trains of cars from the mine.

First-class buildings are erected near the mine for use as offices and stores for mine supplies. There is also an electric power-house, built of brick with galvanized-iron roof (60 by 35); and a boiler-house of the same materials (48 by 40); blacksmith shop of brick, &c. (35 by 60); and a frame building for stables (66 by 45).

*The Shipping Facilities of the Wellington Colliery Co., Limited,  
at Ladysmith, B. C.*

At Ladysmith there are coal bunkers with a capacity of 9,000 tons, from which lines of railway run on to loading wharves in Oyster harbour. Transferring appliances for speedy shipment of coal are provided, and vessels of the largest tonnage are rapidly dispatched.

*Prospecting.*

The Wellington Colliery Company has been extensively prospecting its coal-fields by diamond drill.

ACCIDENTS OCCURRING IN BRITISH COLUMBIA COLLIERIES DURING 1900.

CAUSES OF ACCIDENTS AND NATURE OF INJURY.	COLLIERY AT WHICH ACCIDENT OCCURRED.												TOTAL FOR YEAR IN ALL B. C. COLLIERIES.									
	Nanaimo.			Wellington.			Union.			Extension.			Alexandria.			Crow's Nest.			Total.	Fatal.	Serious.	Slight.
	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.				
Explosion of Gas.....																			24			
Fatal.....																						
Serious.....							2														2	
Slight.....			2		1		8			2									9			22
Fall of Coal.....																			19			
Fatal.....							1		1											2		
Serious.....	4				2		4		4												14	
Slight.....			2							1												3
Fall of Rock.....																			24			
Fatal.....					1		3								2					6		
Serious.....	4						6		3		1		1								15	
Slight.....			2					1														3
From Mine Cars.....																			14			
Fatal.....							3							1						4		
Serious.....							3					2		2							7	
Slight.....			1															2				3
Powder in Mine.....																			10			
Fatal.....	1																			1		
Serious.....										3											3	
Slight.....								2		1								3				6
Shaft.....																			1			
Fatal.....							1													1		
Timber in Mine.....																			2			
Serious.....								1													1	
Slight.....														1								1
Railway on Surface.....																			3			
Fatal.....										2										2		
Serious.....																	1				1	
Water Sump.....																			1			
Fatal.....	1																			1		
Total.....	2	8	7	1	2	1	8	16	11	3	10	4	3	1	3	4	14	98	17	43	38	

## SUMMARY—TABLE SHEWING ACCIDENTS OCCURRING IN B. C. COLLIERIES IN TEN YEARS—1891 TO 1900.

For the year .....	1891.				1892.				1893.				1894.				1895.				1896.				1897.				1898.				1899.				1900.				Total for 10 years.			
Output of coal—tons.....	1,029,097.				826,335.				978,294.				1,012,953.				939,654.				896,222.				882,854.				1,135,865.				1,306,324.				1,439,595.				10,447,193.			
Number persons employed	3,212				2,854				2,862				2,929				2,924				2,753				2,433				2,988				3,780				4,031				30,766			
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.								
Gas explosions .....	2	2	13	17	1	1	1	3	1	6	7	14	9	9	5	23	1	3	8	12	2	2	4	8	2	14	3	19	3	9	18	30	2	22	24	48	8	39	90	137				
Falls of coal .....	2	10	4	16	1	6	3	10	5	7	1	13	2	7	9	18	1	4	5	10	3	4	1	8	1	3	2	6	3	4	7	14	1	4	3	8	2	14	3	19	21	69	20	110
" rock .....	9	18	1	28	2	6	2	10	6	6	1	13	8	8	5	21	18	2	8	28	2	7	2	11	1	5	3	9	3	5	4	12	6	15	3	24	38	95	18	151				
Mine cars .....	8	2	10	20	2	4	6	12	10	11	4	25	11	4	5	20	9	11	8	28	9	3	4	16	7	1	9	17	3	9	4	16	4	7	3	14	17	84	14	115				
" mules .....	1	1	2	4	3	3	1	7	1	1	1	3	1	1	1	3	2	2	2	6	2	2	1	5	1	1	2	4	2	2	2	6	2	2	2	6	10	1	1	12				
" timber .....	1	1	1	3	2	2	1	5	1	1	1	3	1	1	1	3	1	1	1	3	2	2	2	6	2	2	2	6	2	2	2	6	1	1	2	4	1	6	1	8				
Hoisting, ropes, &c .....	1	1	1	3	1	1	1	3	1	1	1	3	2	2	3	7	3	3	1	7	1	1	2	4	2	2	2	6	2	2	2	6	1	1	1	3	1	3	8	12				
Powder, &c., explosions .....	2	1	3	6	7	7	3	17	3	3	3	9	3	3	3	9	1	1	1	3	1	1	1	3	3	1	4	8	2	1	3	6	1	3	3	7	1	21	6	28				
Shot .....	1	4	1	6	3	2	5	10	1	1	1	3	1	1	1	3	2	3	5	10	2	2	2	6	2	2	2	6	2	2	2	6	3	3	5	11	5	15	8	28				
On surface—miscellaneous	1	2	3	6	1	1	2	4	2	2	3	7	3	3	3	9	2	2	2	6	2	2	2	6	2	2	2	6	2	2	1	5	1	3	1	5	4	11	9	24				
	15	48	23	86	6	32	8	46	16	29	8	53	4	22	11	37	10	39	7	56	9	29	9	47	6	21	6	33	7	39	10	56	11	29	30	70	17	43	38	98	105	356	158	619

## DETAILED STATEMENT OF ACCIDENTS OCCURRING IN B. C. COLLIERIES DURING 1900.

REPORTED BY THOS. MORGAN, INSPECTOR V. I. COLLIERIES.

No.	Colliery.	Date.	Name.	Occupation.	Remarks.
1	Wellington .... (Extension)	Jan. 5th	Wang Gip ....	Miner .....	Severely injured about the back by a small quantity of shale falling from the roof.
2	Comox .....	" 11th	M. J. McQueen	" .....	One leg broken and the other injured by a piece of rock falling on him in No. 6 Sh'ft.
3	Wellington .... (Extension)	" 16th	Harry Buckley	" .....	Leg and several ribs broken by a fall of top coal.
4	Comox .....	" 25th	Oscar Johnson.	" .....	Slightly injured in No. 5 Shaft about the head and arms by a shot.
5	Wellington .... (Extension)	Feb. 2nd	Stephen Steve.	" .....	Burned in the tunnel about the face, a spark from the lamp on his head getting into the powder can.
6	Wellington .... (Extension)	" 3rd	Jas. Variese...	" .....	Severely injured by a fall of coal, while at work in his stall in No. 1 Slope; he died about 6 hours afterwards.
7	Wellington .... (Extension)	" 8th	Thos. Spratt ..	" .....	Severely injured about the back by about 5 cwt. of rock falling on him in the tunnel.
8	Wellington .... (No. 5 Shaft)	" 17th	Jno. Demarks .	" .....	Was instantly killed by a fall of rock of about 7 or 8 tons. He had fired a shot which knocked out two props and a stringer, and appears to have gone straight back to work.
9	Wellington .... (No. 5 Shaft)	March 8th	Jno. Myosky .	Mule driver...	Slightly burned by a small feeder of gas in a pot hole.
10	Nanaimo .....	" 23rd	Jno. Gerrow ..	Miner .....	Severely injured while working in No. 1 Shaft, by a premature shot. He had cut too much off the squib and had only gone 12 feet away when the shot went off, striking him on the back of the head and causing a concussion of the brain which resulted fatally.
11	Nanaimo .....	" 28th	Thos. Peters ..	" .....	Slightly hurt about the ankle by a fall of top coal of about 25 tons, which, however, arched a little and left sufficient room to save him from serious injury.
12	Comox .....	" 30th	Calo.....	" .....	Were slightly burned with gas about the hands and faces in their stall in No. 6 Shaft.
13	" .....	" 30th	Hamirichi ....	" .....	
14	" .....	April 2nd	Gust. Ruffings.	" .....	Was killed in No. 7 stall, in No. 11 west level of the old slope, No. 4 Mine. Deceased had a prop under some top coal and must have been in the act of knocking this out when the coal came down.
15	Nanaimo .....	" 3rd	W. Carmichael	" .....	Were hurt in No. 5 Shaft by a fall of rock. The place was about 20 feet high and there was a smooth slip in the roof which swung the timber out and let the rock down.
16	" .....	" 3rd	Dunc. Gillis ...	" .....	

## DETAILED STATEMENT OF ACCIDENTS OCCURRING IN B. C. COLLIERIES DURING 1900.—Continued.

No.	Colliery.	Date.	Name.	Occupation.	Remarks.
17	Alexandria....	April 10th	Frank Pare ...	Miner's helper.	Severely injured in his stall while engaged in loading a car, a piece of rock of about 100 lbs. falling from the roof on to his back, breaking his right leg and arm.
18	Wellington.... (No. 5 Shaft)	" 13th	Frank Barbero	Miner.....	Had his leg broken by the fall of a piece of loose coal after firing a shot.
19	Wellington.... (Extension)	" 13th	Wong Fook ...	Miner's helper.	Killed in No. 1 level west, off No. 3 Slope, by a fall of coal from the side of the level at the face. R. Aitken, the miner, had pulled all that he found loose a few minutes before. The place was wet and this coal came off from a smooth slip at both ends. The place was well-timbered with sets of stringers.
20	Wellington.... (Extension)	" 17th	Yive Wing....	Pusher.....	Killed on the pit-head at the Tunnel while he and some more Chinamen were taking four boxes of gravel from the siding. Deceased fell and the buffer of the front box struck his head against one of the ties.
21	Nanaimo.....	" 19th	Chas. Santy. .	Miner.....	Leg broken by a fall of a piece of coal while in the act of taking it down at the face of his stall in No. 5 Shaft, Southfield.
22	Wellington.... (Extension)	" 21st	Jno. Brougho .	".....	Arm and leg broken in No. 3 Slope by a fall of a little shale rock from the face of his stall.
23	Alexandria....	" 25th	G. Richardson	Timberman ...	Slightly hurt by a stringer falling on his right arm and left foot.
24	Nanaimo.....	" 25th	Robt. Hannah.	Miner.....	Leg broken in No. 1 Shaft by a fall of coal.
25	Wellington.... (No. 5 Shaft)	May 18th	Matt. Watson..	".....	Leg broken. After having fired a shot a piece of coal about 30 lbs. fell upon him.
26	Wellington.... (Extension)	" 25th	M. Camille....	".....	Leg broken in No. 3 Slope by a fall of top coal in his stall.
27	Nanaimo.....	June 1st	T. Bannerman.	".....	Slightly burned by gas on the hands and face in No. 5 Shaft, Southfield.
28	Comox.....	May 29th	Clue..... (Chinaman)	Labourer.....	Killed by a fall of rock in No. 4 Slope. The timbermen and the fireman had examined the place just previously and thought it safe.
29	".....	" 29th	L. Allaria....	Miner.....	Slightly injured on the back in No. 4 Slope by a premature shot.
30	".....	June 4th	Wong Hen....	".....	Leg broken in his stall in No. 4 Slope, when in the act of pulling some loose coal down.
31	".....	" 6th	Takematsu Yoskioka	Roller-man ...	Killed on the slope by the cars. He was last seen just before the end of the shift the night before pulling in an overhead roller about 100 yards down the slope, and as his tools were found there he must have been caught at this spot and pulled up the slope under the cars.

DETAILED STATEMENT OF ACCIDENTS OCCURRING IN B. C. COLLIERIES DURING 1900.—*Continued.*

No.	Colliery.	Date.	Name.	Occupation.	Remarks.
32	Comox .....	June 8th	Jno. Tobacco..	Miner .....	Slightly burned about the face and hands in No. 6 Shaft.
33	Wellington ... (Extension)	" 9th	Wm. Ingram..	" .....	Slightly hurt on the body by a fall of coal in his stall in tunnel after he had fired a shot.
34	Nanaimo .....	July 12th	Jas. Bradley ..	" .....	Slightly burned about the face and hands in No. 1 Shaft by a feeder of gas, which burst out suddenly in his stall. The gas set fire to the coal and props and it was two days before the fire was put out.
35	" .....	" 13th	Thos. Shenton.	" .....	Slightly injured about the back and face through a fall of coal in No. 1 Shaft, after a shot had been fired.
36	" .....	" 15th	Thos. Hope ...	" .....	Badly injured about the head by fall of coal while he was lying down mining at the face of his stall in No. 1 Shaft.
37	Comox .....	" 29th	Wm. Anthony.	Fireman ....	Severely burned about the faces and hands, in No. 1 Shaft, by gas. They went to put up two lengths of brattice that had been knocked down by a shot in a stall. The Chinaman took his light to the return side of the brattice and fired the gas, which burned both of them.
38	" .....	" 29th	Wong Wing ..	Bratticeman	
39	" .....	" 21st	L. C. McDonald	Carpenter.....	Was instantly killed by falling down No. 6 Shaft, a distance of 360 feet. Deceased and two other men were on the cage at the time, repairing the air-shaft, and in knocking off a batten a little gas burst out from behind the timber putting out their lights. Deceased must have become excited and fallen off the end of the cage.
40	Comox .....	July 21st	Ah Hi .....	Pusher.....	Had his leg broken in No. 4 Slope while in the act of spragging a box.
41	" .....	" 28th	Lung Noi .....	Miner .....	Severely injured by a fall of rock, having four ribs broken, while at work in his stall in No. 5 Shaft.
42	" .....	" 30th	Mah Kin.....	Pusher.....	Instantly killed by mine cars while crossing No. 4 Slope opposite the fire station as he was going home from his work. The place was well lighted by incandescent lights, and he was warned that the trip was coming up.
43	Nanaimo .....	" 30th	Wm. Rees ....	Miner .....	Had his leg broken in Protection Island mine by a fall of top coal while in the act of putting in a stringer in his stall.
44	Comox .....	" 31st	Geo. McLean..	" .....	Ribs broken and injured about the back in No. 6 Shaft by a fall of rock in his stall.
45	Nanaimo .....	Aug. 10th	Jos. Woobank.	Timberman ...	Slightly hurt on the back in No. 5 Shaft, Southfield, by the fall of a piece of rock.

## DETAILED STATEMENT OF ACCIDENTS OCCURRING IN B. C. COLLIERIES DURING 1900.—Continued.

No.	Colliery.	Date.	Name.	Occupation.	Remarks.
46	Wellington ... (Extension)	Aug. 17th	Leon Carter...	Miner .....	Had his back broken by fall of coal in his stall in No. 1 Slope. He and his partner had fired a shot in the top coal, but did not bring it down. On going to pull it down, however, it fell upon him.
47	Wellington ... (Extension)	" 29th	Jno. Gumerine.	" .....	Slightly burned in his stall in the tunnel, through a spark getting into the powder can.
48	Nanaimo .....	" 30th	Thos. Johnston.	" .....	Slightly hurt on the head by a piece of rock falling upon him in No. 5 Shaft.
49	Comox .....	" 30th	A. Paregelio ..	" .....	Slightly burned by a feeder of gas while at work in his stall in No. 5 Shaft.
50	" .....	" 18th	Louis Francilio.	" .....	Slightly burned by gas while working in his stall in No. 5 Shaft.
51	Nanaimo .....	Sept. 5th	H. McMullin..	Pumpman ...	Severely scalded and died within a week by falling into a lodgement where the pump exhausted in Protection mine. There was a hole in the sump to get water to prime the pump, and in working at the pump in the steam he forgot to close the hole and fell into it up to the hips.
52	" .....	" 6th	Geo. Piper....	Miner .....	Leg broken by a fall of rock in his stall in No. 1 Shaft. He was told a few minutes before not to work under the rock as it was nearly down.
53	Comox .....	" 15th	Wm. Bowen ..	" .....	Leg broken in No. 4 Slope by a fall of coal.
54	Wellington ... (Extension)	" 18th	Sing Lee .....	Labourer .....	Instantly killed on the railway track at the chute where they dump the coal from the tunnel. He was cleaning the track when the train of empty cars was coming up and was warned.
55	Comox .....	" 21st	J. J. O'Neill ..	Mule-driver ..	Severely injured and died of blood poisoning through being caught between a mine car and a stringer in No. 4 Slope. The car jumped the track and knocked out the stringer.
56	" .....	Oct. 15th	Jno. Barclay ..	Miner .....	Seriously injured and died of blood poisoning by a fall of rock in No. 6 Shaft. It was afterwards found that a splinter from his box had entered his head.
57	" .....	" 15th	T. McWilliams	" .....	Slightly injured around the hip in the same accident.
58	" .....	Sept. 6th	Matsumma .. (Jap.)	Miner's helper.	Leg broken in No. 5 Shaft by a stringer falling upon him.
59	Wellington ... (Extension)	Oct. 21st	Jos. Jeffries ...	Miner .....	Slightly burned in his stall in the tunnel. He was charging a hole with powder with a naked light on his head which ignited a feeder of gas.
60	Wellington ... (Extension)	" 30th	Jno. Campbell.	" .....	Slightly burned by gas in his place in tunnel, having entered with a naked light.



## DETAILED STATEMENT OF ACCIDENTS OCCURRING IN B. C. COLLIERIES DURING 1900.—Continued.

No.	Colliery.	Date.	Name.	Occupation.	Remarks.
61	Comox .....	Oct. 31st	Ah Duck .....	Miner's helper.	Killed by a fall of fire-clay above the coal in his place in No. 4 Slope. Had been warned to get out of the way.
62	Alexandria....	Nov. 10th	Fk. Richardson	Miner.....	Richardson was injured about the hips, and Booker had his leg broken, through a box jumping the track.
63	" .....	" 10th	Jno. Booker...	" .....	
64	Nanaimo.....	" 13th	Mike Corcoran.	Mule-driver...	Slightly hurt about the back in No. 1 Shaft. He was coming out of the level when he fell off the box and was jammed between it and a post.
65	Comox .....	" 15th	Henry Parrotti	Miner.....	Slightly burnt by gas in No. 6 Shaft.
66	" .....	" 15th	Ah Sing .....	Helper .....	
67	" .....	" 17th	Robt. Dugdale.	Miner .....	Arm and leg broken in his stall in No. 5 Shaft by a fall of rock.
68	Nanaimo .....	" 27th	Ben. Morgan..	" .....	Spine severely injured in No. 1 Shaft by a fall of rock.
69	Wellington ...	" 24th	Jno. Allison...	" .....	Burnt by powder in No. 3 Slope. Allison had the charger driven 4 or 5 inches into the thick part of the hip.
70	" .....	" 24th	Chas. Urquhart	" .....	
71	Comox .....	" 27th	Angelo Loreney	" .....	Leg broken by being caught by a loaded trip of cars coming up the slope, when he was coming off the shift.
72	" .....	" 30th	Wong Hee....	Pusher .....	Back injured between the roof and the box in No. 5 Shaft through riding on the water-box along the level when he should have walked.
73	" .....	Dec. 5th	Sing.....	Miner .....	Slightly burned by gas in his stall in No. 6 Shaft.
74	" .....	" 7th	On (Chinaman)	" .....	Back broken by a fall of coal in his stall in No. 4 Slope. He had fired a shot and the powder did not bring the coal down; on going to mine it, however, it fell.
75	" .....	" 8th	J. P. Watson..	" .....	Leg broken in No. 4 Slope by a fall of rock.
76	" .....	" 22nd	Anton Furno..	" .....	Back broken in No. 4 Slope by a piece of coal. He was mining in his stall when a piece of coal came away from a smooth slip and fell upon him.
77	" .....	" 24th	Jno. Manier...	Helper .....	Leg broken in No. 4 Slope by a fall of coal.

DETAILED STATEMENT OF ACCIDENTS OCCURRING IN B. C. COLLIERIES DURING 1900.—*Concluded.*

REPORTED BY JAMES MCGREGOR, INSPECTOR.

No.	Colliery.	Date.	Name.	Occupation.	Remarks.
1	Crow's Nest...	Jan. 18th	Elias Rogers ..	Man. Director.	Slightly burned on face and hands by an explosion of gas in No. 1 Tunnel.
2	" ...	Mar. 7th	Wm. Burris ..	Miner .....	Slightly burned about face and hands in west level, No. 1 Mine.
3	" ...	" 13th	John Allan....	Coupler .....	Killed by falling under mine cars on bank-head.
4	" ...	" 20th	Ferd. Martucci	Miner .....	Killed by fall of rock in No. 1 room west, No. 1 Mine.
5	" ...	April 27th	J. J. McDonald	" .....	Back broken by fall of rock in main dip, No. 1 Mine.
6	" ...	June 7th	Geo. Sulphur..	Track-layer ...	Burned on hands and face by gas in No. 6 room east, No. 1 mine.
7	" ...	" 7th	James Kobeck.	" .....	Burned slightly on hands and face at the same time.
8	" ...	Aug. 11th	Joseph Boldi ..	Miner .....	Injured on face by a shot in No. 2 Mine, the squib being cut too short.
9	" ...	Oct. 9th	L. McLean....	Bratticeman ..	Burned on hands and face in No. 7 room east, No. 1 Mine.
10	" ...	" 10th	Alex. Dragon.	Miner .....	Burned on hands and face by blown out shot in No. 8 room west, No. 1 Mine.
11	" ...	" 10th	Mike Adaymick	" .....	Burned on hands and face at same time and place.
12	" ...	" 12th	John Cowley ..	" .....	Burned on hands and face with gas in No. 3 room west, No. 1 Mine.
13	" ...	Sept. 24th	Jas. Teeters...	Chain-runner..	Back bruised by slipping in front of cars in No. 2 Mine.
14	" ...	" 20th	Robt. Miller...	Coupler .....	Slightly injured by being crushed between motor and mine cars on bank-head.
15	" ...	Oct. 20th	Andrew Baird.	Pumpman .....	Arm broken by falling from tippie.
16	" ...	" 24th	Wils'n Burchell	Miner .....	Leg broken by fall of rock in room 8 east, No. 1 Mine.
17	" ...	" 26th	G. Sengala....	Coupler. ....	Arm broken between cars in No. 2 Mine.
18	" ...	Nov. 8th	Jas. Wilson...	Assistant Mine Supt.	Slightly burned on hands and face in prospect drift No. 4.
19	" ...	Dec. 10th	Alex. Gatty...	Miner .....	Slightly burned on hands and face by gas in No. 3 room west, No. 1 Mine.
20	" ...	" 10th	John Foller ...	" .....	Slightly burned at same time and place.
21	" ...	" 21st	Steve. Morgan.	Coupler.....	Injured by being crushed between motor and cars in No. 2 Mine.

## LIST OF CROWN-GRANTED MINERAL CLAIMS.

## CROWN GRANTS ISSUED IN 1900.

## ATLIN.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
					1900
Anaconda .....	Atlin .....	E. W. Hamilton .....	22.08	Lot 172	11th July.
Copper Queen .....	" .....	" .....	42.95	" 171	"
Disraeli .....	" .....	" .....	43.16	" 165	"
DeSmith .....	" .....	" .....	14.28	" 173	"
Ella Ray .....	" .....	" .....	48.95	" 167	"
East Extension of the Anaconda .....	" .....	" .....	38.66	" 170	"
Kid .....	" .....	" .....	34.38	" 174	"
Kid Fraction .....	" .....	" .....	5.09	" 175	"
Missing Link .....	" .....	" .....	42.21	" 166	"
North Star .....	" .....	" .....	46.43	" 168	"
Wellington .....	" .....	" .....	13.36	" 169	"

## EAST KOOTENAY.

Amster .....	Fort Steele ..	Clement H. Pollen .....	40.50	Lot 4059	31st Jan.
Beauty .....	Windermere.	New Golden Brit. Col., Ltd. ....	51.65	" 2573	30th "
Blue Peter .....	Fort Steele ..	Clement H. Pollen .....	51.65	" 4059	31st "
Blue Peter Fraction	" .....	" .....	21.70	" 4061	31st "
Burton .....	" .....	C. H. Mackintosh .....	35.63	" 3918	20th April.
Black Pine .....	" .....	C. C. Farrell, T. Farrell .....	44.42	" 4409	10th May.
Bunco Fraction .....	" .....	" .....	27.83	" 4407	11th "
Bryan .....	Golden .....	Wm. C. Tillson .....	41.87	" 3951	12th "
Baltimore .....	Fort Steele ..	St. Eugene Con. M. Co., Ltd., C. C. Far- rell, T. Rader, J. Day, .....	51	" 4413	12th Nov.
Big Chief .....	" .....	Hastings (B.C.) Expl. Synd., Ltd. ....	14.60	" 3557	4th Dec.
Calamity Jane .....	Windermere.	Windermere (B.C.) Copper Mines, Ltd ...	42.70	" 3791	19th Nov.
Dragon .....	Windermere.	New Golden B. C., Ltd. ....	37.80	" 3949	30th Jan.
Diamond Jubilee ..	Fort Steele ..	C. C. Farrell .....	40.63	" 4408	11th May.
Delos .....	Windermere.	Windermere (B.C.) Copper Mines, Ltd ...	47.50	" 3790	19th Nov.
Daffodil .....	Fort Steele ..	North Star M. Co., Ltd .....	48.74	" 4094	6th Dec.
Emerald .....	Fort Steele ..	Walter van Arsdalen .....	46.40	" 4402	14th Mar.
Enterprise .....	" .....	H. McCool, W. M. Millican .....	48.69	" 3559	23rd Oct.
Eureka .....	" .....	Hastings (B.C.) Expl. Synd., Ltd. ....	40.10	" 3920	4th Dec.
Gem .....	Fort Steele ..	Chas. H. Wolf .....	35.60	" 4050	29th Mar.
Geneva .....	" .....	Hastings (B.C.) Expl. Synd., Ltd. ....	47.90	" 3913	4th Dec.
Highland Mary .....	Golden .....	H. E. Forster .....	28.00	" 1982	13th Aug.

EAST KOOTENAY.—*Concluded.*

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
					1900
Klondike .....	Fort Steele..	C. C. Farrell, T. Farrell .....	46.13	Lot 4411	10th May.
Little Chief .....	Fort Steele..	Hastings (B.C.) Expl. Synd., Ltd. ....	35.90	" 3569	4th Dec.
Last Chance .....	" .....	Kootenay (Perry Ck.) Gold Mines, Ltd. .	16.55	" 4062	19th April.
Lincoln .....	Golden .....	Wm. C. Tillson.....	44.81	" 3952	12th May.
Mohican .....	Fort Steele..	L. Goodacre .....	43.16	" 3051	10th Oct.
Minnehaha Fract'n.	Windermere.	New Golden B. C., Ltd. ....	50.55	" 2575	30th Jan.
Mogul .....	Golden .....	Golden and Fort Steele Dev. Co., Frank Berthiaume .....	30	" 1976	31st Jan.
Maud .....	Fort Steele..	Clement H. Pollen .....	49	" 4060	31st "
MacIntosh .....	" .....	Chas. H. Mackintosh .....	48.42	" 3919	20th April.
Minnie M. ....	" .....	John E. Humphreys .....	31.33	" 4828	27th Sept.
Melton Fraction ..	" .....	Hastings (B.C.) Expl. Synd., Ltd. ....	8.26	" 3568	4th Dec.
New Chum .....	Windermere.	New Golden B. C., Ltd. ....	48.61	" 2571	30th Jan.
No. 21 .....	Golden .....	Telesphore Mercier and the Golden & Fort Steele Dev. Co., Ltd. Ly .....	51.65	" 1977	21st April.
Old Chum .....	Windermere.	New Golden B. C., Ltd. ....	48	" 2574	30th Jan.
Pretty Girl .....	Windermere.	New Golden B. C., Ltd. ....	32.20	" 2570	30th Jan.
Running Wolf .....	Fort Steele..	The Kootenay (Perry Ck.) G. Mines, Ltd.	47.08	" 4054	19th April.
Ruby Fraction .....	" .....	" .....	11.50	" 4055	19th "
Reindeer .....	" .....	" .....	36.29	" 4063	19th "
Rowan .....	" .....	D. D. Mann .....	51.65	" 4095	6th Dec.
Stony .....	Fort Steele..	Chas. H. Wolf .....	43.47	" 4051	29th Mar.
Snowslide .....	Golden .....	Telesphore Mercier, Golden & Fort Steele Dev. Co., Ltd. ....	51.47	" 1979	21st April.
Society Girl .....	Fort Steele..	C. C. Farrell, T. Farrell .....	49.68	" 4405	10th May.
Sky Pilot .....	" .....	" .....	33.48	" 4406	10th "
Sniper .....	" .....	" .....	50	" 4410	11th "
Timbasket .....	Golden .....	Golden & Fort Steele Dev. Co., Ltd., and Frank Berthiaume .....	37.30	" 1975	31st Jan.
Tiger .....	Fort Steele..	J. E. Humphreys .....	22.37	" 4827	27th Sept.
Trojan .....	Windermere.	Windermere (B.C.) Copper Mines, Ltd. .	40.90	" 3792	19th Nov.
Union .....	Golden .....	T. Mercier, J. Lamontagne, & the Golden & Ft. Steele Dev. Co., Ltd. ....	51.65	" 1980	21st April.
Venus .....	Windermere.	New Golden B. C., Ltd. ....	51.65	" 2571	30th Jan.
Wheel of Fortune ..	Fort Steele..	Clement H. Pollen .....	51.64	" 4056	31st Jan.
Welcome .....	" .....	Geo. Urquhart .....	51.58	" 1389	22nd Feb.
Wynstay .....	" .....	Chas. H. Mackintosh .....	37.01	" 3917	20th April.
Western Cross .....	Golden .....	T. Mercier and the Golden & Fort Steele Dev. Co., Ltd. ....	50	" 1978	21st "
Whistler Fraction ..	Golden .....	T. Todd (admin'r estate J. O. Todd), T. McNaught (admin'r estate G. H. Wood- ley), and Wm. McNeish .....	10.85	" 1117	14th Sept.

## WEST KOOTENAY.

Atlas No. 3 .....	Slocan .....	Chas. S. Ellis .....	42.45	Lot 4106	8th Jan.
Ætna Fraction .....	Trail Creek ..	Margaret Murray .....	9.40	" 3702	18th "
Agnes B. Fraction..	" .....	Fritz A. Heinze .....	27.77	" 1704	5th Mar.
Alice Fraction .....	Slocan .....	Geo. Alexander .....	14.05	" 1928	13th "
Alice .....	Goat River ..	" .....	20.60	" 4104	6th "
Atlantic .....	Nelson .....	Delight G. M. Co., Ltd. ....	18.34	" 4209	13th "
Atlanta .....	" .....	Randolph N. McLean .....	40.71	" 2280	15th "
Ash .....	" .....	Herbert J. Spencer .....	20.32	" 4218	23rd "
Adirondack .....	Slocan .....	Wm. Hunter, R. Sloan, H. Lowe, W. Murray .....	9.52	" 4511	30th "

## WEST KOOTENAY.—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
1900					
A. B. C .....	Trail Creek	English Can. Co., Ltd .....	46.43	Lot 1772	12th April.
Ada L .....	"	Pavo Consol. Mines, Ltd .....	47.63	" 4361	20th "
Anchor .....	Slocan	Wm. Stewart Drewry .....	40.03	" 4169	4th Aug.
Alice Fraction .....	Ainsworth	René Laudi .....	32.70	" 4746	15th Oct.
Apex .....	"	W. E. Boie .....	45.10	" 4747	16th "
Aspen .....	"	Jas. W. Moffat .....	42.75	" 1158	29th "
Almo No. 2 .....	Slocan	D. E. Sprague, T. S. Parker .....	40.38	" 2433	3rd Nov.
A. L. Fraction .....	Nelson	London & Rossland, B. C., Ltd .....	4.95	" 3729	7th "
Annie May .....	"	W. G. Robinson, S. Johns .....	43.26	" 3689	8th "
Altoona .....	Slocan	Sandon Mg. & Mfg. Co., Ltd .....	46.35	" 1918	4th Dec.
Alice .....	Revelstoke	David H. Wilson .....	49.25	" 2697	7th "
Alice Fraction .....	"	" .....	11.60	" 2661	7th "
Alpha .....	Slocan	N. West. Mg. Synd, Ltd .....	35.33	" 3733	14th "
Achilles 200 .....	Nelson	Christoph Sherbart .....	51.65	" 1717	22nd "
Big Bend Fraction .....	Trail Creek	Margaret Murray .....	9.08	" 3502	18th Jan.
Big Four Fraction .....	"	" .....	16.40	" 3503	18th "
Bob Reid .....	Ainsworth	J. Barnet McLaren .....	49.31	" 3269	27th "
Black Witch .....	Nelson	Aaron H. Kelly, Arthur H. Buchanan .....	40.46	" 4146	5th Feb.
Bellerophon .....	"	John McLatchie, W. G. Robinson and Solomon Johns .....	33	" 3680	12th Mar.
Broad Axe .....	"	Canadian King Gold Mg. Co .....	35.16	" 4198	15th "
Brunswick .....	Lardeau	A. Sinclair, M. Simpson and S. T. Langley .....	38.41	" 4354	19th "
Best Fraction .....	Slocan	Rambler Cariboo Mines, Ltd .....	17.34	" 3164	20th "
Bird's Eye .....	Nelson	J. A. McRae, A. E. Crossett and A. G. Shaw .....	51.65	" 3278	24th "
Blue Bird No. 2 .....	Lardeau	Thos. V. Downing, B. F. Reamy .....	40.12	" 4573	28th "
Bad Shot .....	Trout Lake	F. C. Campbell, F. P. Johnson .....	51.65	" 1105	3rd April.
Butte .....	"	" .....	46.70	" 4569	3rd "
Bland No. 2 .....	Slocan City	Slocan Gold & Silver Mines, Ltd .....	47.62	" 3577	4th "
Balmoral .....	Nelson	Delight Gold Mg. Co., Ltd .....	51.65	" 3944	9th "
Bobolink .....	Trail Creek	English Canadian Co., Ltd .....	27.55	" 4012	12th "
Blue Belle No. 1 .....	"	Pavo Consol. Mines, Ltd .....	51.65	" 4318	20th "
Beaver No. 3 .....	"	John S. Clute, Jr .....	34.95	" 1872	25th "
Bannock .....	"	Clarence H. deBeck .....	39.34	" 4428	25th "
Ben Hassen .....	Nelson	The New North Fork Mg. Co., Ltd .....	46.73	" 3663	9th May.
Buffalo No. 2 .....	Trail Creek	Geo. R. Killam .....	40.20	" 3235	10th "
Bute Fraction .....	Ainsworth	Robt. James Stenson .....	16	" 3789	15th "
Banackburn .....	"	Ed. H. Tomlinson <i>et al</i> .....	51.65	" 4450	18th "
Buckeye .....	"	" .....	48.21	" 4454	18th "
B. C .....	Nelson	T. B. Garrison, P. Aspinwall .....	50.28	" 4355	5th July.
Bonanza .....	Ainsworth	F. E. Starkey, Chas. R. Conner .....	28.41	" 4322	5th "
Blocksberg .....	Trail Creek	F. Blockberger .....	13.21	" 3852	5th "
Bimetallic .....	Nelson	Edw. J. Dyer .....	45.58	" 4622	5th "
Burnside .....	Slocan	The Wakefield Mines, Ltd .....	51.65	" 2617	5th "
Betsy Ross .....	"	Hermann Clever .....	25.03	" 3743	24th "
Black Colt .....	"	Hinckley & Black Colt Mg. Co., Ltd .....	28.66	" 1721	25th "
Bell .....	Ainsworth	C. W. McAnn, J. W. Bell, O. K. Oleson and John Bell .....	43.89	" 1165	26th "
Bessie .....	Slocan	Wm. Stewart Drewry .....	30.12	" 4183	4th Aug.
Bertha Fraction .....	Ainsworth	René Laudi .....	23.90	" 4748	15th Oct.
Buck Fraction .....	Slocan	Mary E. Rammelmeyer .....	20.38	" 3751	30th "
Blenheim .....	Goat River	G. Alexander, H. W. Forster .....	43.08	" 2060	17th "
Black Prince .....	"	" .....	27.15	" 2061	17th "
Broker .....	Arrow Lake	H. E. Forster and H. C. Pollock .....	34.44	" 4189	5th Nov.
B. and M .....	Nelson	Summit Ymir Mg. Co., Ltd .....	45.03	" 4230	7th "
Buck Horn .....	"	" .....	36.47	" 4231	7th "
Blye .....	"	H. L. A. Keller, A. L. Keller, F. S. Algiers, and C. E. Wynn Johnson .....	51.65	" 2924	3rd Dec.
Boston .....	"	Cumberland Gold Mg. Co., Ltd .....	33.92	" 4019	4th "
Bowknot .....	Slocan	Sandon Mg. & Mg. Co., Ltd .....	19.50	" 1919	4th "
Belle .....	Nelson	Edw. C. Arthur .....	19.07	" 2353	5th "
Bonanza King .....	Revelstoke	Frank Young .....	51.65	" 2658	7th "
Broken Hill .....	Ainsworth	Edw. J. Roberts, Anna C. Buckley .....	48.41	" 4330	21st "
Big Timber .....	Slocan	Mervyn Reginald, W. Ruthborne, Fred. Steele and H. B. Alexander .....	42.85	" 3191	22nd "

## WEST KOOTENAY.—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
					1900
Broken Lock .....	Slocan .....	Bosun Mines, Ltd. ....	20.90	Lot 3735	28th Dec.
Centennial .....	Ainsworth ..	Robert Ira Kirkwood. ....	19.57	" 3147	11th Jan.
Canadian Pacific ..	Nelson .....	T. Gallon, E. Peters, Chas. Dundee and Thos. S. McPherson. ....	51.65	" 3981	13th Feb.
Chance .....	Trail Creek ..	Lulu F. Largey, administrator of estate of P. A. Largey, dec., and G. E. Pfunder. ....	7.08	" 3296	15th "
Centre Star .....	Trout Lake ..	Wm. M. Brown. ....	46.74	" 4289	6th Mar.
Consolidated Vir-	Slocan .....	Harold Selous .....	44.14	" 3992	13th "
Calgary .....	Nelson .....	Delight Gold M. Co., Ltd. ....	37.21	" 4208	13th "
Consolid. Alabama.	" .....	Randolph N. McLean. ....	51.65	" 2279	14th "
Canadian King .....	" .....	Canadian King Gold Mg. Co. ....	34.95	" 4196	15th "
Columbia .....	" .....	W. J. Gospel, Alf. J. Marks ..	20.66	" 3136	31st Jan.
Colchester .....	Trail .....	H. E. Forster, H. C. Pollock. ....	28.47	" 3442	26th Mar.
Centaur .....	Slocan .....	Chas. E. Hope .....	23.53	" 3226	30th "
Cody Star .....	" .....	John Dockstader <i>et al</i> .....	51.52	" 4492	11th April.
Carpenter .....	Trail Creek ..	English Can. Co., Ltd .....	16.98	" 4013	12th "
Cliff .....	Ainsworth ..	Victor A. Johnson, B. B. Hill ..	19.50	" 2503	11th May.
Clarence .....	Slocan .....	Scottish Colonial Gold Flds. Ltd., and Geo. W. Hughes. ....	25.17	" 2098	14th "
C. & K .....	Nelson .....	Golden Five Mines, Ltd .....	50.71	" 3927	16th "
Carbonate King ..	Slocan .....	Samuel K. Green .....	15.90	" 919	17th "
Combine Fraction ..	Ainsworth ..	Lester B. Clough. ....	5.40	" 4381	9th June.
Cashier .....	Trail Creek ..	John Kraff, August Jackson, Anton Sor- enson, E. M. Kinnear. ....	37.70	" 3860	5th July.
Cumberland .....	" .....	" .....	50.81	" 3861	5th "
Cody Fraction .....	Ainsworth ..	W. J. Whiteside .....	47.60	" 4601	5th "
Chicago No. 2 .....	Slocan .....	Alonzo D. Copen .....	44.08	" 2142	23rd "
Columbia View .....	Trail Creek ..	R. W. Northey, R. H. Smith ..	28.65	" 3717	24th "
Cara Brea .....	" .....	Arthur H. Greene. ....	50.70	" 3399	31st "
Cecil Rhodes .....	" .....	" .....	51.65	" 4606	31st "
Crown Point .....	Ainsworth ..	John T. Wilkinson. ....	14.04	" 4488	24th Sept.
Crescent .....	" .....	Wm. E. Boie .....	51.65	" 4122	16th Oct.
Chicago .....	Slocan .....	Byron N. White Co., W. H. Franklin and Thos. McGovern. ....	14	" 622	25th "
Craig No. 2 .....	Arrow Lake ..	H. E. Forster, H. C. Pollock. ....	37.26	" 4191	5th Nov.
Cork .....	Ainsworth ..	Chas. Doras .....	49.75	" 4883	5th "
Candidate .....	Nelson .....	Loudon & Rosland B. C., Ltd ..	51.65	" 3807	6th "
Chetopa .....	Slocan .....	John G. Steel .....	45.56	" 3534	7th "
Copper Giant .....	Trail Creek ..	W. G. Merryweather .....	51.65	" 1631	8th "
Canada .....	" .....	Summit Gold & Copper Mg. Co., Ltd ..	36.59	" 4358	8th "
Camden .....	" .....	Merritt A. Green, T. R. McMacken. ....	40.62	" 1133	10th "
Cowboy .....	Ainsworth ..	A. T. Garland <i>et al</i> .....	46.68	" 4888	12th "
Comet .....	Slocan .....	Granville Mg. Co., Ltd .....	10.60	" 1482	15th "
Currant .....	" .....	Scottish Colonial Gold Fields & Geo. W. Hughes .....	51.65	" 3529	3rd Dec.
Copper Cape .....	Nelson .....	Cumberland Gold Mg. Co., Ltd. ....	20.84	" 4020	4th "
Crown Point .....	Revelstoke ..	David H. Wilson. ....	45.21	" 2759	7th "
Commonwealth .....	Ainsworth ..	J. J. Shallcross, W. S. Drewry, T. G. Proctor .....	51.65	" 4172	10th "
Chapin .....	Goat River ..	California & Clipper Silver Lead Mines, Ltd	46.19	" 2862	14th "
Century Fraction ..	Slocan .....	Wm. S. Drewry .....	21.45	" 4557	14th "
Chapleau .....	Slocan City ..	Chapleau Consol. Gold Mines, Ltd. ....	26.12	" 4963	18th "
Chapleau Con. Frac.	" .....	" .....	0.81	" 4966	18th "
Cracker Jack .....	Slocan .....	Bosun Mines, Ltd .....	40	" 3747	28th "
Duncan .....	Trout Lake ..	W. T. Oliver, W. G. Johnson, F. J. Lin- nard, C. T. Porter, D. W. Henley ..	51.65	" 3472	15th Jan.
Double Fraction ..	" .....	Margaret Murray .....	3.60	" 3753	18th "
Deadwood .....	Nelson .....	New Brunswick Consol. Gold. Mg. Co., Ltd	51.59	" 3976	13th Feb.
Diamond .....	Trail Creek ..	J. L. Drumheller, C. H. Ellacott ..	0.40	" 1046	14th "
Daly .....	" .....	Smith Curtis, W. L. Lawry, Geo. Moore ..	31.30	" 4077	28th "
Delaware .....	Goat River ..	Henry Roy, J. J. B. Gosselin. ....	51.65	" 2858	28th "
Delight .....	Nelson .....	Delight Gold Mg. Co., Ltd .....	20.50	" 4206	9th Mar.
Deadwood .....	Slocan City ..	Slocan Lake Gold & Silver Mines, Ltd. ....	34.81	" 3576	4th April.

## WEST KOOTENAY—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
					1900
Derby .....	Ainsworth ..	Excelsior Gold Mines of B. C., Ltd .....	44.75	Lot 3892	20th April.
Drummer .....	Nelson .....	T. R. Jones, O. B. Jones, B. F. Butler and Robt. Rennie .....	51.65	" 4223	23rd "
Denmark .....	Trail Creek ..	J. S. Clute, Jr .....	31	" 1873	25th "
Daisy .....	Slocan .....	Scottish Colon. Gold Fields, Ltd., and Geo. W. Hughes .....	32.74	" 2099	14th May.
Directorate .....	Nelson .....	Hastings (B. C.) Expl. Co., Ltd .....	27.40	" 4442	27th July.
Directorate Fract'n.	" .....	" .....	11	" 4882	27th "
Detroit .....	Slocan .....	Scottish Colonial Gold Fields, Ltd., and Geo. W. Hughes .....	46.65	" 3525	1st Nov.
Dublin .....	Ainsworth ..	Jean Dardignac .....	38.50	" 4884	5th "
Defender .....	Slocan .....	Granville Mg. Co., Ltd .....	26.90	" 1465	15th "
Daybreak .....	" .....	" .....	13.80	" 1464	15th "
Daylight .....	" .....	H. B. Alexander, W. P. Dickson .....	10.65	" 3181	17th "
Dayton .....	" .....	Sandon Mg. & Mg. Co., Ltd .....	10.18	" 1914	4th Dec.
Ema Fraction .....	Trout Lake ..	C. T. Porter, D. W. Henley, W. T. Stall, Wm. S. Rugh and J. A. Kennedy .....	50.59	" 3468	12th Jan.
Ella .....	" .....	W. T. Oliver, W. G. Johnson, E. J. Lin- nard, C. T. Porter, D. W. Henley .....	51.65	" 3474	15th "
Elk .....	Nelson .....	John McLatchie, W. G. Robinson and Solomon Johns .....	43.85	" 3677	12th Mar.
Elk .....	Slocan .....	Harold Selous .....	36	" 3993	14th "
Egypt .....	" .....	John A. Finch .....	25.10	" 1922	29th "
Edna .....	Trail Creek ..	English-Canadian Synd., Ltd .....	18.31	" 1770	5th April.
Early Morn .....	" .....	" .....	51.56	" 1776	13th "
Elk No. 1 .....	" .....	Pavo Consolidated Mines, Ltd .....	41.63	" 4314	20th "
Ethel No. 1 .....	" .....	" .....	51.65	" 4315	20th "
Elk No. 1 Fraction.	" .....	" .....	6.60	" 4324	20th "
Ethel No. 1 "	" .....	" .....	4.27	" 4325	20th "
Eldorado .....	Slocan .....	Edw. Mahon, H. Selous and J. Rae .....	18.60	" 2901	23rd "
Eastern .....	" .....	Scottish Colon. Gld. Flds. & G. W. Hughes .....	24.40	" 2100	14th May.
Evergreen .....	Ainsworth ..	Edwin H. Tomlinson <i>et al.</i> .....	51.65	" 4456	18th "
Empress .....	Nelson .....	Empress of India Mines Co. ....	48.03	" 4424	5th July.
Early Bird .....	Slocan .....	James Sutherland, Chisholm Fraser .....	22.66	" 1648	18th "
Estella .....	" .....	Herman Clever .....	12.06	" 3742	1st Aug.
Exchange .....	Arrow Lake ..	H. E. Forster and H. C. Pollock .....	45.61	" 4190	5th Nov.
Eclipse .....	Nelson .....	London & Rossland B. C., Ltd .....	46.83	" 3809	6th "
Esther May .....	Ainsworth ..	Highland (Kootenay, B. C.,) Mg. Co., Ltd .....	40.06	" 2347	8th "
Ensign .....	Slocan .....	J. M. Martin, W. A. Arnold, A. Robinson .....	43.21	" 4103	20th "
Empress .....	Ainsworth ..	J. J. Shallcross, W. S. Drewry, T. G. Proctor .....	50.24	" 4170	20th Dec.
Elazhar Fraction ..	Slocan .....	Wm. S. Drewry .....	10.51	" 4548	14th "
Florence .....	Nelson .....	New Brunswick Consol. G. Mg. Co., Ltd .....	51.50	" 3977	13th Feb.
Florence G .....	" .....	J. McLatchie, W. G. Robinson, S. Johns .....	50.95	" 3676	12th "
Free Gold .....	" .....	John Folinsbee .....	36.94	" 4309	12th "
Frezeno .....	Lardeau .....	Benj. F. Reamy .....	41.08	" 4572	19th April.
Free Coinage .....	Trout Lake ..	Wm. Farrell and Thos. Dunn .....	51.09	" 1588	5th "
Franklin .....	Ainsworth ..	A. McC. Banting and E. W. B. Snider .....	35.51	" 3645	20th "
Free Silver .....	" .....	D. F. Strobeck and J. R. Hardie .....	51.65	" 4377	21st "
Freemont .....	Nelson .....	Golden Five Mines, Ltd .....	34.53	" 3928	16th May.
Fossil .....	Ainsworth ..	E. H. Tomlinson <i>et al.</i> .....	46.94	" 4455	18th "
Ferry No. 2 .....	Slocan .....	Slocan Lake Mg. & Develop. Co., Ltd .....	50.02	" 3668	5th July.
Flossie R .....	Nelson .....	Edw. J. Dyer .....	51.65	" 4620	5th "
Fairy .....	Slocan .....	John G. Steel .....	30.77	" 4508	11th Sept.
Full Hand .....	Goat River ..	G. Alexander, H. W. Forster .....	48.19	" 2065	17th Oct.
Fee Donald .....	Nelson .....	Hastings (B. C.) Explor. Synd., Ltd .....	50.26	" 5126	15th Dec.
Fidelity Fraction ..	Slocan .....	Bosun Mines, Ltd .....	14.50	" 3748	28th "
Grand Prize .....	Nelson .....	Aaron H. Kelly .....	8.04	" 3592	23rd Jan.
Gold Bell .....	" .....	" .....	28.65	" 4155	24th "
Gem Fraction .....	Ainsworth ..	J. B. MacLaren .....	3.52	" 2017	24th "
Great Western .....	Nelson .....	Aaron H. Kelly .....	39.03	" 4148	2nd Feb.
Great Eastern .....	" .....	" .....	34.56	" 4152	2nd "

WEST KOOTENAY—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
<b>1900</b>					
Golden Star	Nelson	Aaron H. Kelly and A. H. Buchanan	38.41	Lot 3594	3rd Feb.
Golden Era	"	" and Mary P. Driscoll	43.24	" 4153	8th "
Golden Chain	"	"	38.05	" 4154	8th "
Golden Calf	"	W. DesBrisay, P. Gallon, E. Peters, T. S. McPherson	41.16	" 3980	8th "
Golden Eagle	"	G. A. Kirk	20.83	" 4215	26th "
Gilt Edge	Ainsworth	Ibex Mg. & Develop. Co. of Slocan, Ltd.	51.65	" 2252	12th Mar.
Gerald F. Fraction	Nelson	J. McLatchie, W. G. Robinson, S. Johns.	14.60	" 3683	12th "
Gold Standard	"	Canadian King Gold Mg. Co.	42.20	" 4199	15th "
Golden Crown	Slocan City	Chas. E. Hope	30.18	" 2611	27th Feb.
Genesee	Slocan	Geo. W. Shaw	51.65	" 4490	15th Mar.
Gold Bug Fraction	Trout Lake	Sunshine, Ltd.	3.67	" 3053	22nd "
Great Western	Ainsworth	F. S. Andrews	35.46	" 3890	29th "
Garnet	"	C. D. McKenzie	51.65	" 2842	6th April.
Gopher Fraction	Trail Creek	English-Canadian Co., Ltd.	1.36	" 4008	12th "
Galt	Ainsworth	Hillside Silver Mines, Ltd.	20.24	" 1650	21st "
Great Britain	Trail Creek	Geo. R. Kellair	33.57	" 4085	10th May.
Glen Ellen	Ainsworth	Lester F. Clough and Gaspard LeMoine	43.87	" 4379	5th July.
Giant	"	Financial & Mg. Trust of Canada, Ltd.	13.11	" 4529	5th "
Green Crown	"	London Consol. Gld. Flds. Expl. & Mg. Co	45.43	" 2855	23rd "
Good Hope	Nelson	Oriel Mg. & Mllg. Co., Ltd.	33.88	" 4382	10th Sept.
Green Lakes Fract.	Ainsworth	René Laudi	40.20	" 4121	15th Oct.
Green Lakes	"	W. E. Boie	51.54	" 4120	16th "
Good Hope	Nelson	Athabasca Gold Mine, Ltd.	40.88	" 2812	24th "
Gray Copper	Trail Creek	W. G. Merryweather	36.55	" 1632	8th Nov.
Gloucester	Revelstoke	David H. Wilson	43.08	" 2758	7th Dec.
Gentle Annie	Slocan	Wm. S. Drewry	35.71	" 4184	14th "
Grand View	"	F. T. Kelly	4.20	" 3998	15th "
Gopher	"	John W. Harris	19	" 1851	18th "
Humbolt	Ainsworth	J. B. MacLaren	45.97	" 2015	27th Jan.
Hexahedron	Nelson	Jay Benn	51.65	" 4187	6th Mar.
Haddo Fraction	"	Herbert J. Wilson	34.28	" 4221	23rd "
Hustler Fraction	Slocan	Ernest Harrop and G. A. Petty	28.40	" 2619	28th "
Hellena	"	Chas. E. Hope	33.40	" 4238	3rd April.
Howard Fraction	Slocan City	Slocan L. Gld. & Silver Mines, Ltd.	6.64	" 3578	4th "
Humphrey	Slocan	Rambler-Cariboo Mines, Ltd.	26.43	" 3165	6th "
Homestake Fract.	Trail Creek	English-Canadian Co., Ltd.	17.13	" 4010	12th "
Hand Fraction	"	Chas. S. Warren and L. Davenport	3.31	" 1134	18th "
Henry Clay	Nelson	L. E. MacFarlane, J. E. MacFarlane and Andrew Sostal	36.92	" 4200	20th "
Humbolt	Ainsworth	A. McC. Banting, E. W. B. Snider	50.98	" 3644	20th "
Hillside	"	Hillside Silver Mines, Ltd.	21.90	" 1651	21st "
Hugle	Trail Creek	G. H. Suckling and T. E. Suckling	30.38	" 3075	26th "
Humbolt	Nelson	Golden Five Mines, Ltd.	51.07	" 3929	16th May.
Hidden Treasure	Ainsworth	Crawford Crk. Mg. Co., Ltd.	21.94	" 4448	17th "
Harrison	"	L. F. Clough, G. LeMoine	28.90	" 4380	5th July.
Hope No. 2	Trail Creek	Iron Hope Mg. & Mllg. Co., Ltd.	19.50	" 4605	5th "
High Ore Fraction	Slocan	Scottish Colon. Gld. Flds., Ltd., and G. W. Hughes	16.52	" 4514	5th "
Hungary Man	Nelson	W. B. Townsend and J. W. Moore	29.20	" 4083	5th "
Hoodo	Slocan	F. W. Godsal, H. B. Alexander	24.45	" 3188	19th Nov.
Hidden Treasure	Nelson	Cumberland Gld. Mg. Co., Ltd.	29.07	" 4021	4th Dec.
Iron Hill	Trail Creek	Thos. Smirl, M. O'Neil, L. D. Wolford, Alex. Rogers, M. F. Hennesy and David B. Bogle	13.22	" 3781	2nd Jan.
Irene	Nelson	A. H. Kelly and Mary R. Driscoll	51.65	" 4151	7th Feb.
Ibex	Ainsworth	Ibex Mg. & Develop. Co. of Slocan	18.65	" 1428	12th Mar.
Invincible	Nelson	J. McLatchie, W. G. Robinson and S. Johns.	51.65	" 3682	12th "
Iron Arm	"	Canadian King Gold Mg. Co.	29.33	" 4197	15th "
Iron Duke	Ainsworth	Mervyn Reginald W. Rathborne	51.95	" 3190	22nd "
Iron Cap	Nelson	Kootenay-Tacoma L. C. Mg. Co., Ltd.	8.37	" 3970	26th "
Ida D	"	Reginald K. Neill and Jos. E. Read	51.65	" 2462	9th April.



## WEST KOOTENAY.—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
					1900
Iron King No. 4 . . .	Trail Creek . . .	Pavo Consol. Mines, Ltd. . . . .	48.16	Lot 4317	20th Apl.
Iron Mask . . . . .	" . . . . .	E. H. Tomlinson <i>et al</i> . . . . .	51.65	" 4453	18th May.
Iron Chief . . . . .	" . . . . .	John Kraff, A. Jackson, Anton Sorenson, E. M. Kinnear . . . . .	45.30	" 3859	5th July.
Ivanhoe . . . . .	Nelson . . . . .	W. L. Lawry . . . . .	36.00	" 4929	5th "
Impregnable . . . . .	Arrow Lake . . .	Kamloops Mg. & Develop. Co., Ltd . . .	51.65	" 4195	7th Nov.
Iron Cap . . . . .	Ainsworth . . . .	A. R. MacDonald and F. Viets . . . . .	28.20	" 3785	7th "
Jewell Fraction . . .	Trout Lake . . . .	C. T. Porter, D. W. Henley, W. T. Stoll, W. S. Rugh and J. A. Kennedy . . . . .	8.05	" 3466	12th Jan.
J. and J . . . . .	Trail Creek . . . .	English-Canadian Co., Ltd . . . . .	23.00	" 1773	12th April.
Jennie . . . . .	" . . . . .	" . . . . .	5.43	" 1950	12th "
Joker . . . . .	Ainsworth . . . . .	Excelsior Gold Mines of B. C., Ltd . . . .	21.20	" 3891	20th "
Josie . . . . .	Nelson . . . . .	Golden Five Mines, Ltd. . . . .	28.04	" 3925	16th May.
Jennie . . . . .	Ainsworth . . . . .	Chas. S. Allmen and J. M. Ashton . . . .	47.08	" 3650	5th July.
Jessie . . . . .	Slocan . . . . .	Byron N. White Co. (Foreign). . . . .	19.53	" 620	18th "
Jumbo . . . . .	Goat River . . . .	H. Roy, J. A. Forin and J. A. Macdonald .	41.00	" 4375	24th "
John A . . . . .	Ainsworth . . . . .	René Laudi . . . . .	45.30	" 4119	15th Oct.
Jim Dandy . . . . .	" . . . . .	Geo. D. Scott and Ellen McDougald . . . .	51.65	" 1972	11th Dec.
Juno . . . . .	Nelson . . . . .	June Gold Mg. Co., Ltd. . . . .	45.23	" 3161	19th "
Kalispell . . . . .	Nelson . . . . .	Aaron H. Kelly . . . . .	33.40	" 4165	26th Jan.
Kootnia Star . . . .	" . . . . .	A. H. Buchanan . . . . .	32.34	" 4147	6th Feb.
King Solomon . . . .	" . . . . .	E. J. Dyer . . . . .	51.65	" 4621	5th July.
Kaslo . . . . .	Slocan . . . . .	J. E. Sprague and J. S. Parker . . . . .	51.65	" 2432	11th Oct.
Kitchener . . . . .	" . . . . .	E. McQuirk . . . . .	45.88	" 4487	8th Nov.
Kopje Fraction . . . .	" . . . . .	N. W. Mg. Synd., Ltd . . . . .	3.55	" 3749	14th Dec.
King of the Forest .	Nelson . . . . .	Juno Gold Mg. Co., Ltd . . . . .	41.53	" 3160	18th "
Kirkwall . . . . .	" . . . . .	" . . . . .	43.85	" 3162	18th "
Kid . . . . .	" . . . . .	Christoph Sherbart . . . . .	51.65	" 2049	22nd "
Leap Year Gem . . . .	Nelson . . . . .	C. J. Schleif, G. J. Schleif and J. G. Brown.	49.50	" 4363	16th Nov.
Leap Year Pride . . . .	" . . . . .	" . . . . .	48.50	" 4364	16th "
Lillie Fraction . . . .	Ainsworth . . . . .	Jas. W. Moffat . . . . .	4.50	" 1159	19th "
Last Chance . . . . .	Revelstoke . . . . .	J. H. Hoare . . . . .	51.65	" 2666	10th Dec.
Lone Star No. 3 . . . .	Slocan . . . . .	Robt. B. Skinner and Dalziel G. Smith . .	47.65	" 1891	12th "
Lake View . . . . .	" . . . . .	North-West Mg. Synd., Ltd . . . . .	51.14	" 3732	12th "
Lake View Fract . . . .	" . . . . .	" . . . . .	40.56	" 3734	12th "
Lardeau . . . . .	Trout Lake . . . . .	W. T. Oliver, W. G. Johnson, E. J. Lin- nard, C. T. Porter and D. W. Henley . . .	51.65	" 3470	15th Jan.
Lardo Fraction . . . .	" . . . . .	W. T. Oliver, C. T. Porter, D. W. Henley and W. T. Stoll . . . . .	44.19	" 3477	15th "
Laura J . . . . .	" . . . . .	W. T. Oliver, W. G. Johnson, E. J. Lin- nard . . . . .	47.08	" 3478	15th "
Labour Day Fract . . .	Ainsworth . . . . .	Jackson Mines, Ltd . . . . .	5.00	" 3466	21st Feb.
Lincon . . . . .	Arrow Lake . . . . .	G. Alexander, F. G. Fauquier and A. J. Jackson . . . . .	25.65	" 4115	8th Mar.
Lake View . . . . .	Nelson . . . . .	Kokanee Mg. Co., Ltd. . . . .	41.75	" 3667	9th "
Liddesdale . . . . .	Ainsworth . . . . .	Ibex Mg. & Develop. Co. of Slocan, Ltd . .	16.55	" 1429	12th "
Last Chance No. 4 . . .	Slocan . . . . .	Geo. Alexander . . . . .	22.78	" 3516	13th "
Lady Aberdeen . . . .	Nelson . . . . .	Herbert J. Wilson . . . . .	41.00	" 3936	23rd "
Lily Fraction . . . . .	" . . . . .	" . . . . .	29.40	" 4220	23rd "
Lost Chief . . . . .	Trail . . . . .	H. E. Forster and H. C. Pollock . . . . .	50.86	" 3440	27th "
Last Chance . . . . .	Nelson . . . . .	Kootenay-Tacoma L. C. Mg. Co., Ltd. (For.) . . . . .	38.27	" 3969	26th "
Lone Pine . . . . .	Trout Lake . . . . .	F. C. Campbell, and F. G. Johnson . . . .	51.00	" 4570	3rd April.
London Belle . . . . .	Trail Creek . . . . .	English-Canadian Co., Ltd . . . . .	39.26	" 1959	12th "
Legal Tender No. 3 . .	Slocan City . . . . .	T. McLaughlin . . . . .	47.05	" 4469	20th "
Legal Tender . . . . .	Ainsworth . . . . .	Crawford Creek Mg. Co., Ltd . . . . .	16.09	" 4449	18th May.
Longsley . . . . .	Nelson . . . . .	T. B. Garrison and Philip Aspinwall . . .	48.98	" 4356	5th "
Lucky Boy . . . . .	Ainsworth . . . . .	F. E. Starkey and Chas. R. Conner . . . .	36.39	" 4320	5th "
Liberty . . . . .	" . . . . .	" . . . . .	28.25	" 4321	5th "
Lake View . . . . .	Trout Lake . . . . .	B. C. Smelting & Refining Co. (Foreign). .	25.74	" 1705	17th July.
La Dura . . . . .	Nelson . . . . .	Hastings (B. C.) Explor. Synd., Ltd . . . .	48.00	" 4459	27th "
La Dura Fraction . . . .	" . . . . .	" . . . . .	17.50	" 4461	27th "

## WEST KOOTENAY.—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
					1900
Lost Tiger .....	Slocan	Hermann Clever .....	51.65	Lot 3744	1st Aug.
Link Fraction .....	"	"	15.46	" 3745	1st "
Lucy .....	Goat River	Joseph Blanchard and Adolphus Williams	36.14	" 2860	16th "
Lake View .....	Ainsworth	D. T. Strobeck .....	49.85	" 2325	22nd Oct.
Legal Tender .....	Slocan	C. A. Freeman, L. W. Toms, J. Wilson and J. Wilson, admin. of estate of E. C. Pease, deceased .....	24.83	" 1749	26th "
Lotus .....	Ainsworth	John C. Flanders .....	38.24	" 2179	30th "
Lillie Fraction .....	Nelson	Summit-Ymir Mg. Co., Ltd .....	28.79	" 4232	6th Nov.
Lavina .....	Ainsworth	A. R. Macdonald and F. Viets .....	32.60	" 3784	7th "
Lakeview .....	Nelson	T. B. Garrison, J. H. Graham and G. Aspinwall .....	50.10	" 3245	9th "
Lucky Jack .....	Golden	W. C. Tillson .....	37.80	" 3953	12th May.
Maple Leaf .....	Nelson	Maple Leaf Mg. & Develop. Co., Ltd. ....	41.21	" 3262	27th Jan.
Monday .....	Trail Creek	H. F. McLean, Andrew F. R. Blackwood and E. Lavalley .....	39.00	" 995	19th Feb.
Morning Star .....	Goat River	Geo. Alexander .....	27.80	" 4105	6th Mar.
Mayflower .....	Nelson	Kokanee Mg. Co., Ltd. Liability .....	33.14	" 3665	9th "
Minto Fraction .....	"	Herbert J. Spencer .....	37.14	" 4219	23rd "
Mohawk .....	Lardeau	Thos. V. Downing .....	24.12	" 4571	28th "
Midnight .....	Slocan	Chas. E. Hope .....	33.32	" 3227	30th "
Morn Fraction .....	"	Scottish Col. Gld. Flds., Ltd., and Geo. W. Hughes .....	42.29	" 748	9th April.
Monterey .....	Trail Creek	English-Can. Co., Ltd .....	27.13	" 1769	12th "
Mountain Lion .....	"	"	43.28	" 1777	12th "
May Flower Fract. ....	"	"	16.77	" 4011	12th "
Mount'n Lion Frac. ....	"	"	23.21	" 4018	12th "
Mona Fraction .....	Ainsworth	Excelsior Gold Mines of B. C., Ltd .....	1.50	" 3893	20th "
Maggie .....	Trail Creek	John Gloyd .....	37.46	" 4662	25th "
Monte Christo .....	Ainsworth	John A. Finch .....	51.65	" 4468	25th "
Monitor .....	Slocan	G. A. Petty, Eleanor J. Kendall and Alfred R. Fingland .....	48.74	" 1916	30th "
Maud S. ....	Nelson	New North Fork Mg. Co., Ltd. ....	38.44	" 3662	9th May.
Margaret Dora .....	Ainsworth	Frank E. Harkey and Chas. R. Connor ..	28.06	" 4323	5th July.
Mohawk .....	Slocan	Chas. E. Hope .....	22.92	" 2537	23rd "
Micawber .....	Nelson	Hastings (B. C) Explor. Synd., Ltd. ....	48.10	" 4443	27th "
Micawber Fraction. ....	"	"	2.10	" 4444	27th "
Mowich .....	Slocan	J. A. Finch, J. H. Moran and Chas. W. Greenlee .....	49.42	" 4558	17th Sept.
May and Jennie .....	Nelson	A. H. Kelly .....	39.76	" 3943	5th Oct.
Merrimac .....	Slocan	G. D. Long and A. C. Allen .....	28.19	" 3746	12th "
Marguerite Fract'n. ....	Ainsworth	René Laudi .....	11.02	" 4749	15th "
McCartney .....	Trout Lake	W. T. Oliver, W. G. Johnson, E. J. Lin- nard, C. T. Porter, and D. W. Henley ..	47.08	" 3471	15th Jan.
Morning Star .....	Nelson	London & Rossland, B. C., Ltd .....	40.10	" 4361	6th Nov.
Morning Star Frac. ....	"	"	24.79	" 4362	6th "
Minnie .....	Ainsworth	A. T. Garland <i>et al.</i> .....	14.20	" 4890	12th "
Magpie .....	Nelson	Hamilton Geo. Neelands .....	49.49	" 4422	1st Dec.
Mazepa .....	Slocan	Scottish Col. Gld. Flds. and G. W. Hughes	3.81	" 4510	1st "
Mary S. Fractional. ....	"	"	27.84	" 3533	3rd "
Morning Star No. 2 .....	Ainsworth	Geo. W. Bevell and A. McC. Banting .....	48.89	" 4885	5th "
Mayflower .....	"	Jas. L. Montgomery .....	27.44	" 4458	7th "
Marble Edge .....	Nelson	Edw. C. Arthur .....	19.91	" 2354	17th "
North Star .....	Nelson	Arthur H. Buchanan .....	30.66	" 4149	6th Feb.
New Brunswick .....	"	New Brunswick Con. Gld. M. Co., Ltd. ....	38.82	" 3975	13th "
Norfolk .....	Ainsworth	London Con. Gld. Flds. Expl. & Mg. Co., Ltd. ....	51.50	" 2854	7th Mar.
North Fork .....	Nelson	Jay Benn .....	31.11	" 4199	15th "
No. 25 .....	Trout Lake	F. C. Campbell and F. P. Johnson .....	51.65	" 1106	3rd April.
Nancy Jane .....	Nelson	A. Lorne Becher .....	26.24	" 2930	5th July.
Nip & Tuck .....	"	"	33.94	" 2931	5th "
Number One .....	Slocan	John A. Whittier .....	36.30	" 4560	6th Aug.
Number Two .....	"	"	21.00	" 4561	6th "

## WEST KOOTENAY.—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
No. 5 Fraction	Ainsworth	J. M. Ashton and C. S. Allmen	11.56	Lot 3656	1900 14th Nov.
Ould Jim Fraction	Trout Lake	W. T. Oliver, W. G. Johnson, E. J. Lin- nard, C. T. Porter and D. W. Henley	34.69	" 3473	15th Jan.
O. B. H.	Slocan	H. Keverne Mg. Co. (Foreign)	14.20	" 2644	15th Mar.
Omega	"	John M. HARRISS and Fred. T. Kelly	42.00	" 618	5th April.
Olga	Trail Creek	Olga Gld. Mg. & Milling Co.	46.20	" 4201	9th "
Ontario	Nelson	Ontario Gld., Silver & Copper Mg. Co., Ltd	36.54	" 3659	9th May.
Ontario	Trail Creek	Geo. R. Killam	34.93	" 4064	10th "
Onix	Nelson	Golden Five Mines, Ltd	23.36	" 3926	16th "
Oro	Slocan	D. E. Sprague and J. S. Parker	35.65	" 2434	1st Nov.
Opatunka	"	John G. Steel	45.56	" 3523	7th "
Original	Nelson	Hastings (B. C.) Explor. Synd., Ltd	25.50	" 5120	27th "
Original Fraction	"	" " "	44.10	" 5125	15th Dec.
Patsy [Fractional]	Nelson	Albert L. Keller	36.60	" 2937	14th Mar.
Princeton Fraction	"	David Lusk and John A. McRae	41.32	" 3938	26th "
Perry Lode	Trout Lake	F. C. Campbell and F. P. Johnson	47.28	" 4568	3rd April.
Philadelphia	Trail Creek	English-Canadian Co., Ltd	39.79	" 1778	12th "
Parker Fraction	"	Arthur H. Greene	30.70	" 4607	31st July.
Putnam	Slocan	Thos. A. Cameron and Wm. S. McRae	17.40	" 4917	8th Aug.
Ptarmigan	Trail Creek	B. C. Gold Discovery Co., Ltd. (Foreign)	50.22	" 1956	9th "
Pack Train	"	A. J. McMillan and T. B. Garrison	19.76	" 962	5th Oct.
Portland No. 5	Slocan	J. C. Williams, admin. estate E. S. Wil- liams (deceased)	41.17	" 2620	11th "
Philomene	Ainsworth	René Laudi	38.80	" 4123	15th "
Promestora	Arrow Lake	J. S. C. Frazer and F. H. Bourne	51.65	" 3788	1st Nov.
Piccadilly	Nelson	London and Rossland, B. C., Ltd	51.65	" 3808	5th "
Phoenix	Slocan	Evelyn M. Sandilands	32.32	" 2358	21st Dec.
Quinsault	Trail Creek	B. C. Gold Discovery Co., Ltd. (Foreign)	13.32	" 1957	9th Aug.
Queen Anne	Goat River	G. Alexander and H. W. Forster	41.83	" 2062	17th Oct.
Red Bluff	Trail Creek	James Scott	50.10	" 4007	2nd Jan.
Road View	"	Victor L. Clemence and Harold Rickard	51.12	" 3783	8th "
Runover	"	Jesse B. Reynolds, Geo. G. Reynolds and Ann Bryant	34.19	" 2195	18th "
Roy	Ainsworth	London Consol. Gold Flds. Expl. & Mg. Co., Ltd.	17.85	" 2857	7th Mar.
Rockland	Slocan	W. W. Spinks	49.96	" 3884	9th "
Royal City	Nelson	Kokanee Mg. Co., Ltd.	42.44	" 3666	9th "
Royal Arthur	"	John McLatchie, W. G. Robinson, S. Johns	48.35	" 3681	12th "
Rambler	Trail Creek	H. E. Forster and H. C. Pollock	44.94	" 3441	27th "
Rainy Day	Nelson	Golden Reef Mg. & Milling Co., Ltd	33.65	" 3978	7th April.
Rainy Day No. 2	"	" "	46.17	" 3979	7th "
Roman Eagle	Trail Creek	English-Can. Co., Ltd	41.02	" 1767	12th "
R. E. Adams	Ainsworth	Hillside Silver Mines, Ltd	51.65	" 1652	21st "
Rio Tinto	Nelson	Thos. Bennet and H. M. Billings	38.75	" 4640	30th "
Rio Tinto Fraction	"	" "	7.61	" 4641	30th "
Riverside	"	A. Lorne Becher	50.00	" 2932	5th July.
Ridgway	Trail Creek	B. C. Gold Discovery Co., Ltd. (Foreign)	22.83	" 1954	9th Aug.
Red Top Fraction	Nelson	A. H. Kelly	34.51	" 4310	5th Oct.
Rose Marie	Slocan	James H. Moran and Chas. Greenlee	10.52	" 4003	23rd "
Rainbow Quartz	Arrow Lake	Kamloops Mg. & Dev. Co., Ltd.	46.00	" 4193	7th Nov.
Ruthie Bell	Ainsworth	A. R. Macdonald and F. Viets	37.30	" 3786	7th "
Rueben	Slocan	Sandon Mg. & Milling Co., Ltd.	4.58	" 1915	4th Dec.
Republic	Ainsworth	J. J. Shallcross, W. S. Drewry and F. G. Proctor	51.65	" 4173	11th "
Republic Fraction	"	" " "	.69	" 4176	11th "
Reliance	Slocan	Wm. S. Drewry	50.38	" 4186	14th "
Sailor Boy	Ainsworth	J. B. McLaren	21.54	" 2016	27th Jan.
Salut	"	"	50.32	" 3270	27th "
Silver Hill	"	London Con. Gld. Flds. Expl. & Mg. Co. Ltd	40.99	" 2852	7th Mar.
Simcoe	"	" " "	35.31	" 2853	7th "

## WEST KOOTENAY.—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
1900					
S. & N. Fraction ..	Ainsworth ..	London Con. Gld. Flds. Expl. & Mg. Co., Ltd	2.45	Lot 2856	7th Mar.
Spokane .....	Slocan .....	Geo. Alexander .....	18.77	" 3515	13th "
Speculator .....	" .....	Harold Selous .....	42.45	" 3994	14th "
Six Friends .....	Ainsworth ..	Kokanee Mining Co., Ltd.	41.70	" 3669	16th "
Slocan Belle .....	Slocan .....	Robt. Cunning and Volney D. Williamson	51.65	" 1921	11th April.
S. C. ....	Trail Creek ..	English-Canadian Co., Ltd.	42.13	" 1771	12th "
Sidney .....	" .....	" .....	48.21	" 1775	12th "
S. C. Fraction .....	" .....	" .....	1.02	" 4009	12th "
Sterling .....	Nelson .....	Rose McGlynn and R. W. Caldwell .....	50.35	" 2926	23rd "
Salmon Star .....	" .....	Jons G. Swedberg, Chas. W. Anderson, and J. J. Malone .....	51.65	" 3942	23rd "
Skilligole .....	Trail Creek ..	John S. Clute, Jr .....	49.33	" 1871	25th "
St. Clair .....	Slocan .....	J. H. Moran and Chas. W. Greenlee .....	7.27	" 4559	26th "
Standard .....	Trail Creek ..	Horace J. Raymer, M. Sullivan, Ida M. Dunn and Thos. W. Shipley .....	51.65	" 4240	28th "
Sundown Fraction.	Slocan City ..	H. Bunting <i>et al</i> .....	9.40	" 2423	4th May.
Summit .....	Slocan .....	Eleanor T. O'Neil, Geo. Gooderham, and War Eagle Con. Mg. & Dev. Co., Ltd.	30.76	" 4374	7th "
Silver Bottom .....	Ainsworth ..	Edw. H. Tomlinson <i>et al</i> .....	51.63	" 4451	18th "
Silver Reef .....	" .....	" .....	51.65	" 4452	18th "
Silver Bell .....	" .....	Lester F. Clough and Gaspard leMoine .....	51.65	" 4378	5th July.
Skylark .....	Trail Creek ..	Fred. R. Blockberger .....	23.74	" 3851	5th "
Strontian .....	Nelson .....	Hastings (B.C.) Expl. Synd., Ltd.	48.60	" 4460	27th "
Seignorage .....	Trail Creek ..	B. C. Gold Discovery Co., Ltd. (For)	12.91	" 1955	9th Aug.
Stanley .....	Nelson .....	John McLellan McKinnon .....	16.72	" 4384	10th Sept.
Snow Bird .....	Trail Creek ..	Oriel Mg. & Milling Co., Ltd.	51.65	" 4608	11th "
Shenango .....	Nelson .....	T. R. French and I. Erickson .....	33.20	" 4785	14th "
Stormount .....	Slocan .....	S. K. Green and W. A. Jowett .....	14.02	" 4117	31st Oct.
Sunrise No. 4 .....	" .....	J. E. P. Brockhausen and S. H. Nichols ..	33.41	" 4562	1st Nov.
Show Down .....	Goat River ..	G. Alexander and H. W. Forster .....	37.50	" 2064	17th Oct.
St. Joseph .....	Ainsworth ..	A. R. Macdonald .....	11.60	" 3787	6th Nov.
Summit .....	Nelson .....	Summit-Ymir Mg. Co., Ltd.	50.48	" 4229	6th "
Swan .....	Trail Creek ..	Summit Gold & Copper Mg. Co., Ltd.	34.19	" 4357	8th "
Sunrise .....	Ainsworth ..	Geo. W. Bedell, A. McC. Banting .....	46.51	" 4886	5th Dec.
Sultan .....	" .....	J. J. Shallcross, W. S. Drewry, T. G. Proctor	47.17	" 4171	11th "
Sultan Fraction ..	" .....	" .....	2.42	" 4175	11th "
Sandow .....	Slocan .....	Robt. B. Skinner and Dalziel Smith .....	22.51	" 1890	12th "
Stephenite Fraction	Slocan City ..	Wilbur F. Dubois .....	4.92	" 2357	19th "
Shoshone .....	Slocan .....	W. S. Drewry, J. C. Bolander and Chas. McNicholl .....	31.60	" 4002	20th "
Triangle .....	Ainsworth ..	Ibex Mg. & Dev. Co. of Slocan, Ltd	10.81	" 1430	12th Mar.
Trumpet .....	Nelson .....	John McLatchie, W. G. Robinson, S. Johns	39.40	" 3678	12th "
Tiger No. 7 .....	Slocan City ..	Slocan L. Gold & Silver Mines, Ltd.	50.06	" 3150	4th April.
Tiger Fraction .....	" .....	" .....	2.39	" 3579	4th "
Tiptop .....	Slocan .....	B. Wilson, J. A. Lindsay, & B. C. Riblet.	45.53	" 4491	4th "
Twilight .....	" .....	Jno. M. Harris and Fred. T. Kelly .....	20.65	" 1854	5th "
Tonka Fraction .....	" .....	Scottish Col. Gld. Flds., Ltd., and G. W. Hughes .....	8.88	" 4509	9th "
Tenderfoot .....	Trail Creek ..	Pavo Consol. Mines, Ltd.	50.81	" 4313	20th "
Trade Dollar .....	Slocan .....	James Shields, J. M. Martin, and G. W. Hughes .....	45.20	" 1432	6th June.
Teller .....	Trail Creek ..	John Kroff, August Jackson, Anton Soren- son, and E. M. Kinnear .....	15.30	" 4600	5th July.
Tony .....	Ainsworth ..	René Laudi .....	51.65	" 3894	15th Oct.
Treadwell .....	" .....	" .....	37.06	" 4118	15th "
Twin Lakes .....	" .....	W. E. Boie .....	41.70	" 4124	16th "
Triumph .....	Arrow Lake ..	Kamloops Mg. & Dev. Co., Ltd.	48.82	" 4194	7th Nov.
Tom Thumb .....	Nelson .....	London & Rossland, B. C., Ltd.	51.65	" 3728	7th "
Texas .....	Ainsworth ..	A. T. Garland <i>et al</i> .....	26.60	" 4889	12th "
Tawanda .....	Slocan .....	Sandon Mg. & Millg. Co., Ltd.	32.24	" 1920	4th Dec.
Thistle .....	" .....	Scottish Col. Gld. Flds. & G. W. Hughes.	12.06	" 4515	11th "
Thursday Fraction.	" .....	Payne Consol. Mg. Co., Ltd.	1.85	" 3524	18th "
U. S .....	Ainsworth ..	H. Geigerich, W. Sudrow, Thos. J. Len- drum, and John Sudrow .....	46.65	" 1055	23rd April.

WEST KOOTENAY.—*Concluded.*

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
					<b>1900</b>
United Empire	Slocan City	Herbert W. Kent <i>et al</i>	43.35	Lot 2103	15th May.
Volunteer	Ainsworth	Kokanee Mg. Co., Ltd	20.23	" 3670	16th Mar.
Vulture Fraction	Slocan	Financial & Mg. Trust of Canada, Ltd	5.39	" 3672	9th April.
Vulture	"	"	39.51	" 4482	9th "
Vult	"	"	8.83	" 4483	9th "
Victor	"	James Marshall	45.04	" 3184	11th "
Vancouver	Trail Creek	Eng. Canadian Co., Ltd	27.48	" 4014	12th "
Vanderbilt	"	Chas. S. Warren and Lee Davenport	24.63	" 1135	18th "
Voyageure	Ainsworth	Brit. Can. Gd. Fds. Exp., Dev. & Inv. Co.	51.65	" 3585	24th "
Violet	Trail Creek	John Gloyd	10.50	" 4663	11th May.
Victoria	"	Silas Barry Yuill, J. Henderson, & J. W. Fear	24.70	" 2985	5th July.
Viking	Slocan	Thos. A. Cameron and Wm. S. McCrea	46.53	" 4916	8th Aug.
Venango	Nelson	Thos. R. French and Isaac Erickson	47.90	" 4757	14th Sept.
Ward	Trout Lake	W. T. Oliver, W. G. Johnson, & Emily J. Linnard	48.32	" 3479	15th Jan.
Willie	Nelson	John McLatchie, W. G. Robinson, and Solomon Johns	28.07	" 3670	6th Mar.
Woodstock	"	Delight Gold Mining Co., Ltd	36.24	" 4207	13th "
White Elephant	Ainsworth	Arch. B. McKenzie, J. H. Chewett, & Jos. Fred. Ritchie	43.18	" 3159	20th "
Wild Horse	Nelson	Oliver Blair	47.01	" 4212	26th Feb.
Waverly	"	John Folinsbee	51.65	" 4308	12th Mar.
Wolverine No. 2	Trail Creek	Thos. Smirl <i>et al</i>	50.50	" 927	18th April.
White Witch	Nelson	A. H. Kelly and A. H. Buchanan	42.23	" 3595	5th May.
White Iron	Trail Creek	Iron Hope Mg. & Millg. Co. (For.)	30.70	" 4604	5th July.
Wallaroo	"	A. H. Greene	45.00	" 3400	31st "
X Ray	Nelson	Oliver Blair	51.65	" 4213	26th Feb.
X Ray	Trail Creek	Olga Gold Mg. & Millg. Co	38.50	" 4204	9th April.
Yakima	Nelson	Columbus M. Parker	16.42	" 4227	10th "
Yosemite	"	Thos. Bennett and H. M. Billings	35.55	" 3654	30th "

## YALE.

Assayer	Kettle River.	Beaumont Leather	36.40	Lot 991	8th Jan.
Alma	Grand Forks.	J. W. Spaulding, O. W. Graden, & Abraham W. Seigel	51.65	" 1039	28th Feb.
A. D. A.	Osoyoos	Dominion Consol. Mines Co., Ltd	47.85	" 1596	30th Mar.
Anaconda	Kettle River.	Edwin S. Graham	42.23	" 1538	19th April.
Alfred	Osoyoos	P. C. McArthur and A. Woodcroft	39.10	" 1603	5th July.
Alice Fraction	Kettle River.	Sailor Consol. Mng. & Millg. Co. of Camp McKinney, Ltd	.61	" 1651	24th "
Aurora Fraction	Grand Forks.	Wm. Hart McHarg	35.50	" 967	13th Aug.
Alexandria	"	Albert E. Ashcroft, Elmer D. Olmsted, & James M. Fitzpatrick	50.00	" 2126	15th Sept.
Accident	"	R. Intram, C. Cosgriff, J. T. Hood, P. McMullen, P. Byrne, and J. S. Byrne	49.15	" 1704	26th Oct.
Anaconda	Kettle River.	W. T. Oliver	40.30	" 1931	5th Nov.
Blue Bird	Grand Forks.	Chas. Matheson	40.34	" 1363	16th Jan.
Bismarck	"	Alexander McKenzie	51.65	" 1366	18th "
Beaver	"	W. J. Porter and J. J. Farrell	30.74	" 1487	21st Feb.
Banner	Kettle River.	James Marshall and Thos. Roderick	47.59	" 1847	6th Mar.
Baby	Vernon	Richard Byron Johnson	51.65	" 737	8th "
Bootblack	Osoyoos	Henry T. Shelton	50.20	" 1593	28th "
Butte	Grand Forks.	Nellie Gallagher, F. H. Oliver, P. Feldman, and M. Oppenheimer	51.65	" 1067	28th "
Buttercup	"	J. J. Farrell	41.20	" 1490	28th "

## YALE.—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
					<b>1900</b>
Bell .....	Grand Forks.	R. G. Edwards Leckie .....	38.10	Lot 1560	29th Mar.
Boys .....	"	Ella Clark .....	51.65	" 651	29th "
Black Hawk .....	Osoyoos .....	Dominion Consol. Mines Co., Ltd. ....	40.00	" 1598	30th "
Banner .....	"	Camp McKinney Mines, Ltd .....	28.15	" 1586	5th April.
Bull's Eye Fraction .....	"	Jno. C. Fisher, W. F. Keller, and G. A. Engel .....	19.30	" 1591	12th "
Bank of England .....	Kettle River.	E. S. Graham .....	51.58	" 1536	19th "
Big Four .....	Osoyoos .....	Jos. B. McArthur, R. Dalby Morkill, and Chas. R. Hamilton .....	47.60	" 1788	21st "
Boston .....	Kettle River.	Sidney M. Johnson .....	44.48	" 1645	25th "
Bonnie Jean .....	Kamloops .....	Cole Hill Gd., Silv. & Copper Mg. Co., Ltd .....	.32	" 850	7th June.
Balmoral .....	Kettle River.	William Small .....	49.72	" 1966	8th "
Black .....	Osoyoos .....	P. C. McArthur and James Black .....	43.03	" 1602	5th July.
Bull Dog .....	"	Myron K. Rodgers .....	40.32	" 739	5th "
Bald Eagle .....	Kettle River.	Francis P. Buck .....	19.98	" 1473	23rd "
Brayfogle .....	Grand Forks.	Mary McMynn, Thos. Hardy & W. T. Smith .....	31.37	" 1491	24th "
Butcher Boy .....	Kettle River.	Butcher Boy Gold & Copper Mg. Co., Ltd .....	50.60	" 1282	23rd Aug.
B. C. (No. 2) .....	Grand Forks.	A. J. Marks, admin. estate Chas. Van Ness, deceased .....	33.84	" 1564	11th Sept.
Belville (Ry. Belt) .....	Kamloops .....	Cinnabar Mg. Co. of B. C., Ltd .....	49.58	" 922	25th "
Briar .....	"	" .....	36.30	" 923	25th "
Bendigo .....	Kettle River.	Nicholas Garland .....	42.28	" 2080	6th Nov.
Ballarat .....	"	" .....	45.90	" 2081	6th "
Barrow .....	"	G. R. Naden, J. B. Desrosiers, J. Leyeaux, F. H. Parker, & E. J. Livermore .....	31.20	" 1290	16th "
Cannon Ball .....	Grand Forks.	R. Dalby Morkill, Jr., <i>et al</i> .....	51.65	" 1036	28th Feb.
City View .....	Kettle River.	Ernest A. Bielenberg .....	51.59	" 1565	27th Mar.
C. O. D. .....	"	Hal. J. Cole, C. N. Collins, & T. Miller .....	51.65	" 1532	25th April.
Copper King .....	"	John Moran and Austin Hammer .....	44.60	" 1713	7th "
Crescent .....	"	Chas. Sweeny .....	51.65	" 1711	7th "
Corydon .....	Grand Forks.	Frank Guse, Frank Hutchinson, & Smith Curtis .....	41.45	" 971	6th June.
Christina .....	"	Smith Curtis, David D. Birks, and C. A. Hagelberg .....	27.87	" 1350	8th "
Calumet .....	"	Randolph Stuart .....	40.56	" 1314	5th July.
Clipper Fraction .....	Kettle River.	E. T. Wickwire and E. C. Cargill .....	9.50	" 1102	5th "
Copper Field .....	Osoyoos .....	Myron K. Rodgers .....	40.40	" 742	5th "
Cosmopolitan .....	Kettle River.	Cosmopolitan Gd. Mg. & Smelting Co. ....	37.43	" 1680	5th "
Crown .....	Grand Forks.	Wm. H. Covert .....	25.40	" 2015	29th Oct.
Columbia .....	Kettle River.	W. T. Oliver .....	41.00	" 1933	5th Nov.
Copper Queen .....	Kamloops .....	Cole Hill Gd., Silv. & Copper Mg. Co., Ltd .....	50.90	" 880	7th June.
Deadwood .....	Grand Forks.	J. W. Spaulding, O. W. Graden, & A. W. Seigel .....	50.66	" 1038	28th Feb.
Double Eagle Frac. ....	"	John Rogers .....	3.04	" 1329	9th Mar.
Diamond Hitch .....	"	Mammoth & Diamond Hitch Consol. Gd. Mg. Co., Ltd .....	45.90	" 1684	13th "
Dividend .....	Osoyoos .....	John C. Fisher, Henry A. Bowerman, and Benj. A. Anderson .....	51.65	" 1589	17th April.
Dividend Fraction .....	"	" .....	5.00	" 1590	17th "
Delamar .....	"	H. M. McCartney .....	49.05	" 1346	24th July.
Danube .....	"	M. K. Rodgers .....	33.53	" 1792	10th Sept.
Earthquake .....	Grand Forks.	The Earthquake Consol. G. M. Co., Ltd .....	51.65	" 1339	5th April.
Evening .....	"	Evening Gd. Mg. Co., Ltd .....	46.25	" 771	5th May.
Elmore .....	"	F. Guse, F. Hutchinson, & Smith Curtis .....	34.39	" 972	6th June.
Electroplate .....	Osoyoos .....	M. K. Rodgers .....	50.60	" 745	5th July.
Erwin .....	Kettle River.	Sigmund Dilsheimer and A. S. Dingle .....	38.20	" 1691	25th "
Fantantine .....	Grand Forks.	Robt. Allen Brown .....	38.51	" 1477	15th Mar.
Fairview .....	Osoyoos .....	Dom. Consol. Mines, Ltd .....	51.56	" 1597	30th "
Falcon .....	Kettle River.	Mary Garland .....	51.55	" 1640	28th "
Girl of the Period .....	Grand Forks.	Wm. J. Porter and John J. Farrell .....	51.65	" 1488	21st Feb.
Granite .....	Osoyoos .....	Camp McKinney Mines, Ltd .....	51.65	" 1585	21st "

## YALE.—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
<b>1900</b>					
Golden Cache Frac.	Grand Forks.	Ernest Spragget .....	35.43	Lot 955	7th Mar.
Golden Crown Frac.	"	John Rogers .....	1.45	" 1058	9th "
Gold Drop .....	Kettle River.	Jewel Gold Mines, Ltd .....	51.65	" 1415	25th April.
Gold Dust .....	Osoyoos .....	Wm. F. Keller and Geo. A. Engel .....	51.65	" 1434	26th "
Greenwood .....	Kettle River.	Mary Garland and Paul Johnson .....	9.57	" 897	17th May.
Golden Star .....	Kamloops .....	Kamloops Copper Mg. Co., Ltd .....	41.30	" 845	30th "
Gem Fraction .....	Kettle River.	Jewel Gold Mines, Ltd .....	8.06	" 1416	5th July.
Green Mountain .....	Osoyoos .....	P. C. McArthur and David Black .....	32.06	" 1601	5th "
Gold Field .....	"	M. K. Rodgers .....	47.30	" 744	5th "
Gold Plate .....	"	" .....	45.60	" 1793	5th "
Gold Bug .....	"	Hugh Cameron .....	44.69	" 934	23rd "
Golden Eagle .....	Grand Forks.	John H. Fox .....	45.23	" 1334	10th Oct.
Garfield .....	Kettle River.	G. W. Rumberger, R. T. Daniels, T. Stack, and C. McConnell .....	43.00	" 1264	7th Nov.
Hartford .....	Grand Forks.	John Rogers and Hannibal L. Jones .....	48.14	" 1057	24th Feb.
Herbert Spencer .....	Kettle River.	Fred. Kilmaster McMann .....	51.65	" 1571	21st "
Humming Bird .....	Grand Forks.	Humming Bird (B.C.) Gold Mines, Ltd ..	33.93	" 1369	27th "
Hartford Fraction .....	"	John Rogers and H. Jones .....	37.73	" 1061	13th Mar.
Hope .....	"	Neils Larsen and S. R. Almond .....	48.21	" 1635	15th "
Independence .....	Osoyoos .....	Oro Fino Mines, Ltd .....	50.60	" 1449	26th Jan.
Iron Clad .....	Grand Forks.	W. J. Porter, J. J. Farrell, and G. W. Rumberger .....	51.65	" 1489	26th Feb.
Iron Cap .....	Kettle River.	Silver King Gd. Mg. Co .....	17.24	" 1574	13th Mar.
Iron Mask .....	Kamloops .....	Cole Hill Gd., Silv. & Copper M. Co., Ltd	38.20	" 878	7th June.
John Bull .....	Grand Forks.	John Bull Mines, Ltd .....	36.60	" 2015	23rd July.
Joliette Fraction .....	Kettle River.	John B. Desrosiers .....	23.96	" 1885	16th Aug.
Junction City .....	Grand Forks.	L. S. Moulton Barrett .....	39.64	" 1352	11th Oct.
Jane R. Fraction .....	"	J. Rogers, H. L. Jones, P. W. Dillon, L. J. Ostroski, and D. Moylan .....	39.80	" 1059	9th Nov.
Jay (Ry. Belt) .....	Kamloops .....	Cinnabar Mg. Co. of B. C., Ltd .....	25.60	" 930	25th Sept.
Kate Fraction .....	Grand Forks.	Lake D. Wolford .....	18.27	" 1701	10th April.
Keno .....	"	D. McLaren, W. G. McMynn, and Jas. McLenaghan .....	37.10	" 1319	21st "
Kootenay .....	Kettle River.	W. T. Oliver .....	51.65	" 1932	5th Nov.
Lulo .....	Kettle River.	Hugh R. Eliot and Randolph Stuart .....	39.53	" 1471	26th Jan.
Lulu .....	Similkameen	Star Expl. & Mg. Co .....	36.75	" 92	30th Mar.
Little Gold Dust .....	Osoyoos .....	W. F. Keller and G. A. Engel .....	5.00	" 1592	12th April.
Last .....	Grand Forks.	Vestus Quinby .....	34.94	" 2006	21st "
Livingston .....	"	Jas. M. O'Toole .....	43.45	" 1563	15th May.
Lancashire Lass .....	"	Mary McMynn, W. G. McMynn, and T. Hardy .....	47.78	" 1687	23rd July.
Laskay .....	"	L. S. Moulton Barrett .....	27.87	" 1351	11th Oct.
Lookout .....	"	R. Inram and W. Halbeis .....	51.65	" 2204	9th Nov.
Lake View .....	Osoyoos .....	Benj. Anderson and H. A. Bowerman .....	45.75	" 1899	6th Dec.
Montana .....	Grand Forks.	G. W. Rumberger, Marcus Oppenheimer, and Jos. Taylor .....	21.75	" 1318	23rd Feb.
Mayflower .....	Osoyoos .....	Henry F. Shelton .....	17.50	" 1089	28th Mar.
Mammoth .....	Grand Forks.	Mammoth & Diamond Hitch Con. Gd. Mg. Co., Ltd .....	19.29	" 1683	6th April.
Mountain View .....	Kettle River.	Geo. A. Rendell, Geo. Smith, Geo. B. Tay- lor, and Justin C. Sears .....	36.00	" 1405	25th "
Meadow Lark .....	"	Nelson J. LaPlant, Robt. L. Rutter, Jas. McNicol, and W. G. McMynn .....	51.00	" 1712	8th May.
Mayfield Fraction .....	"	M. H. McMahon .....	30.74	" 2070	8th June.
Massachusetts .....	"	Jewel Gold Mines, Ltd .....	41.94	" 1401	5th July.
Mountain View .....	"	Edmund T. Wickwire and E. C. Cargill ..	29.49	" 1100	5th "
Missing Link .....	"	Geo. W. Rumberger and W. J. Porter ..	7.07	" 979	5th "
Marinette .....	Grand Forks.	John Bull Mines, Ltd .....	51.65	" 2052	23rd "
Mecklenberg .....	"	Annie M. Brown and Chas. S. Wallis .....	49.74	" 1045	24th "
Mecklenberg Fract.	"	" .....	10.60	" 1046	24th "

## YALE.—Continued.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
<b>1900</b>					
Moreen Fraction Mono.....	Kettle River. Grand Forks.	Harry H. Shallenberger .....	48.70	Lot 1709	22nd Oct.
		J. T. Flood, C. Cosgriff, P. Byrne, J. S. Byrne, P. McMullen, & J. J. McMullen	45.07	" 2205	27th "
Mountain View.....	"	Mountain View Copper Co., Ltd	27.20	" 1533	29th "
Mary B.....	"	J. S. C. Frazer.....	36.89	" 1568	1st Nov.
Mammoth.....	"	E. D. Olmsted, J. M. Fitzpatrick, and T. J. Evans.....	51.65	" 1410	5th "
Nabob Fraction.....	Grand Forks.	John Rogers.....	10.60	" 1063	9th Mar.
North Star.....	Osoyoos....	Wm. Edwards.....	46.00	" 1587	29th "
New Last Chance.....	Grand Forks.	Earthquake Consol. Gd. Mg. Co., Ltd....	47.00	" 1341	5th April.
Normandy.....	Kettle River.	E. S. Graham.....	31.37	" 1537	19th "
Nugget.....	"	Frederick Colleton Junes.....	46.13	" 1257	20th "
Nightingale.....	"	E. T. Wickwire and E. C. Cargill.....	31.33	" 1101	5th July.
Nickel Plate.....	Osoyoos....	M. K. Rodgers.....	49.85	" 741	5th "
Nickerson.....	"	John C. Fisher.....	51.65	" 1903	5th Dec.
Oro Fino.....	Osoyoos....	Oro Fino Mines, Ltd.....	50.30	" 1448	26th Jan.
Oro.....	Grand Forks.	M. Oppenheimer, J. Taylor, and P. Feldman.....	44.50	" 1167	22nd Feb.
O. K.....	"	Julia O'Connor, Helen J. McColl, and G. E. Drew.....	36.40	" 1478	20th Mar.
Orften Boy.....	"	Arthur B. Clabon.....	45.19	" 1766	26th "
Ophir.....	"	S. M. Johnson, T. Kirk, M. Oppenheimer, Janè Russel, and P. Feldman.....	51.65	" 1066	21st April.
Ontario Boy.....	"	Marguerite F. Folger and J. D. Spence.....	43.15	" 596	29th May.
Orient.....	Osoyoos....	Benj. Anderson and H. A. Bowerman.....	45.46	" 1898	6th Dec.
Pioneer.....	Kettle River.	J. H. Macfarlane and Wm. L. Hogg.....	51.64	" 1637	21st Feb.
Palmetto.....	Grand Forks.	Alfred J. Marks and Moses Burns.....	38.70	" 1353	5th Mar.
Philip Sheridan.....	"	Earthquake Consol. Gd. Mg. Co., Ltd....	32.80	" 1340	5th April.
Phillipsburg Fract.	Kettle River.	Frederick Colleton Junes.....	1.23	" 1842	6th "
Paymaster.....	"	Edwin Smith Graham.....	51.65	" 870	19th "
Pheasant.....	Grand Forks.	A. K. Stuart.....	43.75	" 864	15th May.
Puyallup.....	"	D. D. Mann, C. T. Porter, C. B. Strong, W. T. Smith, and G. A. Cox.....	15.20	" 1152	20th Sept.
Peacock.....	Kettle River.	C. H. Brown, M. A. Graham, E. Parry, E. H. Mortimer, and G. R. Naden.....	48.20	" 1243	7th Nov.
Queen of Sheba.....	Kettle River.	G. Andrews and L. A. Smith.....	40.69	" 1859	5th July.
Queen of the Hills.	Grand Forks.	C. Cosgriff, J. T. Flood, P. Byrne, and J. S. Byrne.....	38.26	" 2203	27th Oct.
Robin Hood.....	Kettle River.	Beaumont Leather.....	51.65	" 989	8th Jan.
Revenue.....	"	J. H. McFarlane and W. L. Hogg.....	51.65	" 1636	21st Feb.
Ranger.....	Grand Forks.	J. Rogers and H. L. Jones.....	43.55	" 1060	24th "
Red Rock.....	Kettle River.	J. C. Haas, Geo. R. Naden, & Brit. Amer. Dev. Co., Ltd.....	40.67	" 1472	7th May.
Rover Fractional..	"	Sailor Consol. Mg. & Millg. Co. of Camp McKinney, Ltd.....	15.30	" 769	5th July.
Ruby.....	"	G. Cook and W. G. McMynn.....	48.49	" 1333	23rd "
R. Bell.....	Grand Forks.	H. M. McCartney.....	41.71	" 1506	24th "
Remington.....	"	".....	39.85	" 1507	24th "
Rattler.....	Kettle River.	W. Garland.....	51.65	" 1265	16th Aug.
Roman Eagle.....	Grand Forks.	J. J. Walker.....	51.65	" 2168	10th Sept.
Red Robe (Ry. Belt)	Kamloops...	Cinnabar Mg. Co. of B. C., Ltd.....	48.73	" 924	25th "
St. Mark.....	Grand Forks.	J. B. McArthur, C. R. Hamilton, and R. D. Morkill, Jr.....	36.57	" 1787	5th Mar.
St. Clair.....	"	" " ".....	47.57	" 1789	5th "
Something Good...	Osoyoos....	G. R. Naden and E. Bullock-Webster....	27.00	" 1451	7th "
Sycamore.....	Kettle River.	F. Beauchene and Geo. Riter.....	45.93	" 1578	7th "
Silver King.....	"	Silver King Gd. Mg. Co.....	29.90	" 1097	13th "
Shickshock.....	Grand Forks.	R. A. Brown.....	51.65	" 992	14th "
Silver Queen.....	Vernon....	Silver Star Mg. Co., Ltd.....	35.46	" 1182	15th "
Strawberry.....	Grand Forks.	Arthur B. Clabon.....	51.65	" 1765	26th "
St. Luke Fraction.	"	J. B. McArthur, Herman Luckman, and R. D. Morkill.....	.54	" 1785	27th "



YALE.—*Concluded.*

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
<b>1900</b>					
Sunrise .....	Kamloops ..	Cole Hill Gd., Silv. & Copper Mg. Co., Ld	48.80	Lot 879	7th June.
Shoo Fly .....	Kettle River.	Geo. E. Drew .....	48.75	" 1547	5th July.
Sunnyside .....	Osoyoos ..	M. K. Rodgers .....	45.95	" 740	5th "
St. Genevieve .....	Kettle River.	Geo. T. Crane .....	51.65	" 1397	14th Aug.
Sunnyside .....	"	W. G. McMynn .....	51.65	" 1646	16th "
Silver Plume Fract.	Grand Forks.	Evangeline G. Stirling .....	34.27	" 1945	11th Sept.
Sissy .....	"	J. Mack and R. Stuart .....	42.60	" 1068	17th "
Silver Cloud .....	Kettle River.	J. W. Nelson and D. Ross .....	28.82	" 1218	17th "
Sylvester K .....	"	Louis I. Ostroski, Patrick W. Dillon, Denny Moylan, Charles Scott Galloway, and Adolph Sercu .....	42.21	" 2385	17th "
St. Lawrence .....	"	Deadwood Gold-Copper Mg. Co	34.77	" 1255	18th "
Stag .....	Vernon .....	Camp Hewitt Mg. & Dev. Co., Ltd .....	47.41	" 1003	12th Oct.
Standard .....	Kettle River.	P. Aspinwall and J. Johnstone .....	40.30	" 1463	6th Nov.
Stafford Fraction ..	"	G. W. Rumberger and J. Moran .....	1.05	" 1703	12th Dec.
Sunflower .....	"	B. C. Copper Co., Ltd .....	16.50	" 916	12th "
St. Lawrence .....	Grand Forks.	H. Johnson, F. E. Linfield, J. W. With- erop, Leander H. Pratton, and Clayton B. Strong .....	41.40	" 595	12th "
Timer Fraction .....	Kettle River.	P. C. McArthur .....	9.65	" 1705	22nd Mar.
Tiger .....	Grand Forks.	Wm. K. White .....	38.33	" 1562	21st April.
Tintic .....	Kettle River.	Isaac H. Hallett .....	14.37	" 1461	16th Aug.
Twin Sisters .....	"	R. W. Lee .....	30.15	" 1432	18th Sept.
Triangle Fraction ..	"	Grey Eagle Gd. Mg. Co., Ltd .....	0.60	" 2082	5th Nov.
Tip Top .....	"	" .....	44.32	" 1111	6th "
Volcano .....	Grand Forks.	R. A. Brown .....	51.65	" 1476	14th Mar.
Vigo .....	Similkameen	Kokanee Mg. Co., Ltd .....	20.23	" 91	16th "
Webfoot .....	Osoyoos ..	C. deB. Green, H. W. Yates, and J. T. Campbell .....	51.50	" 1446	9th Jan.
Wellington Fract'n.	Grand Forks.	M. Oppenheimer, G. W. Rumberger, and J. Taylor .....	31.00	" 1315	22nd Feb.
Wren .....	Kettle River.	R. Denglor .....	40.84	" 1170	29th Mar.
Wolfard .....	Grand Forks.	L. D. Wolfard .....	51.65	" 1702	16th April.
Wellington .....	Kettle River.	W. J. Harris .....	30.90	" 1214	30th "
" No. 1 .....	"	" .....	42.97	" 1215	30th "
" No. 2 .....	"	" .....	17.75	" 1216	30th "
Williamena Fract'n.	"	G. W. Rumberger and A. A. McIntosh ..	7.30	" 1693	6th Nov.
Wake .....	Grand Forks.	J. Douglas, G. T. Hodgson, A. A. Pelly, T. McDonnell, and F. J. Finnicane .....	46.46	" 2107	2nd Dec.
Yucon .....	"	N. Garland .....	37.59	" 1530	22nd Mar.
Yankee Girl .....	"	R. G. Edwards Leckie .....	51.65	" 1558	29th "
Yankee Boy .....	"	" .....	51.46	" 1559	29th "

## LILLOOET.

Alpha Bell Fract'n.	Lillooet .....	Alpha Bell Gd. Quartz Mg. Co., Ltd .....	29.17	Lot 523	11th Jan.
Omega Fraction .....	" .....	" .....	2.32	" 522	11th "
Surprise .....	" .....	" .....	46.65	" 521A	11th "
Trio .....	" .....	" .....	44.66	" 460	26th Mar.

## COAST—ALBERNI.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
					<b>1900</b>
American Wonder	Alberni	J. M. Ashton	14.58	Lot 386	2nd Mar.
Apex	"	H. E. Newton	31.50	" 99	6th April.
B. C. Wonder	"	J. M. Ashton	43.60	" 324	2nd Mar.
Ben Bolt	"	Forfarshire Mines, Ltd	34.13	" 341	5th July.
Countess	"	Mary Frances Ashton	51.65	" 389	2nd "
Count of Monte	"	J. M. Ashton	51.65	" 326	5th "
Condor [Cristo]	"	"	42.00	" 327	5th "
Duchess	"	"	42.10	" 388	2nd Mar.
Hope	"	Mary F. Ashton	31.60	" 453	2nd "
Iron Duke	"	J. M. Ashton	26.24	" 325	5th July.
Latchbrook	"	Chas. Hayward	16.76	" 508	27th Mar.
Mermaid	"	Forfarshire Mines, Ltd	35.90	" 342	5th July.
Monarch of the Glen	"	"	22.30	" 343	5th "
Mountain Treasure.	"	"	9.00	" 346	5th "
Nymph Fraction	"	"	2.43	" 347	5th "
Princess	"	J. M. Ashton	44.80	" 390	2nd Mar.
Pacific	"	Forfarshire Mines, Ltd	28.14	" 344	5th July.
Pheasant	"	"	27.85	" 345	5th "
Star	"	Chas. Hayward	20.29	" 509	27th Mar.
Skyline	"	R. T. Godman	37.00	" 1000	10th April.
Yankee Blade	"	J. M. Ashton	31.40	" 387	2nd Mar.

## COAST—NEW WESTMINSTER.

Albion	New West'r.	J. Webster and F. W. Welsh	50.89	Lot 1648	14th Aug.
Bootblack	"	J. Webster and F. W. Welsh	32.67	" 1672	14th "
Bonanza	"	H. W. Treat	45.35	" 1862	27th Feb.
Comet	"	"	46.46	" 1863	27th "
Copper Crown	"	"	32.52	" 1865	27th "
Copper King	"	"	43.86	" 1866	27th "
Copper Queen	"	"	25.48	" 1867	27th "
Calumete	"	Calumete Synd., Ltd	30.00	" 1900	16th Mar.
Clifton	"	Britannia Copper Synd., Ltd., and L. J. Boscowitz	51.65	" 1893	25th July.
Edith Fraction	"	" " "	7.77	" 1891	25th "
Eliza	"	J. Webster and F. W. Welsh	51.23	" 1669	14th Aug.
Fairview	"	Britannia Copper Synd., Ltd., and L. J. Boscowitz	51.65	" 1890	25th July.
Heather Fraction	"	" " "	37.37	" 1896	25th "
Isinglass	"	J. Webster and F. W. Welsh	46.50	" 1675	14th Aug.
Jane	"	Britannia Copper Synd., Ltd., and L. J. Boscowitz	51.65	" 1892	25th July.
Last Chance	"	H. W. Treat	49.25	" 1860	27th Feb.
Lone Jack	"	"	43.67	" 1861	27th "
Look Out	"	"	49.22	" 1864	27th "

COAST—NEW WESTMINSTER.—*Concluded.*

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
					<b>1900</b>
Look Out .....	New West'r.	J. Webster and F. W. Welsh .....	32.67	Lot 1671	14th Aug.
Lass .....	"	" " .....	51.65	" 1679	14th "
Mineral Creek .....	"	Britannia Copper Synd., Ltd., and L. J. Boscowitz .....	48.76	" 1894	25th July.
Merivale .....	"	J. Webster and F. W. Welsh .....	51.65	" 1674	14th Aug.
Oakley .....	"	" " .....	49.17	" 1677	14th "
Poorboy .....	"	" " .....	39.65	" 1673	14th "
Pilot .....	"	" " .....	48	" 1676	14th "
Surprise .....	"	" " .....	51.49	" 1670	14th "
Shopgirl .....	"	" " .....	51.65	" 1678	14th "
William .....	"	Britannia Copper Synd., Ltd., and L. J. Boscowitz .....	50.07	" 1895	25th July.

## COAST—NANAIMO.

Name of Claim.	District.	Name of Grantee.	Acres.	Lot.	Date of Grant.
Bluejacket .....	Nanaimo .....	J. Mc. L. McKinnon .....	39.36	1833	8th Sept.
Copper Chief .....	" .....	G. W. DeBeck .....	45.55	1834	8th "
Copper King .....	" .....	James Cullen .....	45.14	1835	8th "
Chemainus .....	" .....	B. H. John .....	35	109	31st Oct.
Electric .....	" .....	W. A. Bauer .....	50.23	317 R. 1	22nd Jan.
Iron Horse .....	" .....	A. W. More .....	37.76	176	9th Mar.
Lion .....	" .....	" .....	34.26	174	9th "
Mabel .....	" .....	John A. Humbird .....	38.90	108	31st Oct.
Ohio .....	" .....	Michael Diffley .....	40.05	333, R. 1	17th Dec.
Saxon .....	" .....	J. Campbell .....	51.65	175, T. I.	15th Mar.
Silver King .....	" .....	J. Mc. L. McKinnon .....	44.21	1832	8th Sept.
Tyhee .....	" .....	W. L. Challoner, C. R. Dingwall, & Van Anda Copper & Gold Co .....	25.45	105, T. I.	6th April.
Theodosia .....	" .....	J. Mc. L. McKinnon .....	44.02	1831	8th Sept.
Texada .....	" .....	E. J. Palmer .....	30.14	107	31st Oct.
Union .....	" .....	F. W. Bauer .....	50.34	316, R. 1	22nd Jan.
Whistler .....	" .....	W. L. Challoner, C. R. Dingwall, & Van Anda Copper & Gold Co .....	51.63	106, Tex.	6th April.

## COAST—VICTORIA.

Name of Claim.	District.	Name of Grantee.	Acres.	Description.	Date of Grant.
Key City .....	Victoria .....	A. Wasson and E. H. McKee .....	49	37g	10th Oct.
Leona .....	" .....	Henrietta McKay .....	51.65	38g	7th Mar.
Richard III .....	" .....	Lenora Richards .....	51.65	39g	17th Dec.

## GOLD COMMISSIONERS AND MINING RECORDERS.

Mining Districts and Divisions.	Location of Office.	Gold Commissioner.	Mining Recorder.	Sub-Recorder.
Cassiar District.....	Telegraph Creek..	James Porter.....		
Stikine River.....	"		James Porter.....	
Liard ".....	"		"	
Sub-office.....	McDame Creek..			
Teslin Lake.....	Telegraph Creek..		"	
Atlin District.....	Atlin.....	J. D. Graham.....		
Atlin Lake.....	"		E. J. Thain.....	
Bennett Lake.....	Bennett.....		T. DesBrisay.....	
Chilkat.....	Wells.....		W. J. Rant.....	
Skeena District.....	Victoria.....	W. S. Gore.....		
Skeena River.....	Fort Simpson.....		John Flewin.....	
Sub-office.....	Hazelton.....			R. S. Sargent.
".....	Kitsilas.....			T. A. Singlehurst.
".....	Kitimat.....			Geo. Rayley.
Bella Coola.....	Victoria.....		W. S. Gore.....	
Ormineca District.....	Manson Creek.....	F. W. Valteau.....		
Ormineca.....	"		F. W. Valteau.....	
Sub-office.....	Fort St. James.....			A. McNab.
".....	Fort St. John.....			F. J. H. Bedson.
".....	Tom Creek.....			Jos. Lyon.
Cariboo District.....	Barkerville.....	John Bowron.....		
Cariboo.....	"		John McKen.....	
Quesnel.....	Quesnel Forks.....		J. Murphy.....	
Lillooet District.....	Clinton.....	F. Soues.....		
Clinton.....	"		F. Soues.....	
Lillooet.....	Lillooet.....	C. Phair.....	C. Phair.....	
Kamloops District.....	Kamloops.....	G. C. Tunstall.....		
Kamloops.....	"		E. T. W. Pearse.....	
Sub-office.....	Nicola.....			Geo. Murray.
Ashcroft.....	Ashcroft.....		J. W. Burr.....	
Similkameen.....	Princeton.....		H. Hunter.....	
Sub-office.....	Nicola.....			Geo. Murray.
Yale.....	Yale.....		Wm. Dodd.....	
Vernon District.....	Vernon.....	L. Norris.....		
Vernon.....	"		J. C. Tunstall.....	
Boundary District.....	Fairview.....	C. A. R. Lambly.....		
Osyoos.....	"		J. R. Brown.....	
Sub-office.....	Olalla.....			D. Black.
Kettle River.....	Greenwood.....	*W. G. McMynn.....	W. G. McMynn.....	
Sub-office.....	Westbridge.....			J. S. Harrison.
".....	Vernon.....			J. C. Tunstall.
".....	Camp McKinney.....			H. Nicholson.
Grand Forks.....	Grand Forks.....	*S. R. Almond.....	S. R. Almond.....	
Golden District.....	Golden.....	J. E. Griffith.....		
Golden.....	"		F. C. Lang.....	
Windermere.....	Windermere.....		John Bulman.....	
Fort Steele District.....	Fort Steele.....	J. F. Armstrong.....		
Fort Steele.....	"		L. W. Patmore.....	
Sub-office.....	Tobacco Plains.....			M. Philipps.
".....	Fernie.....			A. McLeod.
".....	Cranbrook.....			F. L. Morris.
".....	Kimberley.....			E. Elwell.
".....	Moyie.....			F. D. Hope.

Mining Districts and Divisions.	Location of Office.	Gold Commissioner.	Mining Recorder.	Sub-Recorder.
Revelstoke District.....	Revelstoke.....	F. G. Fauquier.....	.....	.....
Revelstoke.....	".....	.....	Fred. Fraser.....	.....
Illecillewaet.....	Illecillewaet.....	.....	Alexander Stewart.....	.....
Lardeau.....	Comaplix.....	.....	Geo. Sumner.....	.....
Trout Lake.....	Trout Lake.....	.....	F. C. Campbell.....	.....
Slocan District.....	.....	.....	.....	.....
Slocan.....	New Denver.....	*Angus McInnes.....	Angus McInnes.....	.....
Slocan City.....	Slocan City.....	*H. P. Christie.....	H. P. Christie.....	.....
Nelson District.....	Nelson.....	John A. Turner.....	.....	.....
Nelson.....	".....	.....	Harry Wright.....	.....
Sub-office.....	Ymir.....	.....	.....	A. B. Buckworth.
Goat River.....	Kuskonook.....	.....	E. N. Murphy.....	.....
Ainsworth.....	Kaslo.....	.....	E. E. Chipman.....	.....
Sub-office.....	Howser.....	.....	.....	Wm. Simpson.
".....	Trout Lake.....	.....	.....	Alex. McRae.
Arrow Lake.....	Nakusp.....	.....	Walter Scott.....	.....
Sub-office.....	Vernon.....	.....	.....	J. C. Tunstall.
Rosland District.....	Rosland.....	John Kirkup.....	.....	.....
Trail Creek.....	".....	.....	John Kirkup.....	.....
Nanaimo District.....	Nanaimo.....	Marshal Bray.....	.....	.....
Nanaimo.....	".....	.....	Marshal Bray.....	.....
Alberni District.....	Alberni.....	A. L. Smith.....	.....	.....
Alberni.....	".....	.....	A. L. Smith.....	.....
West Coast V. I.....	Clayoquot.....	.....	W. T. Dawley.....	.....
Victoria District.....	Victoria.....	W. S. Gore.....	.....	.....
Victoria.....	".....	.....	W. S. Gore.....	.....
New Westminster.....	New Westminster.....	.....	D. Robson.....	.....
Sub-office.....	Harrison Lake.....	.....	.....	L. A. Agassiz.
".....	Vancouver.....	.....	.....	R. J. Skinner.
".....	Chilliwack.....	.....	.....	J. Pelly.

\* Acting.

---

---

## DECISIONS

### Of the Geographic Board of Canada, relating to Geographic Names in British Columbia.

By Order in Council dated December 18th, 1897, the Governor-General in Council was pleased to create a "Geographic Board," and was further "pleased to order and direct that all questions concerning geographic names in the Dominion which arise in the departments of the public service shall be referred to the Board, and that all departments shall use in their publications the names and orthography adopted by the Board."

At the request of the Dominion Government that the Provincial Government appoint a representative on the "Geographic Board," the Lieutenant-Governor in Council was pleased to appoint Wm. F. Robertson, Provincial Mineralogist, a member of the Board, representing British Columbia. The second Report of the Board, containing a large number of rulings relating to British Columbia names, may be obtained from the Provincial Mineralogist, Victoria.

---

## INDEX.

## A . . .

	PAGE.
<i>Abbott Group</i> .....	850
<i>Aberdeen Group</i> .....	892
<i>Aberdeen Mountain Camp</i> .....	886
<i>Accessibility of Atlin</i> .....	776
<i>Accidents in Mines:</i>	
List of accidents in Metalliferous Mines during 1900 .....	944
Table of accidents in certain Rossland mines during 1900 .....	946
Inspector's Report on accidents in Vancouver Island Collieries .....	955
Tables of accidents in Vancouver Island Collieries .....	971-972
List of accidents in Vancouver Island collieries .....	973
<i>Acklains, N.-W. M. P.</i> .....	768
<i>Ada B</i> .....	898
<i>Ada Bell Group</i> .....	883
<i>Adair</i> .....	809
<i>Adams</i> .....	768
<i>Aerial tramway (St. Eugene mine)</i> .....	792
<i>Afton</i> .....	890
<i>Agnes Group</i> .....	675
<i>Ah Quay claim (Cariboo Consolidated)</i> .....	731
<i>Ah There</i> .....	875
<b>AINSWORTH MINING DIVISION</b> .....	848, 850
<i>Ainsworth, or Hot Springs, camp</i> .....	852
<i>Ajax</i> .....	872
<i>Ajax (Nettie L.)</i> .....	820
<i>Ajax (Slocan M. D.)</i> .....	829
<i>Alaskan boundary</i> .....	764
<i>Alaskan voyage, The</i> .....	751
<b>ALBERNI DISTRICT</b> .....	917
Alberni Mining Division .....	917, 919
West Coast, V. I., Mining Division .....	921, 923
<b>ALBERNI MINING DIVISION</b> .....	917, 919
<i>Alberta</i> .....	831
<i>Alberta Group</i> .....	928
<i>Alena</i> .....	869
<i>Alexandre</i> .....	846
<i>Alexandria Colliery</i> .....	953, 964, 968
<i>Alhambra</i> .....	908, 914
<i>Alice</i> .....	854
<i>Alliance</i> .....	812
<i>Allover</i> .....	800
<i>Alma</i> .....	813
<i>Alma Fraction</i> .....	873
<i>Alpha Group and claim</i> .....	817
<i>Alps Group</i> .....	806
<i>American</i> .....	825
<i>American Boy</i> .....	828
<i>American Eagle</i> .....	872

	PAGE.
<i>American Flag</i> .....	928
<i>American Wonder Group</i> .....	924
<i>Ample</i> .....	909
<i>Anaconda</i> (Nimrod Syndicate) .....	777
<i>Anaconda Group</i> .....	758, 759, 777
<i>Anchor</i> .....	853
<i>Anderson Group</i> .....	939
Anderson Lake M. & M. Co. ....	909
Anderson's camp .....	920
<i>Anny</i> (Nimrod Syndicate) .....	777
Antler Creek .....	734, 736
<i>Apple Jack</i> (Cassiar Railway Co.) .....	783, 785
<i>Arallu</i> .....	825
Arctic Slope Co., of Victoria, The .....	748
<i>Arlington</i> .....	829
<i>Arlington</i> (Nelson M. D.) .....	847
ARROW LAKE MINING DIVISION .....	856
ASHCROFT MINING DIVISION .....	906
Aspen Grove camp .....	899
ASSAYERS' EXAMINATION—DEPARTMENT OF MINES:	
Report of Secretary of Board of Examiners .....	726
List of Certificated Assayers, January 1st, 1901 .....	727
Assay Office (work of year)—Department of Mines .....	723
<i>Astec No. 1 and No. 2</i> .....	830
Athabasca Gold Mines, Ltd .....	832-837, 844
Extracts from Report of .....	833, 834, 835, 836
Athabasca Mine .....	832-837, 844
<i>Athelstan</i> .....	870
Atlin (town):	
Government Buildings. <i>Illustration</i> .....	Facing p. 724
ATLIN AND BENNETT LAKE MINING DIVISIONS:	
(Report of Provincial Mineralogist) .....	751
Atlin and Willow Creek Mining Co. ....	772
Atlin Consolidated Hydraulic Mining Co. ....	774
Atlin lake .....	753, 754
Atlin Lake Co. ....	756, 774
ATLIN MINING DIVISION:	
Provincial Mineralogist's Report .....	753
Gold Commissioner's Report .....	771
Atlin Placer deposits .....	754, 755
<i>Aurora Group</i> .....	799
<i>Azurite Group</i> .....	898
<b>B.</b>	
<i>Bachelor</i> .....	830
<i>Badshot</i> .....	821
View of. <i>Illustration</i> .....	Facing p. 820
" from mine. " .....	" 820
Baker creek .....	799
<i>Balarat</i> .....	856
Bald mountain .....	803
<i>Bald Mountain Group</i> .....	803
<i>Bald Peak Group</i> and claim .....	762
<i>Banner</i> .....	814
<i>Banner</i> (Grand Forks M. D.) .....	871, 872, 874
<i>Bannockburn Group</i> .....	850
Barclay sound .....	920



	PAGE.
<i>Bare Mountain Group</i> .....	900
<i>Barnato</i> (Kamloops) .....	891
<i>Barnato</i> .....	879
<i>B. C.</i> .....	805
<i>B. C. Agency</i> .....	926
<i>B. C. Development Co.</i> .....	910
<i>B. C. Exploring Syndicate</i> .....	889
<i>B. C. Copper Co.</i> .....	875
<i>B. C. Copper Co.'s Smelter</i> .....	866 to 869, 880
<i>B. C. Mine</i> .....	870, 946
<i>B. C. (Rossland and Spokane) Syndicate</i> .....	872, 873
<i>Bear creek placers</i> .....	766
<i>Bear lake</i> .....	827
<i>Bear river</i> .....	923
<i>Beatrice</i> .....	813
<i>Belle</i> .....	898
<i>Belleview</i> .....	891
<i>Bell-Helen</i> .....	788
<i>Bench claims, Atlin</i> .....	755
<i>Bendigo</i> .....	811
<i>Bend 'Or Mines</i> .....	908, 912, 915
<i>Bengal</i> .....	892
<i>Bennett</i> .....	752, 753
<b>BENNETT LAKE MINING DIVISION:</b>	
Provincial Mineralogist's Report .....	762
Gold Commissioner's Report .....	779
<i>Beresford Group</i> .....	846
<i>Bertha</i> .....	870
<i>Betts</i> .....	870
<i>Big Canyon Group</i> .....	760, 778
<i>Big Chief Group</i> .....	797
<i>Big Dipper Group</i> .....	800
<i>Big Four Group</i> .....	863
<i>Big Horn</i> .....	846
<i>Big Shuswap lake</i> .....	890
<i>Big Sioux</i> .....	899
<i>Big Valley creek</i> .....	737
<i>Billy Nye</i> .....	797
<i>Billy Goat</i> .....	884
<i>Bimetallic</i> .....	805
<i>Birch creek</i> .....	756, 774
<i>Birdseye</i> .....	845
<i>Bishop Group</i> .....	798
<i>Bismarck Group</i> .....	851
<i>Black Bear</i> .....	872
<i>Black Bear Group</i> (Fort Steele) .....	800
<i>Black Bear Group</i> and claim .....	813
<i>Black Bear Group</i> (Alberni M. D.) .....	920
<i>Blackbird</i> .....	909, 914
<i>Blackcock Gold Mines</i> and <i>Blackcock</i> .....	846
<i>Black Diamond</i> .....	814
<i>Black Eagle</i> .....	820
<i>Black Jack</i> .....	770
<i>Black Jack</i> (Lillooet) .....	908
<i>Black Knight Group</i> .....	854
<i>Black Prince</i> (Vernon) .....	886
<i>Black Prince</i> (Windermere M. D.) .....	806
<i>Black Prince</i> (Slocan City M. D.) .....	830

	PAGE.
<i>Black Prince</i> (Goat River M. D.) .....	854
Black sands .....	921, 924, 929
<i>Blacksmith</i> .....	938
Blackwater camp .....	910
<i>Blenheim Group</i> .....	854
<i>Blue Bell</i> .....	870
<i>Bluebird</i> .....	768
<i>Bluebird</i> (Nelson M. D.) .....	846
<i>Blue Fox</i> .....	803
<i>Blue Grouse</i> .....	798
<i>Blue Jay</i> .....	810
Blue Joint creek .....	871
Blue Ridge camp .....	850
<i>Bluestone</i> .....	788
<i>Bonanza</i> .....	825
<i>Bonanza Group</i> .....	789
<i>Bonanza Group</i> (Grand Forks M. D.) .....	871
<i>Bonanza Group</i> and <i>Bonanza No. 3</i> (Trail Creek) .....	863
<i>Bondholder</i> .....	830
<i>Bonner</i> .....	870
<i>Boston</i> .....	802
Boston and B. C. Mining Co .....	900
Bosun Mines, Ltd., and <i>Bosun Group</i> .....	828
Boulder creek (Similkameen) .....	903
Boulder creek (Atlin) .....	757, 774, 781
Boulder creek (Chilkat District) .....	766
Boulder creek (Fort Steele) .....	798
Boulder creek (Omineca) .....	750
Boulder creek (Goat River) .....	854
BOUNDARY CREEK DISTRICT .....	864
Grand Forks Mining Division .....	869
Kettle River .....	875
Osyoos .....	882
Boundary Creek Mining and Milling Co .....	876
<i>Brandon</i> .....	908
<i>Brett Group</i> .....	909, 913
<i>Briar</i> .....	891
Bridge river .....	908, 911
Bridge River Section (Lillooet) .....	911
Bridge River and Lillooet Gold Mining Co. ....	907
Britannia Copper Syndicate .....	930, 940
<i>Britannia Group</i> .....	930 to 933, 940
View of camp at mine. <i>Illustration</i> .....	Facing p. 780
Broomhead Syndicate .....	892
<i>Brow</i> .....	820, 824
<i>British Lion</i> .....	887
<i>Broadview</i> .....	817
Broken Hill Mining Co .....	846
<i>Brooklyn</i> .....	877
<i>Brooklyn</i> (Similkameen) .....	903
Brown's camp .....	870
<i>Brunswick</i> .....	812
<i>Bryan and Free Silver</i> .....	805
<i>Buckhorn</i> .....	876
Bugaboo Creek Section .....	803
<i>Bugaboo Group</i> .....	803
Building materials .....	719
<i>Bull Dog</i> .....	787

	PAGE.
<i>Bullion Group</i> .....	884
Bull river .....	797, 798
Bunker Hill Mining Co. and <i>Bunker Hill</i> .....	846
Burns creek .....	733
<i>Burnt Basin Group</i> .....	872
<i>Butte</i> .....	801

## C.

Cache, The .....	767
Cadwallader creek .....	910, 911, 912, 913
<i>Caledonia Group</i> (Atlin) .....	772, 773
Caledonia Mining Co. ....	749
<i>Calgary</i> .....	767
<i>California</i> (Trail M. D.) .....	861
<i>California</i> (Slocan) .....	827
Cameron lake and Cameron Lake Mining Co. ....	926
<i>Camille</i> .....	769
Camp McKinney .....	879
Camp Pleasant (N.-W. M. P.) .....	765
Canada Mutual Mining and Development Co. ....	813
Canadian creek (Cariboo Deeps, Ltd.) .....	734
Canadian Fire Mountain Mines, Ltd. ....	935, 940
<i>Canadian King</i> .....	847
Canadian Lardo Mining and Development Co. ....	824
<i>Canby Group</i> .....	797
<i>Cannon Ball Group</i> .....	872
Canyon creek placers .....	803
<i>Capsheaf</i> .....	926
<i>Carbot Group</i> .....	800
<i>Carbonate Group</i> (Sheep creek) .....	797
<i>Carbonate Group</i> .....	800
Cariboo Consolidated, Ltd, The .....	730
Cariboo Deeps, Ltd .....	733
CARIBOO DISTRICT .....	730
Cariboo Mining Division .....	730
Quesnel Mining Division .....	737, 743
Cariboo Exploration Co., Ltd .....	733
Cariboo Gold Fields, Ltd., The .....	731
Cariboo-McKinney Mining and Milling Co. ....	879, 946
Cariboo Mining Syndicate .....	743
<i>Carmi</i> .....	878
<i>Carmichael and Pretoria</i> .....	769
Carnes creek .....	809
<i>Carrie Lee Group</i> .....	800
Cascade Gold Mining and Milling Co .....	863
<i>Cascade Group</i> .....	863
Cascade water-power .....	881
Dam. <i>Illustration</i> .....	Facing p. 868
<i>Casino</i> .....	908
Cassiar Central Railway Co .....	783, 784, 785
CASSIAR DISTRICT .....	751
Atlin Mining Division .....	753, 771
Bennett Lake Mining Division .....	762, 779
Teslin, Liard and Stikine Mining Divisions .....	782
Skeena River Mining Division .....	786
CASSIAR DISTRICT, NORTHERN PORTION OF .....	782
<i>Castle Group</i> .....	923

	PAGE.
Cayoosh creek .....	909
Center Star .....	886, 945
Central camp .....	869, 878
Centre Star mine .....	860
Certainty Gold Mining Co. ....	802
Certainly Group .....	802
Challenger .....	802
Champion (New Westminster) .....	937
Champion .....	872
Chapleau .....	830
Chapleau Consolidated Gold Mining Co. ....	830
Charlemont .....	805
Cherry creek (Kamloops) .....	890
Cherry creek .....	800
Chicago .....	871
Chieftain .....	856
Chilkat .....	770
Chilkat district ( <i>Chilkat Mining Division</i> ) .....	762, 780, 781
Chilkat river and inlet .....	763, 764, 765
Chilkoot pass .....	752
Christina Lake section .....	872
Cincinatti Group .....	899
Cinnabar .....	884
Cinnabar claims .....	891
City of London .....	869
City of Paris mine .....	869
Clearwater Placer Mining and Dredging Syndicate, and Clearwater river .....	894, 896
Clover Group and claims .....	938
Clyde .....	830
Coal ( <i>See also Coal Mining</i> ) .....	717, 720
Statistics .....	712
In Kamloops M. D. ....	888, 893
In Nicola valley .....	904
In Lillooet .....	910
Coal Creek Colliery .....	947
Coal hill .....	888
Coal mine Managers' Examination .....	728
List of Certificates Issued .....	729
COAL MINING IN THE PROVINCE .....	947
Report on the Inspection of Crow's Nest Collieries .....	950
Report on the Inspection of Vancouver Island Coal Mines .....	953
COAST AND VANCOUVER ISLAND .....	917
Coast of British Columbia .....	751
Cobeldick Dredge, No. 1 Co. ....	906
Coffee creek .....	737
Coke .....	717
Statistics .....	712
Collingwood .....	799
Colonial Mines Development Co. ....	735
Colorado .....	879
Columbia .....	769
Columbia and Western Railway .....	873, 880
Columbian .....	891
Columbia river .....	808
Colossus Group .....	926
Comox mines .....	967
Comstock .....	825
Concerning Prospects .....	721

	PAGE.
Concentrating mills (Slocan).....	828
<i>Condor</i> .....	827
Consolidated Cariboo Hydraulic Mining Co., Ltd., The.....	738, 744
Copper.....	719, 720
<i>Copper Bell and Blue Bird</i> .....	900
Copper creek (Kamloops).....	891
Copper creek.....	805
<i>Copper Farm</i> .....	903
<i>Copper Glance</i> .....	823
Copper island.....	920
<i>Copper King</i> .....	890
<i>Copper King (Osyoos)</i> .....	884
<i>Copper King and Copper Queen</i> .....	770
<i>Copper King Group</i> .....	898
<i>Copper King Group and claims</i> .....	921
<i>Copper Mountain</i> .....	823
Copper Mountain camp (Similkameen).....	897, 902
Copper ores (Atlin).....	760
<i>Copper Queen (Van Anda)</i> .....	925, 943
Cork mine.....	848, 851
<i>Cornell (Van Anda)</i> .....	925, 943
<i>Corona</i> .....	923
<i>Cosmopolitan</i> .....	908
Cottonwood Alluvial Gold Mining Co.....	737
<i>Countless</i> .....	909, 914, 915
<i>Cracker Jack</i> .....	872
Cranbrook.....	799
Crawford creek.....	853
<i>Cream of the Camp</i> .....	885
Creek claims, Atlin.....	755
<i>Crescent</i> .....	797
Criss creek.....	890
<i>Criterion</i> .....	812
<i>Cromwell</i> .....	822, 823
<i>Cromwell (Golden Ears)</i> .....	937
Crown Grants issued during 1900—List of.....	979
Crown Point camp.....	879
<i>Crown Silver</i> .....	875
CROW'S NEST PASS COLLIERIES.....	717, 947
Official Returns.....	947, 948, 949
Inspector's Report.....	950
<i>Curly</i> .....	797
Currie mines.....	828
<i>Custer</i> .....	768
Cyanide tests ( <i>Engineer Group</i> ).....	761

## D.

<i>Daffodil Group and claim</i> .....	814
<i>Daisy</i> .....	934, 940
<i>Daisy Group, Daisy and Daisy Fraction</i> .....	872
Dalton trail and posts.....	763
<i>Daly</i> .....	872
<i>Danube steamer</i> .....	751
<i>Dead Fall Group</i> .....	801
<i>Deadwood</i> .....	872
Deadwood camp.....	875
<i>Dean</i> .....	800
Dease creek.....	783

	PAGE.
Dease lake .....	782
Decisions of Geographic Board of Canada .....	998
De Lamare Syndicate .....	774
<i>Delphine Group</i> .....	805
DEPARTMENT OF MINES. Work of the year .....	723
Provincial Mineralogist .....	723
Assay Office .....	723
Mineral Museum .....	724
Exhibits made .....	725
Assayers' examination .....	726
Examination of coal mine managers .....	728
Deposits of placer gold, Atlin .....	754, 755
Determinations of minerals, free (Department of Mines) .....	724
Developments, general of the year .....	719
Dewdney Canadian Syndicate .....	923
<i>Dewy</i> .....	898
<i>Diamond C. Group</i> .....	804
<i>Dibble Group</i> .....	798
Diorite creek .....	797
Disappointment inlet .....	924
<i>Discovery</i> .....	790
Discovery Co., The, of Shepherd creek .....	736
<i>Dividend Group</i> .....	885
Dixie creek .....	776
<i>Dixy</i> .....	799
<i>D. L. S.</i> .....	788
<i>Dominion</i> .....	800
Dominion Consolidated Mines .....	882
Dominion Copper Co. ....	877
Dominion creek .....	775
<i>Donald</i> .....	811
<i>Dougherty</i> .....	797
<i>Douglas</i> .....	862
Dredging .....	718
Cariboo District .....	741
Kamloops M. D. ....	888 & 893 to 896
Yale M. D. ....	905
Lillooet .....	910
<i>Dry Hill</i> .....	790
<i>Dubal</i> .....	797
<i>Dublin</i> .....	851
Duck creek .....	854
Duck Creek Mining Co. ....	854
Duluth & Texada Exploration Co. ....	926
<i>Dumas</i> .....	846
Duncan river, little west fork .....	821
<i>Dundee</i> .....	846
Dunsmuir district .....	927
<i>Dupont Group</i> .....	797
Dutch creek .....	806
Dutch Hill Co. ....	907
<i>Dyea</i> .....	752
<i>Dykehead</i> .....	872

## E.

<i>Earthquake</i> .....	871, 873
<i>Echo</i> .....	855
<i>Eclipse Group</i> and claim .....	812, 813

	PAGE.
<i>Edison Group</i> .....	872
<i>Edith</i> .....	854
<i>Edith Group</i> .....	846
<i>Eldorado</i> .....	846
<i>Eldorado (Osyoos M. D.)</i> .....	884
<i>Eldorado Group</i> .....	928
<i>Elise</i> .....	769
<i>Elk river</i> .....	798
<i>Ellsmere</i> .....	824
<i>El Progresso</i> .....	891
<i>Emily Edith Group</i> .....	828
<i>Emma</i> .....	870, 878
<i>Empire</i> .....	798
<i>Empire State</i> .....	768
<i>Engineer Group</i> .....	760, 761, 778
<i>Engineer Mining Co.</i> .....	760
<i>Ennismore</i> .....	872
<i>Enterprise</i> .....	830
<i>Erb Group</i> .....	905
<i>Estella Group</i> .....	797
<i>Ethiopia</i> .....	878
<i>Ettie (Eclipse Group)</i> .....	812
<i>Eureka</i> .....	800
<i>Eureka Group (Ainsworth M. D.)</i> .....	850
<i>Eureka Group</i> .....	856
<i>Eutruria (Fern)</i> .....	843
<i>Eva Group</i> .....	812
<i>Evans claim, Lost creek</i> .....	749
<i>Evening Star (Slocan)</i> .....	830
<i>Evening Star (Grand Forks M. D.)</i> .....	870
<i>Evening Star mine</i> .....	861
<i>Everett</i> .....	812
<b>EXAMINATIONS, Department of Mines:</b>	
Assayers' examination .....	726
Coal mine managers' examination .....	728
<i>Excelsior</i> .....	869
<i>Excelsior (Princess Royal)</i> .....	787
<b>EXHIBITS OF MINERALS, 1900, Department of Mines.</b>	
Paris           Exhibition .....	725
Glasow           " .....	725
Winnipeg        " .....	725
New Westminster " .....	725
Spokane Fair .....	726
<i>Extent of alluvial deposits, Atlin</i> .....	755
<i>Extent of placer claims (B. C. &amp; U. S.)</i> .....	765
<b>F.</b>	
<i>Fairplay</i> .....	899
<i>Fairplay Fraction</i> .....	873
<i>Fairview camp</i> .....	882
<i>Faller Group</i> .....	799
<i>Fall river</i> .....	750
<i>Fern</i> .....	845
<i>Fern Gold Mining and Milling Co.</i> .....	843
<i>Fidelity Group and Mining Co.</i> .....	828
<i>Fifteen-Mile creek</i> .....	803
<i>Findlay river</i> .....	748, 750
<i>Fire Mountain Group</i> .....	935

	PAGE.
"5-Mile" .....	815
5-Mile creek .....	825
<i>Flagstaff Group</i> .....	884
Flat Car creek .....	799
<i>Fletcher Group</i> .....	841
<i>Fletcher's Group</i> (Kettle River M. D.) .....	879
<i>Flora</i> .....	882
<i>Florence</i> .....	871
<i>Florida</i> .....	851
<i>Foghorn</i> .....	846
<i>Forget-me-not</i> .....	920
<i>Forrest Group</i> .....	790
Fort Steele .....	798
<b>FORT STEELE MINING DIVISION:</b>	
Report of Provincial Mineralogist .....	791
"    Gold Commissioner .....	796
<i>Forty Thieves Group</i> .....	908, 911, 913
43rd Mining and Milling Co. of Cariboo, Ltd. ....	745
<i>Four Ace</i> .....	786
Four-Mile creek (Fort Steele) .....	797
Four-Mile creek (Slocan) .....	827
<i>Fourth of July</i> .....	879
Fourth of July creek (Grand Forks M. D.) .....	870
4th July creek (Atlin) .....	776, 777
<i>Francis A</i> .....	799
<i>Frank and Joe</i> .....	886
Franklin camp .....	871, 874
Franklin creek .....	871
Fraser river .....	905, 906
Frederick arm .....	926
<i>Free Coinage</i> .....	823
<i>French and English Group</i> .....	871
French Canadian Syndicate, Ltd .....	851
French creek .....	810
Friday creek camp .....	898, 903
<i>Full Hand</i> .....	854
<b>G.</b>	
Galena Creek Mining Co. ....	824
<i>Galena Farm</i> .....	828
<i>Galena Group</i> .....	923
<i>Gem</i> .....	825
General Developments of the Year .....	719
Geology:	
Silver Cup mine .....	815
<i>Alpha Group</i> .....	817
Lillooet District .....	912
West Coast Vancouver Island .....	918
New Westminster .....	934, 935
Germansen creek .....	748
<i>Gertrude</i> .....	863
<i>Giant</i> .....	899
Giant mine .....	862
Glacier creek (Trout Lake) .....	825
Glacier creek (Atlin) .....	766
<i>Gladstone</i> (Similkameen) .....	898
<i>Gladstone</i> .....	811
Glasgow Exhibition .....	725



	PAGE.
<i>Gleaner Group</i> .....	778
"Gleaner," Str., for Atlin on Taku arm. <i>Illustration</i> .....	Facing p. 732
Glen Iron mines .....	890
<i>Glosscup Group</i> .....	820, 824
<i>Gloucester</i> or <i>Glouster</i> .....	872, 874
Gloucester creek .....	870
Goat creek .....	855
Goat mountain .....	854
Goat river .....	853
GOAT RIVER MINING DIVISION .....	853
<i>Golconda</i> .....	786
Gold ( <i>see also</i> "Gold, Lode," and "Gold, Placer.") .....	717
<i>Gold Basin Group</i> .....	939
<i>Gold Bug</i> (Trout Lake) .....	824
<i>Gold Bug</i> (Lardeau) .....	812
Gold Commissioner—his powers .....	755, 776
Gold Commissioners and Mining Recorders—List of .....	996
Gold creek .....	798
<i>Gold Drop</i> .....	878
Gold Dust melted at Government Assay Offices .....	724
<i>Golden Crown</i> .....	870
<i>Golden Crown Group</i> .....	787
<i>Golden Drop</i> .....	870
<i>Golden Eagle</i> .....	870, 873
<i>Golden Ears Group</i> .....	937
<i>Golden Five</i> .....	798
<i>Golden Fleece</i> .....	797
<i>Golden Link</i> .....	887
Golden Link Mining Co .....	825
GOLDEN MINING DIVISION .....	802
<i>Golden Rule Group</i> .....	885
<i>Golden Rule Group</i> and claims .....	920
<i>Golden Slipper Group</i> .....	920
<i>Golden Sovereign</i> .....	899
<i>Goldfield</i> .....	908
<i>Goldleaf</i> and <i>Goldleaf Fraction</i> .....	909
Gold, Lode .....	718
Gold, Placer ( <i>see also</i> "Placer Mining") .....	717, 719
Statistics .....	709
<i>Gold Queen Group</i> .....	905
Gold Run creek .....	772
<i>Goldsmith Group</i> and Goldsmith Copper Co .....	933, 934, 940
Gooderham-Blackstock Syndicate .....	882
<i>Good Hope Group</i> .....	923
<i>Good Luck</i> .....	803
Government Building, Atlin. <i>Illustration</i> .....	Facing p. 724
<i>Grace Dore</i> .....	798
Graham creek .....	771, 776
Granby Smelter .....	864, 865
General view of. <i>Illustration</i> .....	Facing p. 852
Interior of Power-house. " .....	" 860
Exterior " " .....	" 860
Dam and head of Flume. " .....	" 868
GRAND FORKS MINING DIVISION .....	869
<i>Grand View</i> .....	884
<i>Granite Butte</i> .....	872
Granite Gold Mines, Ltd .....	842, 845
Granite mine .....	842, 845

	PAGE.
Granite creek and Granite Creek Mining Co .....	900
<i>Granville Group</i> .....	872
Gravel and gold deposits, Atlin .....	754, 755
<i>Great Britain Group</i> .....	848
<i>Great Hopes</i> .....	875
Great Northern hill or mountain .....	817, 825
Great Western Mines Co .....	820
<i>Greenhorn Fraction</i> .....	800
<i>Green Mountain</i> (Rossland) .....	862, 946
<i>Green Mountain Group</i> .....	884
Greenwood, general view. <i>Illustration</i> .....	Facing p. 876
Greenwood camp .....	876
<i>Grey Eagle</i> .....	876, 877
<i>Greyhound</i> .....	876
Gribbel island .....	787
Gribbel Island Copper Co .....	787
<i>Grizzly Group</i> .....	790
Ground Hog basin .....	810
Grouse creek .....	737
Grundy basin .....	797

## H.

<i>Hackla</i> .....	879
Haines Mission .....	763
<i>Hairspring</i> .....	882
Haley creek .....	825
Hall Mining and Smelting Co .....	831, 832, 844
<i>Hampton</i> .....	830
<i>Happy Frank Group</i> .....	798
<i>Happy Jack and Little Lottie</i> .....	900
<i>Happy John Group</i> .....	920
<i>Hard Cash</i> .....	870
Hardscrabble creek .....	737
Hardy mountain camp .....	872
Harewood mine .....	960
<i>Hartford</i> .....	870
<i>Hartney Group</i> .....	827
Harrison lake .....	935
View of. <i>Illustration</i> .....	Facing p. 940
<i>Harvey</i> .....	813
Haskins creek .....	825
Hastings and B. C. Exploration Syndicate .....	847
"Hayes" mine .....	917, 919
<i>Helena No. 2.</i> .....	872
<i>Helen H. Gardner</i> .....	903
Helga Gold and Copper Mining Co .....	923
Hell Roaring creek .....	799
<i>Henry Clay</i> .....	847
Hesquot .....	924
<i>Hetty Green Group</i> .....	924
<i>Hewett</i> .....	827
<i>Hiawatha</i> .....	924
<i>Hickey Group</i> .....	786
<i>Hidden Mystery Group</i> .....	898
Highlander mine .....	852
Highland Group .....	848, 852
Highland (Kootenay, B. C.) Mining Co. ....	848
Hillside Mines, Ltd. ....	851

	PAGE.
<i>Hiram</i> .....	908, 914
<i>Home Rule</i> .....	898
<i>Homestake</i> .....	870
<i>Homestake Group</i> .....	788
<i>Homestake Group</i> (Goat River M. D.) .....	855
<i>Homestake mine</i> .....	861
<i>Homestroke</i> .....	871
<i>Hoodo</i> .....	831
<i>Hope creek</i> .....	825
<i>Horne lake</i> .....	926
<i>Horrible</i> .....	770
<i>Horsefly Gold Mining Co., Ltd</i> .....	741
<i>Horsefly Hydraulic Mining Co., Ltd.</i> .....	738, 743
<i>Horse Thief creek camp</i> .....	805
<i>Hot Springs, or Ainsworth camp</i> .....	852
<i>Howard Fraction</i> .....	831
<i>Humber</i> .....	890
<i>Humbolt</i> .....	903
<i>Humming Bird</i> .....	870, 873
<i>Hunter and Trapper</i> .....	813
<i>Hunter's Friend</i> .....	934, 940
<i>Hydraulic Mining</i> .....	719
<i>Atlin</i> .....	755, 771
<i>Cariboo, Quesnel, Omineca and Northern Cassiar</i> ( <i>See under</i> ).	
<i>Yale M. D.</i> .....	905
<i>Lillooet</i> .....	913

## I.

<i>Ida D.</i> .....	847
<i>Idaho</i> (Kettle River M. D.) .....	879
<i>Idaho</i> .....	828
<i>Idaho &amp; Alamo concentrator</i> .....	828
<i>Idaho Basin</i> .....	946
<i>Ida May Group</i> .....	909, 911, 914
<i>Idria</i> .....	891
ILLECILLEWAET MINING DIVISION .....	811
<i>Imperial Development Syndicate</i> .....	812
<i>Imperial Group</i> .....	758, 777
<i>Imperial Group</i> (Trout lake) .....	812
<i>Imperial Mines Co., Ltd.</i> .....	855
<i>Incorporated Exploration Co., Ltd.</i> .....	733
<i>Index</i> .....	814
<i>Indian Chief</i> .....	790
<i>Indian Chief Group</i> .....	923
<i>Indication</i> .....	849
<i>Ingersoll</i> .....	898
<i>Investment in mining</i> .....	721, 722
<i>Irene Mg. Co. and Irene Group</i> .....	850
<i>Iris</i> .....	854
<i>Iron</i> .....	719, 721
<i>Iron Cap</i> .....	806
<i>Iron Cap</i> (West Coast) .....	924
<i>Iron Chief</i> .....	870
<i>Iron Dollar</i> .....	812
<i>Iron Hill Group</i> .....	802
<i>Iron Horse</i> .....	830
<i>Iron Mask mine</i> .....	861
<i>Iron Mask Group and claim</i> .....	890

	PAGE.
<i>Iron Mask</i> .....	889
<i>Iron Mask</i> .....	802
Iron mine, Texada island .....	925
Iron ore .....	719, 721, 920
<i>Iron Queen</i> .....	887
<i>Ironsides</i> .....	814
<i>Isaac</i> .....	807
Isaac creek .....	807
Isaac creek camp .....	810
<i>Ivanhoe</i> .....	946
Ivanhoe Mg. Co. mill .....	828
<i>I. X. L.</i> .....	823
<i>I. X. L. (Nettie L. Group)</i> .....	820, 824
<i>I. X. L. (Similkameen)</i> .....	898
<i>I. X. L. mine (Trail)</i> .....	862

## J.

<i>Jack of Spades</i> .....	869
Jamieson creek property .....	894
<i>J. C.</i> .....	825
<i>Jennie</i> .....	898, 903
<i>Jennie D.</i> .....	849
<i>Jewel</i> .....	825
<i>Jewel (Kettle River M. D.)</i> .....	878
<i>Jew Fraction</i> .....	800
<i>J. J. J. mine</i> .....	917, 919
<i>John Bull (Monitor Co.)</i> .....	917, 919
<i>John Bull Group (Boundary)</i> .....	872
<i>John Bull Group</i> .....	800
<i>John Bull Group (Sheep creek)</i> .....	797
<i>John L. Group</i> .....	797
<i>Joker</i> .....	851
<i>Josephine</i> .....	811
Josie mine .....	860
<i>Juanita claim (Col. Mines Dev. Co.)</i> .....	735
<i>Jubilee</i> .....	823
<i>Jubilee</i> .....	898
<i>Jubilee Group</i> .....	938
Jubilee Partnership Co. ....	927
<i>Jumbo (Illecillewaet)</i> .....	811
<i>Jumbo (Lardeau)</i> .....	814
"Jumping" claims .....	771, 776
<i>Juno</i> .....	845

## K.

<i>Kalapa</i> .....	924
KAMLOOPS MINING DIVISION .....	888
<i>Kangaroo</i> .....	813
Kaslo creek, South fork of .....	851
Kelly creek .....	903
Kennedy mountain .....	898, 903
<i>Kenzas</i> .....	899
Keremeos, Upper .....	885
Keremeos valley .....	884
Kettle river .....	879
North fork .....	873
West fork .....	878

	PAGE.
East fork .....	871
Main river. <i>Illustration</i> .....	Facing p. 884
Valley of upper river. " .....	" 884
KETTLE RIVER MINING DIVISION .....	875
Keystone (Osoyoos M. D.) .....	883
Keystone .....	847
Keystone mountain camp .....	809
Kilo Group .....	830
Kimberly Group and Kimberly Copper Mines Co. ....	889
Kimberly .....	883
King Group .....	905
King Solomon .....	903
Kingsley Group .....	928
Kitamaat arm .....	787
Kitsap .....	814
Kitsilas camp (Skeena) .....	786
Klehini river .....	763, 764, 765
Valley of. <i>Illustration</i> .....	Facing p. 740
Klondyke .....	802
Kluckwan .....	765
Indian graves. <i>Illustration</i> .....	Facing p. 764
Knight's camp .....	871
Knob Hill (Osoyoos M. D.) .....	884
Knob Hill .....	876, 877, 946
Kokshittle river .....	924
Kootenay Air Supply Co. ....	852
Kootenay Chief Group and claim .....	814
KOOTENAY DISTRICTS :	
<i>See</i> North-East (Golden District) .....	802
North-West (Revelstoke District) .....	808
South-East (Fort Steele District) .....	791
Kootenay (Perry Creek) Gold Mines, Ltd .....	799
Kootenay Group .....	820
Kootenay mine .....	859
Kootenay Mining Co. ....	859
Kootenay Queen Group .....	805
Kyuquot .....	924
<b>L.</b>	
Labour.—Table of distribution of men in metalliferous mines .....	716
Lady Frances Group .....	905
Laforme creek .....	809
La France creek .....	
Lake Shore workings (St. Eugene) .....	793
Lake View .....	884
Lardeau creek, South fork .....	823
North fork .....	824
Lardeau-Duncan River camp .....	850
Lardeau King, Queen, and Prince .....	814
Lardeau Mines, Ltd .....	814
LARDEAU MINING DIVISION .....	811
La Reine .....	898
La Salle .....	855
Last Chance (Chilkat) .....	770
Last Chance (Eva Group) .....	812
Last Chance (Slocan) .....	828
Laura McRae .....	872
Laurier .....	786

	PAGE.
<i>Laurier and Silver Bell Group</i> .....	811
Laverdiere Bros.' claims .....	778
Lavina-Butte Mining Co. ....	850
<i>Lavina Group</i> .....	850
<i>L. D</i> .....	811
Lead .....	718
<i>Leadville</i> .....	853
<i>Legal</i> .....	831
Lemon Creek .....	830
Lenora mine .....	928, 944
Ore sheds and dump. <i>Illustration</i> .....	Facing p. 924
Steam tramway to E. & N. Ry.      " .....	924
<i>Le Roi</i> (Chilkat M. D.) .....	770
Le Roi mine .....	858, 944
<i>Le Roi No. 2</i> (Osoyoos) .....	885
Le Roi No. 2, Ltd .....	860
Lewis creek .....	797
<i>Lexington</i> (Golden M. D.) .....	802
<i>Lexington</i> (Lardeau M. D.) .....	814
Lexington creek .....	814
<i>Lexington Group</i> .....	869
LIARD MINING DIVISION .....	782
Lightning creek .....	731
Lightning Creek Gold Gravels and Drainage Co., Ltd. ....	736
LILLOOET DISTRICT .....	907
Lillooet, Fraser River, and Cariboo Gold Fields Co .....	811, 817
<i>Lilly B</i> .....	830
<i>Lilly May</i> .....	799
Limekiln, Marble bay .....	926
<i>Lion's Head Group</i> .....	898
<i>Little Babe</i> .....	872
<i>Little Bertha</i> .....	873
Little Dog creek .....	910
<i>Little Joe</i> .....	911, 914
<i>Little John</i> .....	879
<i>Lizard</i> .....	854
<i>Lizzie L. and Lizzie L. Fraction</i> .....	872
Lode Gold ( <i>see</i> "Gold, Lode").	
Lode mining .....	716
London and B. C. Gold Fields .....	853
London Consolidated Gold Fields Exploration and Mining Co. ....	849
<i>Lone Jack Group</i> and claim .....	939
<i>Lone Star</i> .....	814
Long Lake camp .....	878
<i>Long Shot</i> .....	885
<i>Lord Roberts</i> .....	929
<i>Lorna Doone</i> .....	846
Lorne creek .....	790
<i>Lorne Group</i> .....	908, 911, 913
<i>Lorraine</i> .....	903
Lost creek .....	749
<i>Lost Horse</i> .....	898
<i>Lost Mountain Group</i> .....	850
<i>Lost Tunnel</i> .....	823
Lowhee Creek claim (Cariboo Consolidated) .....	730
<i>Lucky Jim</i> .....	826
Luke creek .....	800
<i>Lula Group</i> .....	939

	PAGE.
Lyle creek .....	851
Lynn canal .....	763
Lynn Group .....	940

M.

<i>Macdonald Group</i> .....	806
<i>Mable and Virginia Group</i> .....	825
<i>Mafeking</i> .....	883
<i>Magnetic</i> .....	898, 903
<i>Mahon</i> .....	830
<i>Maid of Erin</i> .....	886
<i>Maid of Vernon</i> .....	886
<i>Mammette lake</i> .....	892
<i>Mammoth Group</i> .....	810
<i>Manson creek</i> .....	748
<i>Maple Leaf (Osyoos M. D.)</i> .....	885
<i>Maple Leaf</i> .....	870
<i>Maratt Group</i> .....	855
<i>Marble Bay</i> .....	926, 943, 946
<i>Marble Bay lime-kiln</i> .....	926
<i>Marguerite</i> .....	768
<i>Marguerite</i> .....	876
<i>Marion</i> .....	827
<i>Mark creek</i> .....	800
<i>Martel</i> .....	891
<i>Martha May</i> .....	872
<i>Mascotte and Mascotte Fraction</i> .....	812
<i>Matthew creek</i> .....	799
<i>Maud S</i> .....	846
<i>Maud S. Fraction</i> .....	908
<i>May and Jennie Group</i> .....	845
<i>May B</i> .....	820
<i>Mayflower</i> .....	799
<i>Mayflower (Woodberry mines)</i> .....	852
<i>Mayflower (Tom creek)</i> .....	750
<i>McBean Group</i> .....	798
<i>McCallum</i> .....	809
<i>McCulloch creek</i> .....	810
<i>McDame (Cassiar Railway Co.)</i> .....	783, 784
<i>McDame creek</i> .....	783
Valley of. <i>Illustration</i> .....	Facing p. 780
<i>McGillivray creek</i> .....	909, 913
<i>McKee creek</i> .....	757, 775
Placer mining on. <i>Illustration</i> .....	Facing p. 740
<i>McKinley</i> .....	872, 874
<i>McKinley (Hickey Group)</i> .....	786
<i>McKinnon Mine, Lost creek</i> .....	749
<i>McLean creek</i> .....	803
<i>Mersey</i> .....	890
<i>Metalliferous Mines, Inspection of</i> .....	942
Inspectors' Reports .....	942 to 944
<i>Metalliferous Mining:</i>	
In Cariboo District .....	742
In Atlin M. D. ....	757, 776
In Bennett M. D. ....	766, 781
In Cassiar District .....	783
In Lillooet District .....	907
<i>Michel Colliery</i> .....	949

	PAGE.
<i>Michigan</i> .....	846
Millbank sound.....	786
Mill (St. Eugene Mine).....	793
Mineral claims. <i>See</i> Metalliferous Mining.	
Mineral claims, Atlin.....	757
<i>Mineral King</i> .....	805
Mineral mountain.....	769
View of. <i>Illustration</i> .....	Facing p. 764
MINERAL PRODUCTION OF BRITISH COLUMBIA.....	707
Method of computing production.....	707
<i>Table I.</i> —Total production for all years up to and including 1900.....	707
<i>Table II.</i> —Production for each year from 1890 to 1900 (inclusive).....	707
<i>Table III.</i> —Amount and value of mineral products for 1898, 1899 and 1900.....	708
<i>Table IV.</i> —Production of mineral by Districts and Divisions.....	708
<i>Table V.</i> —Yield of placer gold per year to date.....	709
<i>Table VI.</i> —Production of lode mines.....	709
<i>Table VII.</i> —Production in detail of the metalliferous mines for 1897, 1898, 1899 and 1900.....	710, 711
<i>Table VIII.</i> —Coal and coke production per year to date.....	712
Tables (graphic) showing comparative mineral production for 1899 and 1900 of B. C. and all other Provinces.....	713, 714
Table (graphic) showing mineral production from 1852 to 1900.....	Facing p. 716
Mineral springs, Harrison lake.....	935
Miner Graves Syndicate.....	876
Mines Exploration, Ltd.....	913
Mines, shipping. Table showing distribution of.....	716
Mining as an investment.....	721, 722
<i>Minnehaha Group</i> .....	880
<i>Minnieball Fraction</i> .....	872
Miocene Gravel Mining Co., Ltd.....	739, 743
Mira Monte Co.....	899
Modus Vivendi (Alaskan Boundary).....	764
<i>Mogul</i> .....	879
Mohawk creek.....	813
<i>Mohican</i> .....	924
Molly Gibson Mining Co.....	843, 845
<i>Monarch</i> .....	803
<i>Monashee Group</i> (Vernon).....	886
<i>Monashee</i> .....	857
<i>Money Spinner</i> .....	935, 940
Mill. <i>Illustration</i> .....	Facing p. 940
<i>Monitor</i> (Trout lake).....	825
<i>Monitor</i> (Slocan).....	827
Monitor mine and Monitor Copper Mining Co.....	917, 919
<i>Montana</i> (Fort Steele).....	797
<i>Montana</i> (Kettle River).....	879
<i>Montana</i> .....	805
Montana Gold Mining Co.....	846
<i>Monte Carlo</i> .....	872
<i>Monte Christo</i> .....	872
<i>Montezuma</i> (Vernon).....	886
<i>Montezuma</i> .....	787
<i>Montreal</i> .....	872
Montreal & Boston Copper Co., Ltd.....	875
<i>Montrose and Dandy Group</i> .....	905
Moose creek.....	776
<i>Morgan Group</i> .....	857
<i>Morning Glory</i> .....	805



	PAGE.
<i>Morning Star</i> .....	823
<i>Morrison (Morrison Mines, Ltd.)</i> .....	876
<i>Mosquito creek</i> .....	737
<i>Mother Lode Group</i> .....	872, 875
<i>Mountain Chief</i> .....	887
<i>Mountain Con</i> .....	827
<i>Mountain Goat</i> .....	805
<i>Mountain Lion</i> .....	872
<i>Mountain View</i> .....	898
<i>Mount Baker district</i> .....	939, 941
<i>Mount Selwyn</i> .....	750
<i>Mount Sicker</i> .....	928
<i>Mount Skirt</i> .....	928
<i>Mount Zion Group</i> .....	885
<i>Moyie river and lake</i> .....	798, 799
<i>Moyie workings (St. Eugene)</i> .....	793
<i>Mulligan Group</i> .....	855
<i>Munroe mountain</i> .....	758, 759, 777
<i>Munroe Mountain claims</i> .....	758
<i>Museum, Mineral—Department of Mines</i> .....	724
<i>Mystery Group</i> .....	872

## N.

<i>Nahmint Mining Co.</i> .....	917, 919
NANAIMO DISTRICT.....	925
<i>Nanaimo Mining Division</i> .....	925
NANAIMO MINING DIVISION.....	925
<i>Neepawa</i> .....	830
<i>Nettie</i> .....	909
<i>Nelson and Slocan Prospecting and Mining Co.</i> .....	848, 852
NELSON MINING DIVISION:	
<i>Report of Provincial Mineralogist</i> .....	831
<i>Report of Gold Commissioner</i> .....	844
NELSON DISTRICT.....	831
<i>Nelson Mining Division</i> .....	831, 844
<i>Ainsworth</i> .....	848, 850
<i>Goat River</i> .....	853
<i>Arrow Lake</i> .....	856
<i>Nero</i> .....	768
<i>Nettie L.</i> .....	820, 824
<i>Newark</i> .....	891
<i>New St. Elmo</i> .....	861
<i>New Vancouver Coal Mining and Land Co.</i> .....	953
<i>Nanaimo Colliery</i> .....	956
<i>New Westminster Exhibition</i> .....	726
NEW WESTMINSTER MINING DIVISION.....	930, 934, 939
<i>New Whatcom Mining Co.</i> .....	787
<i>New York</i> .....	769
<i>New York Group</i> .....	923
<i>New York ledge</i> .....	768
<i>Nickel (Atlin)</i> .....	760
<i>Nickel Plate Group (Osoyoos)</i> .....	883
<i>Nickel Plate mine</i> .....	859
<i>Nicola valley and district</i> .....	892, 904
<i>Nimrod Syndicate</i> .....	758, 759, 775, 777
<i>Nina</i> .....	769
<i>9-Mile creek (Similkameen)</i> .....	901
<i>No. 1 Mine</i> .....	860

	PAGE.
No. 2 creek.....	807
No. 3 creek.....	807
No. 7 and No. 7 Mining Co.....	878
<i>Noble Three</i> .....	809
<i>Noonday</i> .....	889
NORTH-EAST KOOTENAY (GOLDEN) DISTRICT.....	802
Golden Mining Division.....	802
Windermere.....	804
<i>Northern Belle</i> .....	862
North Star Mine.....	794, 800, 946
<i>North Star</i> .....	882
North Thompson river.....	893
NORTH-WEST KOOTENAY (REVELSTOKE) DISTRICT.....	808
Revelstoke Mining Division.....	808
Illecillewaet.....	811
Lardeau.....	811
Trout Lake.....	815, 822
Nugget Gulch (Cariboo Deeps, Ltd.).....	734
Number One, etc., <i>See</i> No. 1, etc.	

## O.

Observatory inlet.....	789
O'Donnell creek.....	776
Office Statistics. 742, 744, 750, 778, 782, 790, 801, 803, 807, 810, 814, 826, 829, 831, 847, 849, 853, 856, 857, 863, 874, 881, 885, 887, 896, 901, 905, 906, 916, 921, 924, 927, 930, 941	830
<i>Ohio</i> .....	830
<i>O. K</i> .....	879
<i>O. K</i> .....	937
<i>Okanagan</i> .....	879
<i>Old Abe Group</i> .....	798
Old Brown Company's Mine, The.....	749
<i>Old Ironsides</i> .....	876, 877
<i>Old Tom Moore</i> .....	827
<i>Olympia</i> .....	898, 903
OMINECA DISTRICT.....	745
Omineca Mining Division.....	745
Onondago Mines.....	846
Ontario and Brunswick.....	898
Onward Co., of Keithley creek.....	744
Ophir Bed-rock Flume Co.....	810
<i>Opulence Group</i> .....	884
<i>Oriole</i> .....	898
<i>Ormonde Group</i> .....	786
<i>Oro Bastavlo</i> .....	882
<i>Oro Denero</i> .....	870, 878
OSOYOOS MINING DIVISION.....	882
<i>Ottawa</i> .....	830
Ottawa Hydraulic Mining Co.....	905
Otter creek.....	775
<i>Our Hope and Our Hope Fraction</i> .....	863
<i>Owen Sound Boy Fraction</i> .....	800
Owosso Gold and Copper Co.....	790
<i>Oyster</i> .....	812

## P.

<i>Pachena</i> .....	928
Pacific North-West Corporation.....	905
<i>Paladora Group</i> .....	856

	PAGE.
Palmer's Bar creek.....	799
Paradise Group.....	804
Paragon.....	787
Paris Exhibition, 1900.....	725
Pathfinder.....	870, 873, 874
Payne mine.....	828
Payne Mining Co.....	828
Peace river.....	750
Pearl Group.....	900
Pearson claims.....	885
Pedro.....	825
Pendugwig Hydraulic Co.....	757, 774, 775
Penticton.....	884
Peoich.....	887
Perkins camp.....	879
Perry creek.....	799
Peter.....	791
Peters creek.....	734
Pete Toy's bar.....	748
Peysaton.....	898
Pheasant (Snowshoe).....	873
Philadelphia.....	801
Philipps arm.....	926
Phoenix Group.....	806
Pine creek.....	756, 772, 776
Pinto.....	827
Pioneer.....	909
Pitt lake.....	937, 938
View of. <i>Illustration</i> .....	Facing p. 948
Placer claims, extent.....	765
Placer Gold ( <i>See</i> Gold—Placer).	
Placer deposits, Atlin.....	754, 755
Placer Mining:	
Atlin Mining Division.....	771, 754
Bennett.....	762, 779
Chilkat.....	765
Revelstoke.....	810
Kamloops.....	893
Similkameen.....	897, 900
Yale.....	905
Ashcroft.....	906
Lillooet District.....	907
Wreck Bay.....	921, 924
Placer mining, McKee creek, Atlin. <i>Illustration</i> .....	Facing p. 740
Porcupine creek.....	756
Placer Mining Act in operation.....	755
Plans of lease claims required (Atlin).....	776
Platinum.....	719
Kamloops, M. D.....	888, 894
Podunk.....	898
Pollard.....	872, 874
Pollock Group.....	898
Pontiac and Tecumseh.....	848, 852
Pool creek.....	813
Poorman mine.....	842, 845
Poplar creek.....	825
Porcupine.....	765
Porcupine.....	787

	PAGE.
Porcupine Commission .....	780
List of claims staked under U. S. Laws .....	780
Commissioner's Camp. <i>Illustration</i> .....	Facing p. 748
Commission sitting.                   " .....	" 748
Porcupine creek .....	765
Placer mining on. <i>Illustration</i> .....	Facing p. 756
Porcupine District .....	762
<i>Porphyry Group</i> .....	802
Port Essington .....	788
Porteous camp .....	886
<i>Portland Group</i> .....	899
Portland inlet .....	790
<i>Porto Rico</i> .....	847
Port Simpson :	
Town from dock. <i>Illustration</i> .....	Facing p. 788
Totem poles, Indian town.   " .....	" 788
Totem pole, Port Simpson.   " .....	" 788
Premier Co., The .....	734
<i>Pretoria and Carmichael</i> .....	769
<i>Princess Royal, etc.</i> .....	787
Princess Royal island .....	787
<i>Prince Group</i> .....	923
Prince Mining and Development Co .....	809
<i>Prince of Wales</i> .....	886
<i>Princess Group</i> .....	924
<i>Princess Mary</i> .....	897, 903
<i>Princeton</i> .....	898, 903
Progress of Mining .....	715
Prospects, concerning .....	721
Protection Island mine .....	959, 960
<i>Providence and Silver Bell</i> .....	936, 939
Providence Mining and Development Co .....	936
Provincial Mineralogist (work of the year) .....	723
<i>Ptarmigan Group</i> .....	786
Puget Sound Iron Co. ....	925
Pyramid harbour .....	764
<i>Python Group</i> .....	889
Q.	
<i>Quantrell Group</i> .....	800
Quartz claims, Atlin .....	757
Quartz creek .....	779, 781
Quartz creek camp .....	802
<i>Quatsino</i> .....	924
<i>Queen Anne</i> .....	854
<i>Queen Bee</i> .....	929
<i>Queen Bess</i> .....	828
Queen Charlotte Islands .....	786, 788
<i>Queen Group</i> .....	847
QUESNEL MINING DIVISION .....	737, 743
List of producing companies .....	743
Quicksilver .....	891
<i>Quien Sabe</i> .....	797
R.	
<i>Race Horse Group</i> of leases .....	773
Railways .....	791, 808, 880
<i>Rainbow</i> .....	830

	PAGE.
Rainy hollow, Chilkat	767, 781
View of. <i>Illustration</i>	FRONTISPIECE.
<i>Ralph Group</i>	928
<i>Randolf</i>	846
<i>Rathmullen Group</i>	870
<i>Raven</i>	820
<i>R. Bell</i>	870
R. Dunsmuir & Sons (Wellington Colliery)	953
<i>Reco</i>	827
<i>Red Bluff</i>	788
<i>Red Buck</i>	898, 903
<i>Red Eagle</i>	898, 903
<i>Red Eagle</i>	898
<i>Red Fox</i> (Golden M. D.)	803
<i>Red Fox</i> (Slocan M. D.)	829
<i>Red Gulch</i>	788
Red Gulch creek	788
<i>Red Jacket</i>	759
<i>Red Line Group</i>	806
<i>Referendum</i>	845
<i>Remington</i>	870
<i>Rene Laudi Group</i>	851
<i>Republic</i>	830
<i>Revelstoke</i>	810
REVELSTOKE MINING DIVISION	808
Richieu Mining Co. and <i>Richieu Group</i>	849
Riordan mountain	883
<i>Riverside</i> (Hardy mountain).	872
<i>Riverside</i>	879
<i>Roadside</i>	884
Roads and trails	798, 802, 804, 806, 807, 808, 815, 821, 827, 871, 893
<i>Rob Roy</i>	824
Roche river or Roach river	898, 903
Rock creek	798
<i>Rocket</i>	937
Rocky Point creek	803
<i>Rosebery Group</i>	809
<i>Rose Marie Group</i>	924
Roses Gulch Co	744
Rossland Bonanza Gold Mining and Milling Co.	863
ROSSLAND DISTRICT	858
Trail Creek Mining Division	858
Rossland Great Western Mines, Ltd.	859
<i>Royal</i>	846
<i>Royal Canadian Group</i>	842
<i>Royal Crown</i>	805
<i>Royal Group</i>	814
<i>Ruby</i> (Cassiar Railway Co)	785
Russel creek	854
Ruth mine	828, 946
<b>S.</b>	
<i>Sadie</i>	787
<i>Sailor Group</i>	880
<i>Sally</i>	879
Salmon river	807
Sand Creek	798
San Juan valley	928

	PAGE.
Sarita river.....	920
Savage.....	883
Saw Tooth.....	879
Schenck's claim.....	769
Scotia.....	885
Scottish Canadian Mining and Development Co.....	824
Scow building industry.....	753
Scows leaving Atlin for Dawson. <i>Illustration</i> .....	Facing p. 724
Scows for Dawson at Bennett <i>Illustration</i> .....	Facing p. 732
Scranton.....	848
Seattle.....	871, 873
Seattle camp.....	871
Second Relief.....	847
Selkirk.....	800
Shamrock.....	884
Sharon.....	823
Sheep creek.....	797
Sheep mountain.....	798
Sherwood Group.....	799
Shiloh.....	946
Shoal bay.....	926
Show Down.....	854
Silkman.....	898
Silver.....	718
Silver Bell.....	872
Silver Bell and Providence.....	936, 939
Silver Bell Group.....	804
Silver Crown (Windermere).....	804
Silver Crown (Trout L.).....	825
Silver Crown Consolidated Co.....	846
Silver Cup Mine.....	815, 816, 817, 822
Silver Dollar.....	879
Silver Foot.....	825
Silver Hill Group.....	849
Silver King Group.....	789
Silver King Mine.....	831, 844
Silver mountain.....	827
Silver Queen (Vernon).....	886
Silver Queen.....	825
Silver Shield.....	809
Silver Star Mg. Co. (Cork mine).....	848, 851
Silver Star Mining Co.....	886
Silverton Boy.....	825
SIMILKAMEEN MINING DIVISION.....	897, 901
Six-Mile creek.....	797, 799
16-Mile creek.....	883
Skagway.....	752
Skeena river.....	786
Str. "Caledonia" ascending river. <i>Illustration</i> .....	Facing p. 788
SKEENA RIVER MINING DIVISION.....	786
Skincuttle Entrance.....	788
Skookumchuck creek.....	800
Skytark.....	855
Slate creek.....	900, 903
Slate Creek Mg. Co.....	900
Slates and placer gold deposition.....	766
Slocan Chief.....	831
SLOCAN CITY MINING DIVISION.....	829

	PAGE.
SLOCAN DISTRICT .....	827
Slocan Mining Division .....	827
Slocan City Mining Division .....	829
SLOCAN MINING DIVISION .....	827
<i>Slocan Star</i> .....	828
Slough creek .....	733
Smelting works—Boundary .....	864, 869, 880
Smith creek .....	810
<i>Snowdrop</i> .....	920
<i>Snow King</i> .....	855
<i>Snowshoe</i> .....	870
<i>Snowshoe Group</i> and claim .....	873
<i>Society Girl</i> .....	799
<i>Soldiers Three</i> .....	769
<i>Sonora</i> .....	768
SOUTH-EAST KOOTENAY DISTRICT .....	791
Fort Steele Mining Division .....	791, 796
<i>Southern Girl Group</i> .....	827
<i>Speculator Group</i> .....	829
<i>Spay</i> .....	891
<i>Spitze</i> .....	862
Spokane Fair .....	726
<i>Spokane Group</i> .....	824
Spring creek .....	804
Spruce creek .....	757, 775, 777
St. Anthony Co. of Santa Barbara, Cal. ....	748
<i>St. Elmo</i> .....	825
St. Eugene Consol. Mining Co. ....	791, 799, 946
<i>St. Eugene mine and mill. Illustration</i> .....	Facing p. 796
<i>St. Eugene workings</i> .....	792
<i>St. John</i> .....	938
<i>St. Lawrence</i> .....	797
<i>St. Lewis</i> .....	824
St. Mary's prairie .....	800
St. Mary's river and lake .....	799
<i>St. Patrick Group</i> (Goat River M. D.) .....	854
<i>St. Patrick Group</i> .....	797
<i>St. Paul</i> .....	938
<i>Stag</i> .....	887
Standard basin .....	809
<i>Standard Group</i> .....	809
Standard Pyritic Smelting Co. ....	881
<i>Stanley</i> .....	797
<i>Star Group</i> .....	798
<i>Steele</i> .....	807
<i>Stemwinder</i> .....	877, 882
Stephendike creek .....	773
Stephendike Hydraulic Mining Partnership .....	773
STIKINE MINING DIVISION .....	782
<i>Stirling</i> .....	891
Stirling creek camp .....	898
<i>Strawberry</i> .....	870, 873
Stuart creek .....	737
Students in Government laboratory .....	724
Sullivan mine and group .....	795, 800
Sulphur :	
Pyritic deposit .....	789
Bed on Elk river .....	798
Summit .....	752

	PAGE.
Summit camp.....	870, 878
Summit camp and <i>Summit</i> (Similkameen).....	899
Summit creek.....	735
<i>Summit-Ymir Group</i> and Summit-Ymir Mg. Co. ....	846
<i>Sunday</i> .....	797
<i>Sunlight</i> .....	891
<i>Sunrise</i> .....	802
<i>Sunrise</i> (Similkameen).....	897, 902, 903
<i>Sunrise</i> (Osoyoos M. D.).....	885
Sunrise Hydraulic Co.....	756, 773
<i>Sunset</i> (Similkameen).....	897, 902, 903
<i>Sunset</i> .....	875
<i>Sunset</i> .....	851
<i>Sunset No. 2</i> .....	861
<i>Sunset Group</i> (Trout L.).....	825
<i>Sunset No. 5</i> .....	852
<i>Sunshine</i> ( <i>Silver Cup</i> mine).....	815, 816
Sunshine, Ltd.....	815
<i>Superb Group</i> .....	924
<i>Surprise Group</i> .....	805
Surprise lake.....	756
Sutherland Hydraulic Gold Mining Co., Ltd., The.....	736
<i>Sweet Grass</i> .....	827
Sydney inlet.....	923

## T.

## Tables :

Of Mineral Production. <i>See</i> Mineral Production.	
Of Accidents in Collieries and Mines. <i>See</i> Accidents.	
Table showing description of Shipping Mines.....	716
<i>Tagish</i> .....	768
<i>Tail Holt</i> .....	831
<i>Tamarac</i> (Nelson M. D.).....	846
<i>Tamarac</i> .....	830
Tamarac Mining Co.....	843
<i>Tangier</i> .....	803
Tanglefoot pass.....	798
<i>Tecumseh</i> and <i>Pontiac</i> .....	848, 852
<i>Tecumseh Group</i> .....	806
Telegraph line to Yukon and Manson.....	748
<i>Telkwa</i> .....	790
Telkwa river.....	790
Tellurides.....	761
<i>Tenderfoot</i> (Kamloops).....	891
<i>Tenderfoot</i> .....	825
Tenderfoot creek.....	825
10-Mile creek.....	830
TESLIN MINING DIVISION.....	782
Texada island.....	925
Thibert creek.....	782, 783
Thibert Creek Mining Co.....	782, 783
Flume. <i>Illustration</i> .....	Facing p. 772
Mill. ".....	" 772
Three Jays mine.....	917, 919
<i>Tiger</i> .....	870
<i>Tilbury</i> .....	805
Tilton-Otterson Mine, The.....	749
Tobacco plains.....	798



	PAGE.
Toby creek and Toby creek waggon road .....	804
Tom creek .....	750
<i>Toon Kwa</i> .....	892
Toronto-Lillooet Gold Reefs Co .....	909
Torres straits .....	777
Total mineral output of British Columbia for 1900.....	707, 715
<i>Toulon</i> .....	787
<i>Towser</i> .....	823
Tracy creek .....	797
<i>Trade Dollar</i> .....	827
Transportation facilities.....	786, 808, 850, 853
Treasury Mine Co .....	926
<i>Triangle</i> .....	898, 903
<i>Triune</i> .....	817, 822, 823
<i>Triune Fraction</i> .....	823
<i>Triune No. 2</i> .....	823
Trond Gulch .....	776
<i>Trout</i> .....	846
TROUT LAKE MINING DIVISION:	
Report of Provincial Mineralogist.....	815
Report of Mining Recorder .....	822
Trout river .....	923
<i>Truth Group</i> .....	890
Tulameen summit.....	903
<i>Turris</i> .....	827
Tutshi lake .....	779
12-Mile creek .....	830
20-Mile creek section .....	883
<i>Two Friends</i> .....	829
Tyanchon creek .....	911
<i>Tyee and Tyee Copper Mining Co.</i> .....	929, 944

## U.

Ucluelet Placer Mining Co. ....	922
Uc-stall river. ....	788, 789
<i>Umpire</i> .....	855
<i>Uncle Sam</i> (Monitor Co.) .....	917, 919
<i>Union Bar</i> .....	905
Union Colliery Co .....	953
<i>Union Jack</i> .....	824
<i>Union Jack Group</i> .....	921
United Gold Fields of B. C. ....	845
<i>Uta</i> .....	788

## V.

<i>Valparaiso</i> .....	855
Valparaiso Gold Mines .....	855
Van Anda Copper and Gold Co .....	925, 946
Van Anda Smelter.....	925
<i>V. &amp; M</i> .....	830
<i>Vancouver</i> .....	829
<i>Vancouver</i> (Similkameen) .....	903
<i>Vancouver Group</i> .....	900
VANCOUVER ISLAND AND COAST.....	917
VANCOUVER ISLAND COLLIERIES .....	717, 947
Inspector's Report .....	953
Aggregate summary of Returns from V. I. collieries .....	954

	PAGE.
Men employed in V. I. collieries .....	954
Exports of Coal from V. I. ....	954
Vancouver Mining Co. ....	829
Vancouver-Mount Sicker Syndicate .....	929
<i>Van Winkle</i> claim (Col. Mines Development Co.) .....	735
Veith, Borland & Co.'s properties .....	741
<i>Velvet</i> .....	861
Venus Gold Mining Co. ....	843
Venus mine .....	845
<i>Vermont Boy</i> .....	800
VERNON DISTRICT .....	886
Vernon Mining Division .....	886
<i>Victoria</i> (Osyoos) .....	882
<i>Victoria</i> .....	872, 876, 877
<i>Victoria</i> claim (Col. Mines Development Co.) .....	735
VICTORIA DISTRICT .....	928
Victoria Mining Division .....	928
New Westminster Mining Division .....	930, 934, 939
Victoria gulch .....	798
<i>Viking</i> (Fort Steele M. D.) .....	797
<i>Viking</i> (Slocan City M. D.) .....	830
Vital Creek Mining Syndicate, The .....	748
<i>Volcanic</i> .....	871, 873
<i>Volunteer Group</i> .....	926

## W.

<i>Wagner Group</i> .....	850
<i>Wakefield</i> .....	828
<i>War Eagle</i> (Chilkat M. D.) .....	769
<i>War Eagle</i> .....	878
<i>War Eagle</i> (Fort Steele M. D.) .....	800
<i>War Eagle</i> mine .....	860, 945
Warner-Miller Syndicate .....	830
Wasa creek .....	797
<i>Washington</i> .....	879
<i>Waterfall</i> .....	798
<i>Waterloo</i> (Lillooet) .....	908
<i>Waterloo</i> .....	880
Water supply, Atlin .....	772
<i>Waverly Group</i> .....	854
Waverly Hydraulic Co. ....	737
Wellington camp .....	870
Wellington Colliery and Wellington Colliery Co. ....	953, 961, 962, 965, 966, 969
Wells .....	762, 780
WEST COAST V. I. MINING DIVISION .....	921, 923
West creek .....	738
<i>Wheat Tamar</i> .....	889
<i>White Cat</i> .....	805
<i>White Elephant</i> .....	886
White Fish creek .....	799
White Grouse camp .....	855
<i>White Grouse Group</i> .....	781
White Grouse mountain .....	799
White pass .....	752
White Pass and Yukon Railway .....	752, 776
Whitewater camp .....	851
<i>Whitewater Deep Group</i> .....	851

	PAGE.
Whitewater mine .....	851
<i>Why Not</i> .....	908
<i>Wilcox Group</i> .....	846
Wild Horse creek .....	798
<i>Wild West</i> .....	814
Williams creek .....	731, 737
<i>William Tell</i> .....	855
<i>Willapa</i> .....	922
Willow creek .....	772
Willow Creek Hydraulic Co. ....	756
Willow River Enterprise, The .....	732
WINDERMERE MINING DIVISION .....	804
<i>Winnipeg (Lillooet)</i> .....	908
<i>Winnipeg</i> .....	870
Winnipeg Exhibition .....	725
<i>Winona-Vernon Group</i> .....	783
Wolf creek .....	797
Wolf Creek Mining Co., The. ....	736
<i>Wonderful</i> .....	768
Woodberry creek .....	852
Woodberry Mines, Ltd. ....	848, 852
<i>Woodchuck</i> .....	781
<i>Woodchuck Group</i> .....	908, 911, 913
<i>Workman Group</i> .....	855
Work of the year (Department of Mines) .....	723
<i>World's Fair Group</i> .....	806
Wreck bay .....	921, 924
Shore line, Wreck bay. <i>Illustration</i> .....	Facing p. 916
Flume, Wreck Bay placers. <i>Illustration</i> .....	Facing p. 916
Wright creek .....	757, 775

## Y.

Yahk river .....	798
YALE DISTRICT .....	888
Kamloops Mining Division .....	888
Similkameen " .....	897, 901
Yale " .....	905
Ashcroft " .....	906
YALE MINING DIVISION .....	905
<i>Yankee Girl Group</i> .....	872
<i>Yellow Jacket et al.</i> .....	777
<i>Yellow Jacket (Nelson M. D.)</i> .....	846
Yellowstone Mines, Ltd., and <i>Yellowstone mine</i> .....	843, 847
Ymir Gold Mines, Ltd., and Ymir mine .....	838-842, 844
Ymir mill, interior and exterior views. <i>Illustration</i> .....	Facing p. 844
<i>Ymirman Group</i> .....	883

## Z.

<i>Zulu</i> .....	802
-------------------	-----