ANNUAL REPORT

OF THE

MINISTER OF MINES

FOR THE

YEAR ENDING 31st DECEMBER,

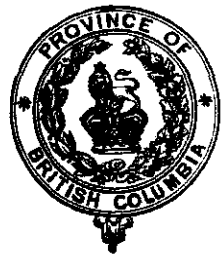
1895,

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 Queen's Most Excellent Majesty.
1896.

PROVINCE OF BRITISH COLUMBIA.

GOLD MINING STATISTICS FOR 1895.

Name of Bar, Gulch, Creek, or River.	No. of Companies working.	No. of Interests.	No. of Companies taking out gold.	No. of Companies prospecting.	Average number of men employed during season.		Rate of Wages.		Nature of Claims.					How Worked.					Description of machinery.		Value of Gold per ounce.	Estimated value of yield for the year.	Total Divisions (Gold).	Total Districts, (Gold).	Remarks.
					Whites.	Chinese or Japanese.	Whites.	Chinese or Japanese.	Bar.	Creek.	Bench.	Hill.	Quartz.	Rocker.	Sluices.	Hydraulic.	Shaft.	Tunnel.	Water wheels.	Steam engines.					
CARIBOO.																									
Barkerville Division:																									
Antler and Cunningham Creeks	9	.....	6	4	9	15	$3 50	$2 50	.....	5	.....	4	.....	.....	5	1	3	.....	.....	.....	$16 00	$ 6,500			
Grouse and Canadian Creeks and vicinity	7	.....	3	4	9	10	"	"	.....	4	.....	2	1	.....	4	2	1	.....	.....	.....	16 00	7,000			
Hardscrabble, Sugar Creek, and vicinity	6	.....	3	3	6	25	"	"	.....	4	.....	2	.....	.....	3	1	2	.....	.....	.....	17 00	7,500			
Lowhee Creek and vicinity	5	.....	5	.....	4	10	"	"	.....	3	.....	2	.....	.....	3	1	1	.....	.....	.....	17 25	3,000			
Mosquito Creek, Red Gulch, and Whipsaw Creek	7	.....	3	4	27	7	"	"	.....	6	.....	1	.....	.....	3	2	2	.....	.....	1	17 25	9,800			
Shepherd's, Pine and Summit Creeks and vicinity	10	.....	5	5	25	.....	"	.....	.....	7	.....	3	.....	.....	10	.....	.....	.....	.....	.....	17 25	5,300			
Stevens Creek, Beggs Gulch and vicinity	4	.....	4	.....	.....	10	"	"	.....	2	.....	2	.....	.....	3	1	.....	.....	.....	.....	16 00	5,000			
Williams Creek and tributaries	24	.....	12	12	98	56	"	"	.....	7	3	11	3	.....	10	11	2	1	.....	.....	15 50 to 16 50	32,400			
Desultory mining	.....	.....	.....	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,500			
																							$81,000		
Lightning Creek Division:																									
Chisholm, Timon, and Poor Man's Creeks	4	.....	2	2	6	5	"	"	.....	3	.....	1	.....	.....	3	.....	.....	1	.....	.....	16 50 to 17 50	1,000			
Last Chance and Davis Creeks	4	.....	3	1	2	10	"	"	.....	3	.....	1	.....	.....	4	.....	.....	.....	.....	.....	"	2,200			
Lightning and Cottonwood Creeks	7	.....	4	3	19	13	"	"	.....	6	.....	2	.....	.....	1	.....	4	1	1	.....	"	6,500			
Nelson and Burns Creeks	5	.....	5	.....	.....	18	"	"	.....	3	.....	2	.....	.....	4	1	.....	.....	.....	.....	"	13,500			
Ruchon and Canyon Creeks	2	.....	2	.....	.....	7	"	"	.....	2	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	"	1,500			
Slough Creek and Devil's Canyon	6	.....	4	2	20	22	"	"	.....	3	.....	3	.....	.....	1	2	2	1	.....	.....	"	10,200			
Van Winkle and Perkins Gulch	2	.....	2	.....	2	5	"	"	.....	2	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	"	3,300			
Desultory mining	.....	.....	.....	.....	.....	15	"	"	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,500			
																							40,700		
Quesnellemouth Division:																									
Cottonwood River	4	.....	3	1	8	12	3 00	2 00	2	.....	1	1	.....	2	1	1	.....	.....	.....	.....	16 00	36,000			
Fraser River	10	.....	7	3	5	55	"	"	5	.....	3	2	.....	5	3	2	.....	.....	.....	.....	"	2,250			
Hixon and Ferry Creeks	3	.....	3	.....	.....	10	.....	"	.....	3	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	15 00	4,000			
Quesnelle River	8	.....	7	1	30	20	"	"	4	.....	2	2	.....	4	2	2	.....	.....	.....	.....	16 00	4,350			
Desultory mining	.....	.....	.....	.....	.....	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,000			
																							18,200		
Keithley Creek Division:																									
Fraser River (Quesnelle to Riskie Creek)	2	18	2	.....	.....	18	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	16 50	5,000			
Do. desultory	.....	.....	.....	.....	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	"	1,000			
Goose Creek	1	6	1	.....	.....	6	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	"	1,500			
Harvey Creek	3	9	3	.....	3	7	.....	.....	.....	3	.....	.....	.....	.....	2	.....	1	.....	1	.....	17 40	3,000			
Horsefly River	3	10	2	1	50	.....	3 00	.....	.....	1	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	16 50	43,000			
Keithley Creek	7	22	5	2	5	20	4 00	2 50	.....	3	.....	4	.....	.....	3	2	1	1	1	.....	17 40	9,700			
Do. desultory	.....	.....	.....	.....	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,000			
Martin Creek	3	9	3	.....	.....	9	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17 00	1,750			
North Fork, Quesnelle River	4	7	2	2	20	10	3 00	1 75	.....	.....	4	.....	.....	.....	3	1	.....	.....	.....	.....	16 50	1,500			
Do. do. desultory	.....	.....	.....	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	"	1,500			
South Fork, do.	2	6	2	.....	35	10	"	"	.....	.....	2	.....	.....	.....	.....	2	.....	.....	.....	.....	"	62,000			Not counting the men employed on the ditch of the Cariboo Co.'s work.
Do. do. desultory	.....	.....	.....	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	"	1,500			Three companies prospecting leased ground.
Quesnelle River, from Forks to Beaver Lake Creek	3	.....	.....	3	30	2	"	"	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
Do. desultory	.....	.....	.....	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	"	3,000			
Spanish Creek	1	4	1	.....	.....	3	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	"	800			
Snowshoe Creek	6	20	6	.....	10	12	4 00	2 50	.....	4	.....	2	.....	.....	2	2	1	1	.....	.....	17 00	6,250			
																							142,500		
																								$282,400	
CASSIAR.																									
Laketon Division:																									
Dease Creek	7	.....	7	.....	3	17	5 00	3 50	.....	2	.....	5	.....	.....	7	.....	.....	3	1	.....	15 50	8,050			
Thibert Creek	6	.....	6	.....	4	12	"	"	.....	2	.....	4	.....	.....	6	.....	.....	3	2	.....	16 00	3,700			
Desultory mining	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	700			
																							12,450		
Liard River Division:																									
Desultory mining	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	475			
																							475		
McDame Creek Division:																									
McDame Creek and tributaries	10	.....	10	.....	5	21	6 00	4 00	.....	7	.....	3	.....	.....	10	.....	.....	2	4	.....	17 50	8,750			
Rosella Creek	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
Desultory mining	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	900			
																							9,650		
																								22,575	
KOOTENAY, EAST	222	334	10	222	155	28	3 50	2 00	.....	.....	6	2	.....	163	7	.....	1	4	1	1	.....	.....	.....	17,575	Yield of silver, $255,200.
KOOTENAY, WEST.																									
Nelson Division	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25,500	
Revelstoke Division:																									
Camp Creek	2	4	.....	2	8	.....	3 50	1 00	.....	2	.....	.....	.....	.....	.....	.....	2	.....	2	.....	18 60	.....			
Carnes Creek	3	5	1	2	7	.....	.....	.....	.....	3	.....	.....	.....	.....	1	.....	2	.....	1	.....	"	200			
Columbia River	1	*	1	.....	8	1	"	"	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	"	420			*Stork Company. Number of interests not known.
French Creek	8	21	3	5	22	1	"	"	1	2	5	.....	.....	.....	4	.....	1	3	3	.....	"	8,600			
Goldstream	5	11	1	4	13	.....	"	"	.....	5	.....	.....	.....	.....	5	.....	.....	.....	.....	.....	"	300			*Ophir Company. " " "
McCulloch Creek	3	*14	.....	3	8	.....	"	"	.....	3	.....	.....	.....	.....	1	.....	1	1	1	.....	.....	.....			
Smith Creek	2	10	.....	2	9	1	"	"	.....	2	.....	.....	.....	.....	.....	.....	2	.....	2	.....	.....	.....			
																							10,020		
Trout Lake Division:																									
Lardeau River	8	16	6	2	20	.....	"	.....	1	2	5	.....	.....	3	5	.....	.....	.....	.....	.....	15 50	500			
																							500		
																								10,520	
LILLOOET.																									
Bridge River, Cayoosh Creek, Fraser River, bars and benches of	14	.....	12	1	20	50	3 00	1 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15 to 16.50	40,663	.....	40,663	
YALE.																									
Osoyoos Division:																									
Cedar Creek	3	15	3	.....	.....	10	.....	1 50	.....	3	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	16 00	400			
Cherry Creek	1	10	.....	.....	.....	10	.....	"	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	13 50	2,500			
Rock Creek	16	50	10	6	12	29	3 00	"	2	9	2	3	.....	.....	12	1	3	.....	1	.....	17 00	8,500			
Siwash Creek	2	6	.....	.....	6	.....	"	.....	.....	2	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	18 00	1,000			
Fairview (quartz)	4	96	1	10	30	.....	3 50	.....	.....	.....	.....	.....	4	.....	.....	.....	4	.....	.....	.....	15 75	30,000			
Camp McKinney "	1	100	1	15	40	.....	"	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	1	13 50	104,861			
																							147,261		
Similkameen Division:																									
Granite Creek	13	21	10	3	45	7	2 25	1 25	.....	7	3	3	.....	.....	11	1	.....	1	7	.....	17 75	23,000			
Similkameen River	19	33	9	10	90	16	2 00	"	1	5	6	.....	7	.....	8	4	5	2	5	.....	17 50	11,000			
Tulameen River	6	14	4	2	9	20	"	"	.....	3	3	.....	.....	.....	4	2	.....	.....	3	.....	"	7,500			
Whipsaw Creek	1	2	1	.....	2	.....	2 10	"	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	"	150			
Desultory mining	.....	.....	.....	.....	8	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
																							41,650		Platinum, approximate, $3,800.
Yale Division:																									
Fraser River	52	.....	36	16	60	*210	2 00	1 50	28	.....	8	6	10	.....	36	6	8	2	.....	2	15 to 16	41,400			*And Indians.
Harrison Lake	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....			
Siwash Creek	2	.....	.....	2	10	.....	"	.....	.....	2	.....	.....	10	.....	.....	.....	2	2	.....	.....	.....	.....			
Thompson River	4	.....	4	.....	10	40	"	"	3	.....	1	.....	.....	.....	4	.....	.....	.....	.....	.....	15 to 16	7,000			
					1,050	979																	48,400		
																								237,311	
																								$636,544	

SILVER, LEAD, COPPER, IRON, ETC., STATISTICS FOR 1895.

As no authentic and complete returns have been sent in, no statistics for these metals could be given. No gold returns from Trail Creek.

REPORT

OF THE

MINISTER OF MINES,

1895.

To His Honour EDGAR DEWDNEY,

Lieutenant-Governor of the Province of British Columbia:

MAY IT PLEASE YOUR HONOUR:

The Annnal Report of the Mining Industries of the Province for the year 1895 is herewith respectfully submitted. I am happy to state that Mr. Carlyle, late Lecturer of Mining and Metallurgy at McGill University, a gentleman of large experience in practical mining, has been appointed a Provincial Mineralogist, and his services will prove of great service to the mining industry.

JAMES BAKER,

Minister of Mines.

Minister of Mines' Office,

10th March, 1896.

PROVINCE OF BRITISH COLUMBIA.

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TABLE

Showing the actually known and estimated yield of gold and silver; the number of miners employed; and their average earnings per man, per year, from 1858 to 1895.

Year.	Amount of gold actually known to have been exported by Banks.	Add one-third more estimate of gold carried away in private hands.	Gold. Total.	Estimated yield Silver.	Gold and Silver. Total.	Number of Miners employed.	Average yearly earnings per man.
1858 (6 months)	$ 390,265	$ 130,088	$ 520,353	.....	$ 520,353	3,000	$ 173
1859	1,211,304	403,768	1,615,072	.....	1,615,072	4,000	403
1860	1,671,410	557,137	2,228,547	.....	2,228,547	4,400	506
1861	1,999,589	666,530	2,666,119	.....	2,666,119	4,200	634
1862	3,184,700	1,061,566	4,246,266	.....	4,246,266	4,100	517
1863						4,400	482
1864	2,801,888	933,963	3,735,851	.....	3,735,851	4,400	849
1865	2,618,404	872,801	3,491,205	.....	3,491,205	4,294	813
1866	1,996,580	665,527	2,662,107	.....	2,662,107	2,982	893
1867	1,860,651	620,217	2,480,868	.....	2,480,868	3,044	814
1868	1,779,729	593,243	2,372,972	.....	2,372,972	2,390	992
1869	1,331,234	443,745	1,774,979	.....	1,774,979	2,369	749
1870	1,002,717	334,239	1,336,956	.....	1,336,956	2,348	569
1871	1,349,580	449,860	1,799,440	.....	1,799,440	2,450	734
1872	1,208,229	402,743	1,610,972	.....	1,610,972	2,400	671
1873	979,312	326,437	1,305,749	.....	1,305,749	2,300	567
1874	1,383,464	461,155	1,844,619	.....	1,844,619	2,868	643
1875	1,856,178	618,726	2,474,904	.....	2,474,904	2,024	1,222
1876	1,339,986	446,662	1,786,648	.....	1,786,648	2,282	783
1877	1,206,136	402,045	1,608,181	.....	1,608,181	1,960	820
1878	1,062,670	1-5th 212,534	1,275,204	.....	1,275,204	1,883	677
1879	1,075,049	,, 215,010	1,290,059	.....	1,290,059	2,124	607
1880	844,856	,, 168,971	1,013,827	.....	1,013,827	1,955	518
1881	872,281	,, 174,456	1,046,737	.....	1,046,737	1,898	551
1882	795,071	,, 159,014	954,085	.....	954,085	1,738	548
1883	661,877	,, 132,375	794,252	.....	794,252	1,965	404
1884	613,304	,, 122,661	735,965	.....	735,965	1,858	396
1885	594,782	,, 118,956	713,738	.....	713,738	2,902	246
1886	753,043	,, 150,609	903,652	.....	903,652	3,147	287
1887	578,924	,, 115,785	694,709	.....	694,709	2,342*	296
1888	513,943	,, 102,788	616,731	.....	616,731	2,007	307
1889	490,769	,, 98,154	588,923	$ 47,873	636,796	1,929	330
1890	412,029	,, 82,406	494,435	73,984	568,419	1,342†	423
1891	358,176	,, 71,635	429,811	.....	429,811	1,199	358
1892	332,938	,, 66,588	399,526	.....	399,526	1,340	298
1893	316,279	,, 63,256	379,535	.....	379,535	1,247	304
‡1894	380,055	,, 76,011	456,066	8,500	464,566	1,610	288
‖1895	254,056	.....	(a.) 636,545	.....	(b.) 636,545	2,030	313
					$55,115,965		

* This is exclusive of over 650 white men who, during the season of 1887, were working on or prospecting for mineral claims.

† This is exclusive of over 300 whites employed working on or prospecting for mineral claims.

‡ Value of gold, silver, copper and lead ore shipped from Nelson during year, $784,965, not included.

‖ (a.) This return of gold, or $636,545, is of the gold derived from the placers except $135,000 from the quartz mines at Fairview and Camp McKinney.

(b.) Not including the value of gold, silver and lead in the ore from Kootenay, estimated at $2,175,000.

REPORTS.

ALBERNI.

MR. FLETCHER'S REPORT.

ALBERNI, V. I., 7th December, 1895.

The Honourable the Minister of Mines,
Victoria.

SIR,—I have the honour to submit for your information the Mining Report for the Alberni District for the year 1895.

I have, etc.,
THOS. FLETCHER,
Gold Commissioner.

MINES.

McLaughlin Range, China Creek and Cowichan-Alberni Road.

One hundred and forty-one mineral claims recorded. Extensive development work is going on in the Mineral Creek Group, exposing several veins of free gold, the most noted being the Alberni, Missing Link, Mountain Rose, Champion, Ace of Spades, and Last Dollar; average assay, about $30 per ton.

Franklin and Granite Creeks.

Thirty-eight mineral claims recorded. The Star of the West Group of Mines is the most noted, the work done exposing several veins of blue quartz, averaging $25 per ton, mill test.

Coleman and Chesnucket Creeks (Alberni Canal).

Twenty-four mineral claims recorded. Work exposes masses of crushed quartz, mixed with cements; low grades; average mill test, $8 per ton; on deep water.

Copper Island and Sarita River, Barclay Sound.

Fourteen mineral claims recorded. Work done exposes several rich veins with a good percentage of copper. Extensive development now going on; also on deep water.

Sechart Channel, Barclay Sound.

Eleven mineral claims recorded. Large bodies of iron have been discovered; also quartz carrying gold in paying quantities; on deep water.

In other parts of the District there are 32 mineral claims recorded, on Sproat Lake and Cous Creek, on the opposite side of the Alberni Canal from China Creek, showing that the gold range extends in that direction.

PLACER.

Two placer claims recorded on China Creek; 4 hydraulic leases issued. The rents of 18 leases have been paid at dates when due. Work has been done on the following leases:—

Lease No. 1,	Alberni Syndicate	$ 100 00
„ 5,	Cataract Hydraulic Co	7,000 00
„ 7,	Lulu Hydraulic Mining Co	500 00
„ 9,	W. B. Ganard	500 00
„ 10,	F. T. Child	700 00
„ 11,	F. McQuillan	3,250 00
„ 16,	Nanaimo-Alberni Gold Mining Co	1,500 00
„ 17,	„ „	1,500 00

A good waggon road has been built to the China Creek Mines from the Townsite of Alberni, and a first-class trail has also been made from the Alberni Canal to the Granite Creek Mines.

TOTALS.

Claims recorded	262	
Free miners' certificates	107	and 1 substitute.
Transfers	81	
Certificates of work	35	

THOS. FLETCHER,
Gold Commissioner, Alberni, V. I.

MR. WM. J. SUTTON'S REPORT.

Honourable Colonel Baker,
Provincial Secretary and Minister of Mines,
Victoria.

SIR,—In compliance with your letter of instructions dated June 27th, 1895, I have the honour herewith to submit my report upon the mining section comprised within the China and Granite Creek Basins, Alberni District, Vancouver Island.

In taking a general survey of the country under consideration, before entering into specific details, a glance at the map of Vancouver Island will show the rugged, mountainous nature of its interior. The mountains of Vancouver Island are comprised within what has been called the Vancouver Range, it being the most westerly of the four great ranges or systems of mountains in British Columbia embraced within the Cordillera belt. Commencing at the most easterly, we have, first, the Rocky Mountains, then the Gold Range, next the Coast Range, and, finally, the Vancouver Range, running more or less parallel in a north-westerly and south-easterly direction.

The Vancouver and Gold Ranges have many features in common in their auriferous schists and altered volcanic rocks. The Gold Range being composed of a number of minor ranges, namely, Cariboo, Selkirk, Purcell, and Columbia Ranges, has thus far produced most of the mineral wealth of the Province of British Columbia. The Vancouver Range is the north-western boundary of the Continent of North America, as there is only a narrow submarine plateau extending beyond it, then a quick descent into the azure depths of the great Pacific.

Comparatively little is yet known regarding the geology of the interior of Vancouver Island, partly owing to its rugged nature and thick undergrowth, also to the limited amount of geological work thus far undertaken. The complications of structure presented can only be satisfactorily worked out by a comprehensive survey of the whole Island, and, therefore, properly comes under the purview of the Geological Survey of Canada; and I would respectfully draw your attention to the needs of the Province in that respect.

The Vancouver Range consists for the most part of an enormous series of eruptive rocks, interbedded with limestone, argillite, quartzite, etc. This great mass of volcanic material and interbedded sedimentary rocks has been grouped together and provisionally called the Vancouver Series by Dr. Selwyn. The series amounts to many thousands of feet in thickness, and will most likely be found to cover not only triassic and carboniferous rocks, but even lower in the geological scale. The limestone portion alone attains a thickness of several thousand feet, and Dr. Dawson has suggested limiting the series to the triassic rocks, when they shall have been distinctly separated. The whole region has suffered great disturbance, and it might be termed a region of turmoil and chaos. Volcanic outflows on an enormous scale have occurred at repeated intervals, long periods intervening, during which the interbedded sedimentary rocks accumulated. The amount of volcanic breccia and tuff is also a remarkable feature of the period, a large exposure of which may be seen along the Alberni Road at Cameron Lake. All this great series has undergone extensive metamorphism. The limestones have become highly crystaline and show few fossils. The argillites have become semi-crystalline and more or less chloritic schists. The eruptives, although originally basaltic and trachytic lava flows, have undergone such alterations that we have now diabase, diorite, felsite, etc. A large proportion might be called greenstone, their greenish appearance being due to alteration products such as chlorite, viridite, etc. Some of these extremely altered eruptives might, from a lithological standpoint, be regarded as very low down in the geological scale.

The interior of Vancouver Island lying north of Cowichan Lake and extending through to Alberni appears to be the remnant of a high, elevated plateau, the mountain peaks now remaining having an elevation of about 4,000 feet, which is about the average height of most of the principal mountains of the Island, the highest being Victoria Peak, with an elevation of 7,484 feet.

Lying unconformably on the Vancouver Series is quite a large area of cretaceous rocks, forming a sort of fringe along the east coast of Vancouver Island, and embracing the coal areas of Cowichan, Nanaimo, and Comox.

At the head of Alberni Canal there is a basin of sedimentary strata, consisting of sandstones, conglomerates, and shales, which have been referred to as the cretaceous, but from observed lithological differences I am inclined to question whether they belong to the same horizon as the gold-bearing era of the East Coast. A shaft was sunk on the shale near the head of the canal about seventeen years ago, but no distinct coal seam was exposed, although the shales were highly carbonaceous. I came across outliers of these sandstones and shales in the China Creek basin, to which I shall have occasion to refer later on. I have also seen similar sandstone and conglomerate on the border of Cowichan Lake.

It is interesting to note in this connection that almost every creek and river on Vancouver Island shows at least one or two colours to the pan. Leach River, in particular, yielded considerable gold to the hardy miners of the early sixties, variously estimated from one to two hundred thousand dollars.

China Creek has been worked for its alluvial gold as far back as 1862, principally by Chinamen, and has yielded about $40,000 by the most primitive methods, the pan, shovel, rocker, and sluice-box. Considerable gold has also been taken out of Gold River by the Chinese, but nothing definite can be obtained regarding its yield. The black sand along the north shore, especially at Cape Cormorant and Cape Scott, contains considerable fine gold, similar to that found along the coast of Oregon and California.

All the streams which have their sources in the auriferous belt under consideration show strong colours to the pan. I may mention the following:—Cameron, Nanaimo, Nitinat, Cowichan, and Franklin Rivers; China, Shaw, and Granite Creeks. It must not be overlooked that placer gold has been deposited by a natural process of concentration by an extensive erosion of the surrounding country, and is not to be entirely depended upon as a finger index to the extent of the gold yet remaining in the hills.

Starting from the Alberni Settlement, where a number of pioneers are busy clearing land in that fertile valley, China Creek is reached by a good pack trail, which passes over a comparatively level valley, along which a good waggon road could be easily built. The trail strikes China Creek about eight miles from the Alberni Settlement, opposite the Cataract Hydraulic Claim, and then follows the bank of China Creek up to its source, the Golden Eagle Basin.

Along the trail several exposures of syenite can be seen. This syenite extends over a large area, as shewn on my sketch map herewith, and forms, I think, the palæozoic floor upon which the Vancouver series was laid; wherever met with, it was found to underlie all the

map ' see "1T1 Original maps." asst Chief Geographer Dept of Lands.

other formations. It is a typical syenite, showing the hornblende in well defined crystals, but considerably altered; it contains very little mica and a small proportion of quartz, although quartz occurs locally in sufficient abundance to make it a hornblendic granite. Syenite occurs as bedrock along nearly the entire length of Granite Creek, from which it has derived its name through the miners regarding it as granite.

Small outliers of the sandstone previously mentioned were exposed along the trail, which no doubt originally covered the whole valley, but has since been denuded. There is a large body of this sandstone overlaid with shale, commencing at Mineral Mound Number 12, and extending up to near Mineral Mound Number 15, on China Creek. It is exposed along the beds of Mosquito and McLaughlin Creeks, extending into the foot-hills, and also forms a rim around Mount Patl Patlicant. There is a fine exposure of these strata at a high falls on McLaughlin Creek, there being a perpendicular drop of 150 feet. Here they appear to lie horizontally, but in passing around Mount Patl Patlicant to the west, they form a spiral, and crop out near the top of the mountain on the south side. A good exposure, showing this twist, is on a bluff at the head of Child's Creek. The most remarkable exposure of this sandstone is at its contact with the Vancouver eruptives, well exposed in the bed of China Creek above Mineral Mound Number 15. Here the sandstone dips under eastward at an angle of sixty degrees, which may be explained as a complete overthrow of the strata, or a reverse fault—pre-supposing that the eruptives antedate the sandstone. There is about two feet of fluccan, and the sandstone is very much indurated at the contact, the eruptives also being very much altered. The deepest section of these sedimentary strata would amount to about 600 feet of sandstone and 400 feet of shale. No evidence of coal was anywhere seen.

The sandstone near Mineral Mound Number 12, graduates into coarse conglomerate containing large boulders of syenite near its contact therewith.

Mount Patl Patlicant has a capping of eruptive rock, probably phonolite, which rests upon the shale above mentioned.

The gold belt on China Creek lies east of this sandstone, the formation being almost a typical section of the Vancouver series, consisting of diabasic, dioritic, and feldspathic rocks, more or less schistose, with interbedded limestone, argillite and quartzite. These eruptive rocks have undergone remarkable alteration, especially in the neighbourhood of Mineral Creek, where they become greenish-grey schists, only showing their eruptive origin under the microscope. A glance at the map will show that a large number of claims have been taken up on Mineral Creek, but no doubt quite a number of these claims have been recorded on the strength of juxtaposition to those looking well.

The first four claims recorded on this creek were:—The Alberni, Chicago, Warspite, and Victoria, the location of which can be best understood by referring to the map. These claims are now under dispute, and have been staked and re-staked, so that in one spot, the south-west corner of the Alberni claim, there are no less than sixteen stakes, a photograph of which I herewith enclose.

On the Alberni claim two veins of gold quartz have been exposed. The lower vein has about two feet of a crystaline quartz containing free gold disseminated through the quartz in fine particles, and in some places plainly visible to the naked eye. The gold is associated with small grains of blende (black jack) in a somewhat peculiar manner, so that the presence of blende is an index to the occurrence of gold. The gold shows signs of crystallization when highly magnified. The vein dips about sixty-five degrees to the east, with a strike of north fifteen degrees east, and conformable with the bedding or foliation of the country rock, and therefore may be classed as a "segregated" vein. The upper exposure of gold-bearing quartz is a narrow vein about a foot in width, cutting across the formation about north-east. The gold occurs in the same manner as in the other vein.

The country rock of the Alberni claim, as already mentioned, is a greenish-grey schist, being an igneous rock highly metamorphosed through hydro-thermal agencies. The same rock formation occurs on the Chicago, Warspite and Victoria claims; also on the claims lying north and south of these claims.

There are two quartz veins exposed on the Chicago claim, one of them lying in a line with the main Alberni ledge, and appears to be a continuation of it. It is the same width and has the same dip and strike.

The Missing Link and Champion claims, lying north of the Alberni, show several quartz outcrops. Two veins, eighteen inches in width, were uncovered, showing free gold plainly visible. Very little work has been done, the veins having been only just discovered.

On the Crown Point claim there is a lenticular body of quartz two feet in width, cutting across the formation, exposed for about forty feet.

On the Mountain Rose there is a quartz vein about two feet in width, also running at right angles to the formation, and exposed for about fifty feet, when a slip causing a fault was encountered, beyond which the vein has not been traced. This vein carries considerable chalcopyrite disseminated through the quartz. The country rock is an argillaceous schist or slate, with the line of foliation running due north and south. This schist is well exposed on Brown Creek, running across the Vancouver claim.

Beyond those I have mentioned, very little work has been done on the claims in this section, so that it would be premature to form any definite conclusions regarding the permanency of the auriferous deposits. The majority of the veins are interbedded or "segregated" veins, and have the appearance of being of a somewhat lenticular character, similar to the quartz veins in the Alleghany Mountains, and a large proportion of the gold-bearing veins of California. They are good types of segregated veins, and contain the usual constituents of gold, pyrites, blende, gelena and chalcopyrite.

It has been advocated that veins of this description are less persistent than true fissure veins; that they are rich near the surface, and frequently terminate by pinching out in depth and horizontal extension; but recent mining operations have demonstrated that segregated veins may extend to great depths, and be of considerable extent. They often do not differ in any way from true fissure veins, except that they run parallel instead of across the strata.

The schists in the neighbourhood of Mineral Creek have a strike nearly north and south, and I would therefore recommend the prospector to examine carefully the country lying due north and south of this creek. I understand that some good prospects have been discovered since my return, on a creek called the Yellowstone, lying due north from Mineral Creek.

Mineral Creek follows the line of bedding of an interbedded strata of calcareous material, or impure limestone, heavily studded with pyrites, the creek being confined to this bed its entire length, owing to its being softer than the neighbouring rock and therefore more easily eroded by the water-course.

In a similar way, a number of other creeks in the neighbourhood were observed following down the interbedded strata of limestone so common to that section.

GOLDEN EAGLE.

Considerable work has been done on the Golden Eagle claim at the head of China Creek, where the trail ends. Two cabins have been built about five chains apart, in what is known as the Golden Eagle basin, which is about 10 acres in extent and completely surrounded by high, precipitous mountains 4,000 to 5,000 feet in height. I enclose some photographs showing the extremely rugged nature of this part of the country, which look like scenes in the Alps.

The basin is beautifully situated for a stamp mill or other works which might be needed in working the mines, and there is a plentiful supply of water and timber. The Golden Eagle is about half a mile from the cabin, and is reached by a gradual ascent of about 500 feet up the foot of Mount Saunders, which is covered with heavy débris from the mountain.

The quartz vein upon which the work has been done is exposed along the ridge of a "hog's back," with snowslides on either side. The ridge is covered with timber, which serves as a protection from the heavy snowslides that would otherwise be a constant menace.

The vein is crystalline quartz with a large percentage of pyrites. There is also interspersed through the quartz some blende, galena, chalcopyrite, and arsenopyrite, making into to about 10% of sulphurets. The vein averages about three and a half feet in width—widening to seven feet and narrowing to a few inches.

The hog's back appears to be an intrusive boss of diorite which has undergone local metamorphism. At a short distance from the vein, the hornblende, of the diorite has undergone alteration to mica. Immediately adjoining the vein the mica diminishes, so that it becomes a leached feldspathic rock which might be classed as a felsite. The vein has a banded structure and has every appearance of being filled by lateral secretion and deposition, and possibly some replacement of the county rock with vein matter.

Four tunnels have been driven in on the ledge. The lowest tunnel, or Number 1, is in 44 feet, with an exposure of seven feet of solid vein matter at the entrance and three and a half feet at the breast. The strike of the vein is south 30 degrees west, and dip about 70 degrees to the east. The vein below this tunnel appears to widen very rapidly, but could not be followed on account of a snowslide. The next tunnel, or Number 2, is about 100 feet

perpendicularly above Number 1 tunnel, and is 65 feet in length. The vein in this tunnel averages nearly three feet, being well mineralized, with well defined walls. The next tunnel, or Number 3, is about 100 feet above Number 2, and is 46 feet in length. In this tunnel the vein pinches to a few inches. Number 4 tunnel is 21 feet in length on a small stringer.

On the upper side of the hog's back there is an exposure of gold-bearing quartz very similar in character to the main ledge, but whether it has any connection I would not venture an opinion without further development.

A large number of claims has been recorded around the Golden Eagle, but no development work of any importance has been done upon them.

KING SOLOMON.

A good deal of work has been done on the King Solomon claim, situated on the divide at the headwaters of McQuillan Creek, a branch of China Creek, but I was unable to fully examine the open cut which has been made on the ledge, on account of its being filled with snow. The ravine where the claim is located, lies between Mount Saunders and Mount McQuillan, at an elevation of nearly 4,000 feet above sea level, so that snow remains in the basin the year round. From what I was able to see, I should judge that the vein is a narrow seam along the side of a dyke. I was informed that it was widening below.

The country rock consists of schists cut through with numerous felsite dykes, which can be plainly seen running up the mountain side. Those igneous injections produce conditions favourable to the consentration of the precious metals; in fact, it has been contended that the presence of gold in veins is always in conjunction with instrusive rocks, that the gold has been carried up with the outflow of these eruptive rocks. Without fully accepting this theory, it is generally believed by mining men that some eruptive action is essential to effect the necessary conditions for the concentration of metals in veins. The occurrence of auriferous deposits in conjunction with dykes is particularly exemplified throughout California, and, apart from any theory in connection therewith, we may naturally expect to find the same conditions here.

It is now well established that the metals occurring in veins in the form of ores, have been deposited by the chemical solution of their ingredients from the surrounding country rock. The principal difference of opinion, over which there has lately been a warm controversy, is with regard to the stress laid upon lateral secretion, or the ascension of the mineral-bearing solutions from great depths.

A number of claims has also been staked off in juxtaposition to the King Solomon, upon which very little work has been done. The ridge on the east side of the King Solomon basin, of which Hanson Heights is the summit, is very much stained with iron oxide, due to the oxidation of the sulphurets with which the whole region is heavily charged. Hanson Heights is a highly crystallized diorite, it being the same as the summit of Mount Saunders.

On the trail, below the cabin on McQuillan Creek, is a notable out-crop of jasper, or jaspilite, a name given the rock by Dr. Wadsworth. Some of this jaspilite is heavily charged with hematite, and is identical with the jaspilite occurring in the association with the great iron deposits of Northern Michigan. This is the only place I found it in situ, although I met with float pieces all over the district. It may only occur as an interbedded layer similar to the quartzites in that locality. Adjoining it on the one side is a large bed of argillaceous schist somewhat ferruginous, and on the other side crystalline rocks.

China Creek for a distance of about twelve miles is taken up under hydraulic leases. Several companies are actively at work prospecting and developing their claims. A dam was under construction at the Cataract claim at the time of my visit, which I understand has since been completed. The company expects to have the water turned on in a few months.

There is a very heavy fall to China Creek, and a number of cañons, making it very easy to dam and secure a head of water for hydraulicing purposes. The creek at its lowest stage would give about 2,000 inches of water. By careful management, so that the first outlay in bringing the water upon the ground is not too large, there is every reason to believe that the creek will yield a good return to the enterprising miners. Some of the benches show many colours to the pan. Mr. Frank McQuillan, the veteran prospector, deserves especial mention for his persevering efforts in drawing the attention of capital to the "golden" prospects, and I noticed his gold pan shone like a mirror from constant use. Messrs. Jones & Garratt, proprietors of the Constance claim, have dammed China Creek and cut a trench to change the channel. They have a stretch of about three-quarters of a mile of the creek-bed ready for sluicing.

Mr. London was ground-sluicing on the Lulu claim, at the mouth of mineral Creek, with the view of proving up his claim. He had not made any clean-up, but had considerable of the yellow metal is sight.

Messrs. Gleeson & Young were sinking a shaft on Mineral Creek, a short distance up the stream. They are in hopes of being able to get down to bedrock and drift in on their placer claim. Some very coarse gold was obtained on this claim with surface sluicing.

Judging from the small samples I was able to see, the placer gold of China Creek appears to consist of two distinct qualities. The paler gold comes from the vicinity of Mineral Creek, as I did not detect any of it in panning above it. The darker gold is much more worn and smooth and likely comes from well up the creek. In panning along the creek, I noticed quite a number of small pieces of gold with quartz adhering to them, which did not have the appearance of having travelled any distance. There are evidences all along China Creek of the Chinese having skimmed the rim rock. They do not appear to have done any extensive sluicing.

ALBERNI CANAL.

In passing down Alberni Canal from the settlement, carbonaceous shale can be seen exposed along the shore at the old Alberni sawmill site, lying almost horizontally. Following down the shore of the canal, about a mile south, syenite out-crops for a short distance, and is then replaced with a blackish, almost aphanitic, diorite, which constitutes the body of Copper Mountain. This formation extends along the shore down to a short distance below where the Esquimalt and Nanaimo Railway boundary line crosses the canal, where syenite reappears and extends down to Hiwatches or Franklin River.

A good contact of this blackish, fine-grained diorite with the syenite may be seen on China Creek, about midway between Mineral Mounds, numbers 5 and 6, the syenite dipping under the diorite westward at an angle of about 55 degrees.

There is an old tunnel half-way up Copper Mountain and facing the canal, which was run in 1865, following a cropping of chalcopyrite, which suddenly gave out.

I may mention that numerous veins of chalcopyrite have been found in the diorite of Vancouver Island, but have not proved sufficiently strong to be worked, such as Sansome Narrows, Cedar Hill, Cowichan Bay, Cowichan Lake, etc.

At Hiwatches River there is a good trail starting from the bay below the mouth of the river and following along the foothills, up to the Star of the West claim on Granite Creek, which is a branch of Hiwatches River.

Some placer mining has been done on Granite Creek by the following miners: H. McCoy, W. Poole, H. Hanson, Wm. Lindsay, and G. Carman.

Good pay in coarse gold was obtained along some of the crevices, but the creek being very rapid, and the boulders large, it was found that ground-sluicing would not pay very well. Some of the benches give colours to the pan and may prove to be sufficiently rich to pay hydraulicing.

Some work has been done on the Star of the West claim, located on McCoy Creek, a small tributary of Granite Creek. The vein is quartz with pyrite, and considerable calcite. The vein is about 5 feet in width where it has been exposed, and it may be traced a short distance along the creek, with a strike of N. 50 deg. E. The country rock is syenite on both sides. A ton of rock from the Star of the West, shipped to the Tacoma smelter, gave a return of $10 in gold.

The Islander claim, adjoining the Star of the West, shows an exposure of basic ore along the bed of McCoy Creek, which is composed of the usual combination of sulphurets.

The Nevada claim also adjoins the Star of the West, being one of those in juxtaposition.

Six miles up Granite Creek from these claims, a number of claims were recorded on a branch called Poole Creek.

The Starlight claim, located on this creek, carries free gold, which can be seen with the magnifying glass, in very fine grains peppered through the rock, in a similar manner as at Mineral Creek, but the associations are different. In the Starlight, the gold is intimately associated with small grains of galena, instead of blende as at Mineral Creek.

The Starlight can hardly be called a vein, but is rather an ore body charged with gold by percolating waters. An exposure of about 7 feet has been blown out without any well-defined walls. The country rock appears to be a diabase that has undergone extensive alteration by the leaching process of chemical solution so prevalent in this district. The ore body consists of quartz, pyrite, galena, calcite, etc. Calcite is a common ingredient of nearly all the veins

in this locality, showing that the solutions were highly charged with carbonic acid, the calcicum being derived from the feldspars in the rock.

A remarkable feature of this whole region is the prevalence of felspathic rocks with no free silica.

A large sample from the Starlight assayed $40 to the ton in gold.

Adjoining the Starlight are the Texas and Emma claims, upon which a small amount of work has been done.

Two claims, called the Tangent and Big Galena, have been taken up at the headwaters of Museum Creek. They show a good exposure of quartz containing chalcopyrite and blende. A sample from the Tangent gave 13 oz. per ton in silver.

Two miles beyond Sweetwater Meadow, on Granite Creek, near the divide, as shown on map, five claims have been recorded on a large intrusive boss of granite upwards of 1,000 feet across. It is a fine-grained granite, with numerous quartz veins, and heavily charged with sulphurets. Although the assays made have been small, still it is a remarkable mineralized mass, and will justify a thorough prospecting. In one spot, I came across some chalcopyrite associated with molybdenite. It is interesting to note the common occurrence of molybdenite throughout British Columbia in association with copper ores; it has been found in numerous places, but only in small quantities.

A good trail could easily be cut from the end of the present trail at the Star of the West Claim up Granite Creek to this divide, and leading over to the Nitinat River, at a small expense. It would be a great convenience to the miners and prospectors in getting in their supplies.

LIMESTONE.

A most remarkable body of limestone outcrops in what I have called Limestone Mountain, at the head of Hiwatches River. There is an abrupt escarpment, almost perpendicular, of not less than 1,600 feet, of crystalline limestone, showing well the lines of stratification, and dipping about fifteen degrees to the south. I did not succeed in obtaining any fossils except a few crinoidal stems. A similar mass of the same kind of limestone occurs on the west side of Mount Douglas, showing a good exposure on the east side of Hidden Lake, there being a vertical section of about 500 feet. All these limestones are highly crystalline and more or less dolomitic. They bear a great resemblance to several other large deposits on the island, such as at Horne Lake, Kennedy Lake, Nootka Sound, and on Texada Island.

In conclusion, I may state that I found it necessary to spend a large portion of my time in working up the geography and topography of the country examined. In order to do so, I had to climb many precipitous bluffs of no particular geological interest, but which enabled me to obtain more accurate information regarding the location of the different claims, etc., which I have embodied in a carefully prepared map of the mining district.

I have, etc.,

Victoria, B. C., September 12th, 1895. WILLIAM J. SUTTON.

CARIBOO.

MR. BOWRON'S REPORT.

BARKERVILLE, 7th December, 1895.

SIR,—In submitting this, my twenty-first Annual Mining Report, accompanied by the customary statistics upon that industry, I have the honour to state that it affords me infinite satisfaction to be in a position to report that the bright anticipations so often indulged in in previous reports upon the district, appear to be on the eve of a speedy realization.

The season may fairly be said to be one of unwonted prosperity, and although such activity in mining operations must be attributed mainly to the introduction of outside capital, yet evidences are not wanting to show, that in the near future very many of the enterprises now opening out must become contributors to the world's gold yield, rather than absorbers of capital.

That there will be many failures to reap a rich return upon the capital invested, it is unnecessary to state to those following the mining industry, but on the whole, I am of the opinion that our district to-day offers probably quite as good, if not the best, opportunities (to those desiring to invest capital in gold mining), as are presented in any part of the world. At the same time, I would here take the opportunity of cautioning the public against permitting itself to be misled by the many rosy-hued and exaggerated statements appearing in the public press from time to time regarding the value of certain mining properties in this district. These articles are generally written by irresponsible parties to boom private properties, and if proper caution is not exercised must eventually result in harm rather than in good to the district.

QUARTZ MINING.

Quartz mining in Cariboo District may be said to be in *statu quo*, notwithstanding that there are perhaps as many mineral claims held under record at the present time as at any previous date. But little work, however, has so far been done, except to satisfy representation. These claims are held mostly by persons without capital to develop them, and there having been during the summer more than ordinary demand for labour on the numerous placer claims now opening on a large scale, owners of quartz claims have been content to earn daily wages and await the advent of capital, doing only sufficient work on their locations to secure their title.

Mr. S. J. Marsh, who has had some experience in the treatment of Cariboo ores, and whose views thereon may be found in last year's report, secured a bond on the Black Jack mine, and about the same time obtained a lease of the Government Reduction Works, has, I understand, made arrangements to erect a cyanide plant at Barkerville, which will be in operation next spring. Quartz claim-owners are looking forward with expectation to Mr. Marsh's return, as while here he inspired very general confidence by his push, energy and apparent ability.

The Cariboo Reefs Development, Limited, of London, England, this season commenced work on the Princess Maria lode by letting a contract for one hundred feet of tunnel, upon the completion of which a second contract was let for the extension of the tunnel one hundred and fifty feet further, which will, it is supposed, tap the ledge about one hundred and twenty-five feet from the surface.

It is understood that the Island Mountain Company will start work upon their mines in the spring by taking out ore and putting their 10-stamp mill in operation.

PLACER MINES.

A pleasing contrast presents itself upon turning from the apparent apathy in quartz mining to our far-famed placer mines, the future output of which we feel warranted in saying will exceed the millions produced, which rendered the district famous in the past.

While the tabulated statement will show a greater number of men employed in mining this year as compared to last season, it will not be far from the truth to assume that not more than one-third of those so engaged were actual gold producers, the majority being employed upon non-productive works, that is, new mines in course of development.

HYDRAULIC MINING.

This process of mining is now assuming vast proportions in the district. Not as carried on in the early days, with the use of canvas hose with small pipe and monitor, with perhaps a two-inch nozzle and one hundred feet of pressure, but upon a more extensive scale, similar to the works elsewhere described as being in operation at the Cariboo and Horsefly mines.

There are now about thirty leases of hydraulic ground held on the Quesnelle River, where two years ago there were but five. The gravel banks along this stream offer most favourable conditions for hydraulic mining, and is limited in extent only by the amount of water supply obtainable.

In the Barkerville Division comparatively few hydraulic claims are operated, the auriferous gravel deposits being more confined to the beds of streams. Where, however, sufficient dumpage can be obtained, this process has been adopted with success, after the lower and richer bed-rock strata have been worked out by drifting. Such are the claims on Mosquito Creek, the Waverly claim on Grouse Creek, the Forest Rose and Black Jack hydraulic claims

on Williams Creek. The Wintrip claim on Stout's Gulch, although worked for the past twenty-five years, has, perhaps, for the number of men employed, been the most productive, the output for the year being about $10,000. On account of the altitude (viz., 4,000 feet), the seasons in this immediate section are short and the water supply limited, rendering five or six months an average working year.

The principal hydraulic claims, being in the Keithley Creek Division, will be reported upon more fully by Mr. Stephenson, the Mining Recorder at Quesnelle Forks; but *en passant*, I will briefly state what was brought before my notice upon a recent visit to that section of the district.

I must admit (and we old Cariboo miners are inclined to be conservative) I saw what was to me a revelation in the manner of working the gravel banks that there abound. Five years ago I visited the ground now worked by the Cariboo Hydraulic Mining Co. I then saw a Company of Chinese working with a 5-inch pipe and 1½-inch nozzle, with scarcely sufficient water to run three hours a day, yet it paid them well. To-day there are eighteen miles of ditch, capable of carrying 5,000 inches of water, upon which a small steamer might run. The outer embankment, even on a steep side-hill, is sufficiently wide for two horsemen to ride abreast. At every curve in the ditch masonry is built. This large stream discharges its waters into three 32-inch steel pipes, supplying three huge monitors, with nozzles ranging from 6 inches to 9 inches in diameter, through which it is forced by a 300-foot pressure against a bank of gravel 280 feet high, which carries more or less gold from top to bottom. Upon my remarking that the monitor did not appear to be farther ahead than was the Chinese small monitor I had seen there five years before, Mr. Hobson informed me that the present large monitors were in reality farther back than the one referred to. The face of gravel could not have been washed ahead more than about one hundred feet, and yet I saw the $42,000 slug of gold that had just been washed up after a comparatively short run. This claim is being worked under great disadvantages, as could easily be seen. Mr. Hobson informs me that it will take two years to get fairly opened out, after which he says he will be disappointed if the output does not amount to one million dollars annually! A visit to this mine will well repay anyone interested in hydraulic mining.

The Horsefly mine, under the same management, is in some respects even more interesting to old miners who have not had the advantage of witnessing operations carried on by the more modern and scientific principles. Here we find 4,000 inches of water conveyed by ditch and pipe about seven miles, carried across depressions by inverted siphons, and supplying six No. 1 monitors, using from 6-inch to 8-inch nozzles. The company has been much retarded in its progress in consequence of the presence of an exceedingly hard cement, which the water, with the pressure obtainable, is unable to disturb. The Company, therefore, has had recourse to dynamite, which is used in large quantities, thus rendering the work very expensive. This cement is also encountered in the Cariboo mine, but not to the same extent as at Horsefly. In both of these claims at the time of my visit, this cement had very much diminished and better progress was being made.

I also visited the Horsefly Gold Mining Company's ground, four miles above, which the company proposes to work by the hydraulic elevator process. The plant is now en route to the mine. As much of the gravel in this vicinity was formerly worked in the old way, by shaft and drive, and proved exceedingly rich, this mine, with proper management, under the new system of working, should prove a lucrative investment.

CREEK DIGGINGS.

This class of mines refers to such as are worked by means of shaft and tunnel, and which may possibly be worked in the future by the hydraulic elevator process. A reference to the Register of leases applied for, shows that creek claims of this nature have of late been attracting more attention than hydraulic propositions, which last season, and during the early part of the present year, were apparently the only class of mines thought of by investors.

There are undoubted great advantages in working underground mines in this district, as compared to surface diggings, principally owing to the duration and severity of our cold weather, during which time work on our surface claims is suspended, while it is the best time for working underground, as there is usually less water to contend with, and foul air is less troublesome in the diggings.

The introduction of boring appliances to locate the depth of the old channel, is destined to create a new era in this class of mining, as shown by the successful working of these

machines at Slough Creek and Willow River. The former company has located what is supposed to be the deepest part of the channel at 287 feet below the surface, and 102 feet is the depth obtained on Willow River. Both these companies have prosecuted work with vigor during the season, but, unfortunately, in their attempt to sink a working shaft through the gravel, were drowned out. They are now preparing to sink their shafts in bedrock and drift out into the channel. Mr. Laird's report upon the Willow River mine will be found appended hereto.

NEW DIGGINGS.

The discovery of gold in paying quantities on Pine and Summit Creeks, situated about six miles north-east of Barkerville, has lent quite an impetus to prospecting in that direction. About twenty-five men have been employed here during the greater part of the season, either in prospecting or opening their claims for future working, and have brought in several thousand dollars. The ground on these streams is now all located, numbering some twenty claims in all.

On Shepherd Creek, a tributary of Pine, the Discovery Company has paid its shareholders handsomely, although working under adverse circumstances, owing to the light water supply.

Several prospecting parties went out in the direction of Bear and Goat Rivers, to the north-east of Barkerville, and confirm previous reports of the great possibilities of that section, in consequence of which several parties will winter there.

RIVER DREDGING.

This branch of mining in this district is now beginning to assume tangible shape. Two scows are now in course of construction at Quesnellemouth, into which dredging plants will be placed to commence operations on the Fraser and Quesnelle Rivers in the early spring. In this connection, a thought expressed in the concluding sentences of Mr. T. A. Rickard's article or river dredging in Otago, New Zealand, which appeared in the last Annual Report, will bear repetition. He says: "This concludes my notes upon a field but little known this side of the equator. The chief lesson it conveys is, that we should seek to profit by the experience of others. Otago has much to learn from California in lode mining and quartz milling, but California would do well to study the steps of Otago in hydraulic elevating and dredging. The miner should be the least conservative of men: his motto should be 'pass it on': the same difficulties should never require to be overcome twice: and thus should be avoided the worst of all wastes, the waste of experience." If then New Zealand is so far ahead of other countries in river dredging, why should those so employed in this country not profit by their experience, by sending a man to New Zealand to carefully examine and report upon this branch of mining as pursued there, and thus avoid the numerous mistakes which are certain to occur in all new undertakings.

Messrs Underwood and Co, of Quesnelle, have their scow, the dimensions of which are 120x24 feet, nearly ready for the machinery. They purpose working the lower ten miles of the Quesnelle River, of which a lease was obtained by Mr. W. A. Johnston. The Pittsburg and Cariboo Gold Dredging Company is just starting the construction of a dredge, also at Quesnelle, to work the Frazer River bed, above Cottonwood Cañon. Both these dredges are of the suction type, although differing slightly in construction.

THE HYDRAULIC ELEVATOR.

This process of recovering the gold scattered through gravel so situated that dumpage or grade for the sluices cannot be obtained, renders it possible to dispose of the débris, by raising it to a sufficient height to create a grade for the sluices. This system has been in use in New Zealand, Australia, and California for some years, but is quite new to British Columbia. The introduction of the plant, and the extensive preparations now being made by Mr. A. D. Whittier for the Cariboo Gold Fields, on Williams Creek, and perhaps on a less extensive scale by Mr. R. T. Ward, for the Horsefly Gold Mining Company, of Horsefly, is attracting much attention, and whose success will doubtless have a salutary effect upon the mining industry. The latter company had not, at the date of my visit, in October, commenced active operations on the ground, except on the ditches, and as Mr. Ward had not then arrived, I was unable to obtain definite information regarding their plant.

The thoroughness with which the preliminary work on the Gold Fields property is being carried out, reflects great credit upon the management. The magnitude and novelty of this enterprise, being such as to warrant more than a passing remark, I append the report of the Agent and Manager, Mr. A. D. Whittier, which includes that of his engineer, Mr. James Champion.

In concluding my report upon the mining industry in this district, I am impressed with its inadequacy to convey to the general reader a proper conception of the operations at present going on for the development of the mineral resources of Cariboo. There are many large claims operated by strong companies in various parts of the district, of which, not being able to make a personal inspection, I am unable to speak.

The increase in the gold product is principally due to the "washups" of the Cariboo and Horsefly mines. From present indications we judge that another year will add many new contributors to the general output of the district. Perhaps the most tangible proof of our coming prosperity will be found in the increase of revenue from mining receipts general, which is about $10,000 in excess for the eleven months ending 30th November, 1895, over the corresponding period in 1894, the total revenue from all sources being greater than at any time during the past twenty-five years.

There have been issued from the Richfield office since 1st January last 58 hydraulic leases, 42 creek leases, 29 dredging leases.

The following are the records:—166 placer mining claims, 84 mineral locations, 83 water grants for mining purposes.

Free Miners' Certificates issued in the district, 1,249.

The gold product for the year, closely approximate, is as follows:—

Barkerville Polling Division	$ 81,000
Lightning Creek Polling Division	40,700
Quesnelle Polling Division	18,200
Keithley, Quesnelle Forks, and Horsefly	145,000
Estimated product for whole district from date of collecting statistics till 31st December, 1895, say	16,000
Total	$300,900

I have, etc.,
JOHN BOWRON,
Gold Commissioner.

To the Honourable
The Minister of Mines.

MR. STEPHENSON'S REPORT.

SIR,—In submitting to you my annual report on mining in this section of Cariboo District, it is gratifying to note the improvement from last year in the amount of gold obtained for this season, with every prospect of the coming season making a yet greater improvement over the season just closing. And although the development of this section proceeds slowly, yet there has been sufficient work done to prove the value of this section of the district for hydraulic mining purposes, as demonstrated by the Cariboo Hydraulic Mining Company on the South Fork of Quesnelle River, and the Horsefly Hydraulic Mining Company on Horsefly River, these companies being the only ones yet that have done any washing of gravel on an extensive scale. Those companies express themselves fully satisfied as to the value of their mines. Both those mines since their purchase from former owners have been under the management of Mr. J. B. Hobson, M. E., as Superintendent, with Mr. L. F. Warner, M. E., as assistant, and the work done shows the thorough knowledge of the business possessed by those gentlemen. A visit to either or both of these mines, will well repay those about to engage in similar work or to any one interested in hydraulic mining.

On the Horsefly River, the Horsefly Hydraulic Mining Company have worked steadily for the season with a good supply of water, and although for a while a body of cement gave them considerable trouble the result of the season's work has been quite satisfactory. Considerable work has been done this season on the Harper lease, Horsefly, and quite an amount of

gold obtained. Still a great part of their work has been of a preliminary nature in preparing for next season's work. Below and joining the Horsefly Hydraulic Mining Company's ground, Mr. W. H. Thompson and others, owning a claim, have for several years past been driving in a bedrock tunnel to tap a back channel. I heard lately that they had got through the rock and into gravel, but with what result I did not learn.

On the South Fork of Quesnelle River, outside of the Cariboo Hydraulic Mining Company, very little work is being done, only one Chinese company working a very small hydraulic claim with about the usual number of desultory miners at work.

On the North Fork of Quesnelle River there has been considerable work done during this season. The Victoria Consolidated Hydraulic Mining Company employed quite a large number of men during the first part of the season repairing their ditch from Spanish Lake; also a strong gang upon their ground at Keithley Point, but unfortunately, about the time they got in good working order their head of water got so light that they could not work to advantage, therefore they shut down for the season, but will resume work in the early spring of next season under more favourable circumstances. On the opposite side of the river, and above Keithley Point, Mr. James Mathers has for the last three years been driving a tunnel and working through the bedrock to get into a back channel, and has succeeded in getting into gravel that will pay him for drifting. This ground is well situated for hydraulic mining, and as he (Mathers) has obtained a water right from Seller's Creek this should be a good property. At Cape Horn, five miles above the Forks, Mr. James Gray has a gang of men at work constructing a dam and digging a canal to turn the river across a point. He expects to have the job accomplished in a short time. This will give him quite a stretch of river bed to work besides sluicing off a large area of ground known to contain gold in paying quantities.

On Kangaroo Creek, Mr. Theo. Thormahlen is in about twelve hundred feet with a tunnel endeavouring to find the bedrock in the bottom of the creek, but has not yet found it. This creek was very rich in gold near the surface, and was completely worked out by Chinese, but owing to the great amount of water encountered no shaft was ever put down to the bedrock.

During the summer, E. B. Herman, C.E., of Vancouver, and others, located five mining leases on the north side of the North Fork of Quesnelle River. About six miles above the Forks on this ground they did some prospecting by sinking a shaft and making cuts into the benches; in all of these they claim to have found fair prospects. They also surveyed a ditch line from Duck Creek to bring water on the ground. On the Quesnelle River, from the Forks down to Beaver Lake Creek, three companies have done considerable amount of work during the season. On Four-mile Creek, J. M. Buxton, of Vancouver, has had a gang of from six to eight men for the season at work on the Maud Company's ground sinking shafts, driving a tunnel and doing other prospecting work. I have been informed quite satisfactory results have been obtained. On Twenty-Mile Creek there has also been a gang of men at work for a great part of the season on leases obtained by Mr. Buxton, while on the opposite side of the river, a little below Twenty-Mile Creek, the Montreal Company has had quite a large gang of men employed for the past year prospecting on their leased ground, and have obtained fine prospects in shafts and tunnel. From what I can learn this company will have very valuable mining property in the near future.

On Keithley, Snowshoe and Harvey Creeks there has been little or no change since last year. The number of men employed, and the amount of gold obtained, being about the same as last season.

Re mineral claims, there is little to report. There were twenty-four mineral claims recorded in this office during the season. On two of these there was very little prospecting done; on the others, no work whatever. Twenty of these locations were made on Snowshoe Mountain; three on Black Bear Creek, and one on the South Fork of Quesnelle River. But if we are short on quartz mines we expect to be quite up to the front on placers.

Enclosed herewith find estimated amount of gold for 1895.

I have, etc.,

W. STEPHENSON,

Government Agent.

The Honourable

The Minister of Mines, Victoria, B. C.

MR. LAIRD'S REPORT.

WILLOW RIVER, Dec. 2nd, 1895.

DEAR SIR,—In response to your request that I supply you with a report of the prospecting work so far done under what is popularly known as the Willow River lease, I take pleasure in submitting the following:—Actual work began July 1st of last year, and consisted of boring a series of holes across the valley to determine the exact distance to the bedrock, and to locate the old channel. Our boring machine has a capacity of 500 feet, but can be pressed to sink considerably deeper than that. A six inch pipe is used at the start, the size of pipe being reduced to three inches as the holes get deeper. We bored in all six holes, and figuring all of them as having started at a fixed level, we found the channel to be 102 feet from the surface. The machine also showed that, in every hole bored, at a uniform distance of 50 feet from the rock, an exceedingly hard stratum was encountered. So hard was this, in fact, that some of the men employed on the work contended that it was bedrock. As a matter of fact the stratum was harder than bedrock. From every hole bored a prospect was secured, those out of the 98 and 102-foot holes being especially encouraging. It seemed marvellous that such heavy pieces of gold could be forced up through one hundred feet of pipe by a jet of water.

After having satisfied ourselves as to the exact location and depth of the old channel, the next question was where to sink a shaft. Although aware of the almost universal failure of gravel shafts in this section of any great depth, we judged that we should be able to reach the hard stratum and shut off the surface water. Experience, however, proved that the surface water was altogether too great to be overcome, and we were compelled to add our shaft to the monuments epitaphed "drowned out," with which, unfortunately, the country was already only too well supplied. Our next move was to adopt the time-honoured saying, "make haste slowly." Accordingly we started on a level with the river at high water mark, and ran a drive into the hill a distance of 670 feet, where we found the rim rock. A careful survey has located the end of our tunnel on the surface of the ground above, and our "chore" now consists in sinking a shaft through the gravel 100 feet to connect with the tunnel, continue the shaft about 115 feet more through rock, and then drive out through the rock till we strike the channel at the point where we bored the 102-foot hole. We have built a shaft house on the hill where we were sinking, have a steam plant all placed ready for work, and everything in ship-shape for nine months steady work. An Ingersoll Sargeant steam drill and blasting outfit are on the way, so that nothing remains to be done now but to plod away, day and night, for the next eight or nine months till we reach our coveted goal and find —— what? It is, of course, needless to say that we *expect* to find gold and plenty of it. The work so far has been very expensive, as all mining operations in this section necessarily are, as it is so far from rapid and cheap transportation. I purchased some time ago an 18-inch Cornish pump, and the freight from Ashcroft here (285 miles) amounted to *more than the first cost of the pump.* The last freight I received was *thirty-two* days coming from Ashcroft here. If ever a country needed a railroad, in my humble opinion, it is this. I believe there can be no question about the wealth stored here, and with railroad communication I am convinced that there would be one thousand men working where there are now ten. The country for 285 miles all around this centre would be prospected and developed as this has been and is, and who knows but that we here are merely at the gateway of the gold-producing country. Pardon this digression, but I am sure that a railway would do more for this country than the discovery of half a dozen gold-producing mines.

Yours very respectfully,

FRED. C. LAIRD.

John Bowron, Esq.,
Gold Commissioner.

MR. WHITTIER'S REPORT.

BARKERVILLE, B. C., 3rd December, 1895.

John Bowron, Esq.,
Gold Commissioner, Richfield, B. C.

DEAR SIR,—In answer to your request for a statement of the amount and nature of the work done during the present mining season on the properties owned by the Cariboo Gold Fields, Limited, on and about Williams Creek, I do not think I can do better than to submit for your perusal the report of Mr. J. Champion, M.E., and dated 27th ult. This report will give the work in detail.

When all the works are completed next spring we will have 14 miles of ditches, and a grand total of (15,097) fifteen thousand and ninety-seven feet of steel hydraulic pipe lines in operation. The total weight of this pipe will be in the vicinity of 400 tons. There will also be 2,600 feet of tunnel, 2,200 feet of flume, and 1,140 feet of trestle for carrying pipe-line over Williams Creek.

One point of great interest to mining men in connection with this mine is that the main pipe-line that connects with the hydraulic gravel elevator will be worked under greater pressure than has ever been attempted in hydraulic mining in any country, and the gravel will be lifted from the bed-rock of Williams Creek to a height of over one hundred feet and deposited on the surface. This is the greatest elevation gravel has ever been lifted by hydraulic pressure. The pipe for this work is made of lap-weld steel, and is 12,200 feet in length. Starting at the elevator the pipe is 18 inches in diameter and $\frac{9}{32}$ of an inch thick. The different sizes are as follows:—6,850 feet of 18-in., 1,860 feet of 20-in., 990 feet of 22-in., 2,400 feet of 24-in., with a mouthpiece of 36 inches. This pipe is secured at the joints with "Kimberley collars," and tamped with 13 tons of lead. This pipe-line is at Ashcroft ready for shipment.

Outside of hydraulic mining, I shall erect this winter two hoisting engines at the mouth of Williams Creek to work the bottom gravels that are below the drainage line, and will work this ground continuously.

I expect to have all the development work completed and the mine in full operation not later than August 1st, 1896.

Yours faithfully,
A. D. WHITTIER,
Cariboo Gold Fields, Limited.

BARKERVILLE, B. C., November 27th, 1895.

To A. D. Whittier, Esq.,
Manager Cariboo Gold Fields, Limited.

DEAR SIR,—I have the honour herewith to submit a statement of work done on the Cariboo Gold Fields, Limited, during the present mining season.

On April 1st I made surveys for the present drain-tunnel, and found the distance from Valley Creek, the initial point, to a point where we expected to strike bedrock in Williams Creek to be 2,600 feet. Work was commenced on the tunnel on April 2nd.

The dimensions of the tunnel are:—Height, 6 feet 4 inches; width, 4 feet in the top and 5 feet in the bottom. The above measurements are within timbers.

Grade of tunnel, 1½ inches to 100 feet.

Length of tunnel excavated to date, 1,300 feet.

Four shafts have been sunk on the tunnel for ventilating purposes and for hoisting the dirt.

No. 4 shaft is 34 feet deep to the bottom of the tunnel.

The site for No. 5 shaft, 400 feet distant from No. 4 shaft, has been surveyed, plans made for the shaft-house and machinery, subject to your approval.

In this shaft-house the gravel will be hoisted by a steam engine, and washed as it is taken from the tunnel.

The buildings will be so constructed that work will be carried on continuously during the winter months.

At a distance of 2,000 feet from the assumed end of the drain-tunnel a log dam has been built across the creek, 343 feet long, 8 feet high, and 6 feet wide.

From the dam a flume, 14 feet wide and 6 feet high, with a grade of 2½ inches to 12 feet, has been constructed down the creek a distance of 2,200 feet. This flume will carry all the water and tailings of Williams Creek at its highest freshets and deposit it 200 feet below the proposed elevator shaft.

Surveys and drawings have been made for the elevator sluice, and the lumber sawed for the same. This flume will be erected next spring, after the completion of the drain-tunnel. The dimensions of this flume will be 6 feet wide by 6 feet high for 36 feet in length, the remainder will be 6 feet wide by 4 feet high.

Surveys have been made for ditches from Lightning Creek to the confluence of Jack of Clubs and Ground-hog Creeks, a distance of 3½ miles and from the confluence of the above streams to the pipe-line, a distance of 3½ miles more, making a total distance of 7 miles.

The dimensions of the Lightning Creek ditch are 7 feet wide on the top, 3 feet wide in the bottom, and 2 feet deep. The dimensions of the Jack of Clubs ditch are 9 feet wide on top, 4 feet wide in the bottom, and 2 feet 6 inches deep. Grade of ditches .03 to a rod.

The ditch from Jack of Clubs Creek to the pipe-line is completed, and the right-of-way is cleared of all timbers, etc., on the Lightning Creek ditch. This ditch will be completed as early as possible next spring.

A short ditch (16 rods long) has been completed from the head of Williams Creek to the "Eye Opener" flume crossing Williams Creek.

The old "Eye Opener" ditch has been resurveyed (a distance of 6 miles), all logs and stumps cleared out, and 2½ miles has been enlarged to date. Men are still working on the ditch, and I hope to have it completed to Williams Creek (a distance of 1 mile more) before Christmas.

Two new flumes, 4 feet wide and 2 feet deep, have been constructed on this ditch, the one crossing Williams Creek is 140 feet long, and the other 136 feet long. Another flume, 62 feet long, will be completed next week.

Surveys have been made for a new pipe-line for the "Eye Opener" claim. The length of pipe will be about 1,800 feet, which will give a pressure of 450 feet.

Surveys have also been made for the elevator pipe-line, from the end of Jack of Clubs ditch to the elevator shaft, a distance of 12,097 feet, which will give a perpendicular pressure of 998 feet to the drain-tunnel level.

Grading has been done on this pipe-line as follows:—Commencing at the end of ditch, thence down the mountain side 2,972 feet to the waggon road leading to Richfield, the ground has been graded down to a comparatively even grade. Cuttings have been made from nil to 12 feet deep, and embankments made from nil to 10 feet high.

From the Richfield Road a high trestle, 360 feet long, has been erected to carry the pipe across Williams Creek at the head of the cañon and into the Black Jack cut. From the end of this trestle a cut has been made through the Black Jack Mining Claim, 834 feet long, to Williams Creek, below the cañon; from thence a trestle has been erected, 780 feet long, crossing Williams Creek diagonally to the bulkhead.

Length of pipe from ditch to this point, 4,946 feet; length of pipe from this point to elevator shaft, 7,151 feet; making the total length of pipe, 12,097 feet.

A ditch has been surveyed from a point near Dower's cabin to a point on the western side of Williams Creek, opposite the site of the proposed elevator shaft. Length of ditch, ¾ of a mile. Dimensions of ditch are 7 feet wide on top, 3 feet wide in the bottom, and 2 feet deep.

A 12-in. pipe will be laid from the end of this ditch to the elevator shaft, a distance of about 1,200 feet. This pipe will be used for piping down the bank of gravel in the creek for the elevator.

At Ground-hog Lake, at the head of Ground-hog Creek, an open cut has been made from the creek in towards the lake, a distance of about 200 feet, which, when completed, will tap the lake 10 feet below the present low-water mark. Owing to the cold weather, work has been discontinued until next spring.

When this cut is completed, a pipe will be laid in said cut, a water-gate fixed in the pipe, and a dam built 20 feet high above the gate-pipe, which will increase the capacity of the lake about four fold.

I am, etc.,

JAMES CHAMPION,
Consulting Mining Engineer.

THE SLOUGH CREEK MINING COMPANY, CARIBOO.

Development Work, 1895.

At the beginning of the year a working shaft was being sunk at a point near the centre of the valley through the alluvial strata, which work was continuously prosecuted until the month of June, when the attempt to further sink at that point was abandoned, on account of an excess of surface water. As soon as it had been decided to discontinue sinking at this point, hydraulic jetting machines were put in operation and a further number of prospect shafts were drilled from the surface to the bedrock, thus completing a series of prospect shafts across the valley, and from the results a cross-section of the entire width of the valley has been prepared. It was found that the extreme depth of the old channel is 287 feet. Previously to the beginning of this year a drain-tunnel had been constructed for the purpose of shedding the surface water as far as possible, in length 2,150 feet, which connected with the main working shaft at about 40 feet from the surface. It was decided to construct a lateral extension of this drain tunnel to the rim rock, an estimated distance of about 400 feet, for the double purpose of draining the high rock so that it might be worked for gold and permitting a bedrock shaft to be sunk at the point where the tunnel connects with the rim. While the prospect shafts were being sunk this year this tunnel extension was being run, and about one-half, or 200 feet, has been completed. When it has been completed, it is proposed to sink a bedrock shaft to a sufficient depth, say 325 feet, to permit a drive or tunnel to be run out under the old channel, reaching a point 300 feet from the surface. This will allow 13 feet to provide for any possible depression lower than the 287 feet depth as shown by the jetting machine. A very encouraging fact in connection with the drilling is that gold colours in considerable quantity were brought up from all the holes drilled at different depths, and particularly from the bedrock. The best showing was from the deepest hole. It is the purpose of the Company to prosecute the development work as rapidly as possible until the old channel is reached, and at the same time to work the high rock. From twenty-five to thirty men have been employed duriug the greater part of the year.

Respectfully submitted,

W. H. FIFE,
President.

W. F. SARGENT,
Secretary.

CASSIAR.

MR. PORTER'S REPORT.

LAKETON, CASSIAR, B. C., 9th October, 1895.

SIR,—I have the honour to enclose the mining statistics and my annual report for this District for the year 1895.

I regret to say that no new discoveries of importance have been recorded during the past season.

Three men were out prospecting during the summer in the Mud River country, but were not successful in finding anything of importance, although they report having obtained some fair prospects on one or two streams that they were not able to thoroughly test this season, on account of the unusual high water met with and other causes. They intend, however, to return to these creeks on the snow early in the spring, and so endeavour to thoroughly prospect them before high water occurs. I am inclined to think, judging by what I can learn from these prospectors, that there are some creeks in that direction that will yet yield a fair harvest of the precious metal.

Four gentlemen from foreign parts paid us a visit during the summer, their object being to test some of our quartz. They came quite prepared, for they had with them all the appliances necessary for that kind of prospecting, but so far, I am sorry to say, they have not been successful enough to find anything that would pay to work in such a remote place as this. I understand from them that it is their intention to return to the district again next season and further prosecute their researches in that direction, and if they do it is to be hoped they will find something that will reward them well for their perseverance and outlay.

The little mining carried on here this summer in the beds of the old streams was greatly retarded by the unusual high water, that was caused by the heavy rains we had during July and August, which, on one or two occasions, caused the water in the creeks to rise to such an extent that it ran over all the wing-dams, and in some instances it completely washed them out.

I am pleased to report that a gentleman recently from England applied to me to-day for a lease of a piece of mining ground at the month of Dease Creek. It is generally supposed that this ground is rich, as it has been the natural dump of the creek for ages. During the early days here the bed of the creek immediately above this point was mined, and it paid rich down to the very verge of the ground applied for, but as it got too deep to work in the usual way, it was abandoned, and has remained so ever since, waiting for some one to come along and take hold of it who could raise the necessary capital and machinery to develop it.

You will observe that the output of gold this season is only a trifle less than that of last year, which might be claimed as being a very fair result, when the many drawbacks met with during the season are taken into consideration.

The returns, as closely as can with any accuracy be obtained, are as follows:—

McDame Creek and tributaries	$ 9,650
Liard River Division	475
Thibert Creek and tributaries	4,000
Dease Creek	8,450
Total	$22,575

The weather has been remarkably fine since about the 20th of last month, so much so that it is certainly making amends for the past, for no one has yet been obliged to cease operations in their claims on account of frost, which is a very unusual thing here as late as this. There is not a speck of snow upon the ground at the present time, and there has not been sufficient frost so far to even seal up the smallest pond.

I have, &c.,

JAMES PORTER,
Gold Commissioner.

To the Honourable
The Minister of Mines.

LILLOOET.

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MR. F. SOUES' REPORT.

SIR,—I have the honour to enclose herewith the mining statistics for Lillooet District, and my annual report for the year 1895. The total yield of gold from the district (ascertained from reliable sources only) is $40,663, showing a slight increase on the yield of last year, but still much below the average of past years. Two-thirds of the total amount may safely be credited to the desultory work of Indians and Chinese, as very few white miners have been gold producers during the past year in this district. In the early summer the whole of the mining leases, at and near Lillooet, were bonded by the Lillooet-Fraser River and Gold Fields Co. They sunk prospecting shafts on the Irving-Jensen, Lillooet-Hydraulic, Vancouver-Enterprise and Hurley-McDonald leases, also on the Eyre-Martley lease, near Pavilion. I append a report on the prospecting works carried out by this company during the past year, courteously furnished me by Mr. D. T. Hughes, the superintendent of the company, a gentleman of many years' experience in the management of placer and quartz mines in California and other lands. With the exception of the prospecting done on the above named claims, no work has been done on any of the other hydraulic mining claims in this district, and the total production of gold is reduced, by the amount obtained in former years from the Lillooet-Hydraulic, Vancouver-Enterprise, and the Hurley-McDonald leases. These three concessions being under bond, were not gold producers this year. The Bridge River Gold Mining Co. have had several men employed during the past year, and have completed a long line of ditch to their mining leases, but too late to use it this season. Scotty's Creek, tributary to the Bonaparte River, has again claimed the attention of the white miner, and six claims have been located on it near its confluence with the Bonaparte. I was shown a very handsome sample of 2 or 3 ounces, taken from one of the claims in the early part of last month. At long intervals, extending back to 1867, this creek has been mined with varying success; the great obstacle in the way being huge boulders. The present locators seem determined to get rid of them, and work the claims thoroughly next season.

I have no report to make on any really new placer mining discoveries, and summed up briefly the production ($40,663) for this year has been obtained from the gravels of the Fraser River, and a few of the tributaries of that river, principally in the immediate neighbourhood of Lillooet; in fact $27,000 worth was bought there by Mr. A. W. Smith, who has for many years been the principal buyer.

QUARTZ.

Twenty-seven mineral claims have been recorded during the year, of which seven are on the Pemberton Portage, nineteen on Cayoosh Creek, and one on the Bonaparte. Of the claims recorded on the Pemberton Portage, there are three distinct veins, running parallel. Development work has only been done on one claim, an assay from the croppings of which gave a return of $10 per ton. The larger number of mineral locations recorded on Cayoosh Creek, is due to the fact that the Bonanza group of claims were bonded, and active prospecting commenced on them, under the superintendence of Mr. Hughes, who reports fully on the work done on this group of claims and others.

Of the locations on the North Thompson, I have no information of the work done on them. Crown grants were issued during the year for two of the claims there, the "Ironclad" and the "Lone Prospector."

DREDGING.

With the exception of an impracticable canyon, the whole of the bed of the Fraser River in my distaict is under lease at an annual aggregate rental of $2,880.

Dredging in my district is a weighty and unsolved problem, as that system of mining has never been tried. I understand there are dredging machines of various kinds, both above and below me, but in dealing with the question, I must be understood to refer only to that portion of the river within my district and lying between 50° 20′ and 52° north latitude, and closely following the 122nd meridian of west longtitude.

In other lands, notably the middle New Zealand Island, river dredging for gold has been fairly successful. From the Australian Mining Standard of the 2nd ult., I quote a portion of the report of the Minister of Mines for the Otago gold fields for last year.

"*Clutha Valley.*

"There are several large companies carrying on mining operations in this valley, some by hydraulic sluicing and elevating, and some by dredging. The whole of the drifts in the Clutha Valley are nothing but a deposit of concentrated material, the light sand and mud being carried away by the waters of the Clutha River to the ocean, and leaving the denser materials behind. The river has shifted its channel at different times and gradually cut down its present bed, where very rich deposits of auriferous wash-drifts are found in many places. Indeed, there are few of the dredging machines now placed in this river which are not working the bed with success. Dredges, as applied to mining, have not only been profitably employed in lifting the auriferous gravels from the beds of the rivers, but they are also used in working the ground in flats, where the depth does not exceed 35 feet, and where the quantity of water to contend with has hitherto prevented the ground being worked by any other means, and they are likely to be largely used in this way in the future.

"The bed of every tributary and stream coming into the Clutha Valley, contains more or less gold, and on the Old Man range, fronting the valley, wherever there is any wash-drift containing gold, men are to be found working at different places and making a livelihood, wherever a supply of water can be obtained."

The New Zealander has been a successful miner, as his grand record of over one hundred million dollars in the past 34 years testifies.

He has been an enterprising miner, and years ago put into practical operation hydraulic sluicing, hydraulic elevating, and dredging the river beds, and without doubt we have much to learn from him. But the New Zealander has not had a Fraser River to deal with. That problem remains to be solved. By way of comparison, the Clutha, one of the principal rivers of the middle island, enters the South Pacific Ocean in latitude 46° 20′ south, practically the same as Astoria, at the mouth of the Columbia River. That part of the Fraser River with which I am dealing lying between latitude 50° 20′ and 52° north, giving the New Zealander a climatic advantage of from 4° to 6° of latitude, a matter of much importance in length of season. The Clutha River has possibly a total length of 250 miles. The Fraser River has run a course of between 400 and 500 miles before crossing the 52nd parallel, and is carrying the entire drainage of that large area embraced within the meridians of 118° and 127° west longtitude. From these comparisons I infer that the auriferous gravels and the débris (boulders) to be encountered, and the volume of water to contend with in the two rivers, cannot possibly bear any comparison. I am not aware of the extremes between high and low water in the Clutha. The average rise of the Fraser in my district is from 40 to 50 feet, at intervals of a few years 10 feet can safely be added. In high water, restless and resistless as the tides of Fundy, and uncertain at all seasons. In the early part of last month at the St. Mary's Creek ferry, in my district, the river rose in three or four days 14 feet without the slightest local climatic cause. I have endeavoured to show the obstacles in the way and the difficulties to overcome in the dredging operations that may be undertaken on the Fraser River, but I do not wish it to be understood that they are insurmountable.

The largest sized dredgers could be in perfect safety when the river is at its highest. A peculiarity is the locally known "eddies," numerous on both sides at short intervals, where the water at the edge of the river runs up stream for long distances, while the centre is a raging torrant, hurrying on in the opposite direction, and carrying with it all kinds of débris, including with it entire trees often a hundred feet long and upwards with roots attached. The river freezes over, but there are long stretches that do not. In these open stretches dredging in mild weather could be carried on to advantage, even in midwinter. As a rule the river is very low then, reaching the lowest mark in February.

From Dr. Dawson's admirable treatise on the "Mineral Wealth of British Columbia," a work which I cannot too strongly recommend to the careful perusal of every one engaged in, or intending to engage in, hydraulic mining or dredging in this Province, I quote: "The Fraser carries to the sea a great part of the entire drainage of the Intesior of British Columbia. * * * Beyond Boston Bar the valley becomes a direct and deep north and south furrough, all the way to Fort George, in latitude 54° * * * From the point of view of the gold miner, the Fraser may be regarded as a gigantic ground-sluice.

Its valley, originally excavated in Tertiary times, in the rocky sub-stratum of the country, was subsequently, during the glacial period, largely filled with drift material, through which, at a still later date, the river has had to re-excavate its bed, leaving great series of terraces, or 'benches,' along its bank in many places as this was gradually accomplished. A portion of the gold now found in its bed and banks has, without doubt, been won out of its rocky matrix directly by the action of the river and its immediate tributaries, while another portion may have been derived from the glacially transported drift materials. The first named moiety may be supposed to include the 'coarse' gold; the last must be in great part 'fine' gold. A great proportion of all this gold, from whatever source derived, has been gradually concentrated in the river bottom by the action of the stream, while in many places paying deposits have been left upon the surfaces of 'benches' at various levels, or buried beneath their material, each such 'pay-streak' representing some portion of a former bed of the river, which has been left behind as erosion progressed. * * * * * *

"It scarcely, I believe, admits of doubt that extensive and successful mining enterprises, based on the application of the hydraulic method of working, will yet be instituted along a great part of the length of the Fraser valley, while dredging or other methods by which the materials of the bottom may be obtained and treated may also be profitably employed. The great extent of the bench or terrace deposits of the valley, with the excellent opportunity of disposing of the waste, offer exceptionally favourable conditions for hydraulic work, and tributary streams with a sufficient quantity and head of water for mining purposes are not wanting.

"From the point of view of the gold miner, the Fraser may be regarded as a gigantic ground-sluice." Undoubtedly it is, and it is a ground-sluice that has never been "cleaned up," and, in addition, the forces of erosion and denudation, the latter to an enormous extent in high water, are ceaselessly adding to the golden deposit. I know, personally, of bars on the Fraser that have been worked every winter and early spring, on the same spots, for the past thirty years, as a rule by the Indians and Chinese, with the primitive rocker and pan. This in itself I think is conclusive evidence that the supply is renewed annually. The so-called bars are nothing more than portions of the river bed left bare at low water, and it must be borne in mind that the season for working these bare spots is a very brief one, much broken by severe weather, and liable at any moment to the erratic overflow movements of the river. White miners have in many places, to my knowledge, tried wing-damming in well-known rich places, notably Big Bar, spent much money and time, exposed to the extreme cold, with the total result of a sudden rise of the river washing everything away in one night.

There is a limit to human perseverance, and the golden treasures of the Fraser and its larger tributaries will never be obtained by wing-damming—a system of mining of which I have a thorough practical knowledge, having worked at it for months with success in early manhood, but dealing with a very different stream to the Fraser. From 1881 to date, the well ascertained value of the gold obtained in this district aggregates $1,070,850, wholly obtained from the auriferous gravels of the Fraser and a few of its tributaries, notably Cayoosh Creek and Bridge River. This golden prize has fallen into the hands of Chinese and Indians, as during all these years, I regret to say, the white gold-producing miner has been in a microscopic minority.

Divided between the two former, the Chinese may safely get credit for nine-tenths of the whole. From the white miner and the Indian a fairly truthful account of their doings can always be had, but from the Chinese it is very different, and in addition to the above figures there is a large amount unaccounted for, especially during the years 1884-7, inclusive, when the Chinese were the only miners on Cayoosh Creek, and cleaned up the accumulated surface deposits of ages there, of an amount that will never be known. Hydraulic mining and dredging at present are attracting a very great amount of attention. I have dwelt on the subject at greater length than I intended, but with the sole aim in view to place the matter before the public with indisputable facts and figures so far as in my power. The existence of gold in enormous quantities in the bed of the Fraser River is beyond dispute. The difficulties in the way, as I have endeavoured to show, of obtaining that submerged gold are also great. The New Zealand miner has satisfactorily solved the question so far as his rivers and auriferous gravels are concerned, and I know of no reason why it should not be solved in this Province also in the near future. Of the various forms of dredgers and their equally varied claims to merit, I cannot speak, but I think it will be admitted that only the most powerfully constructed machines in every way need attempt the task. Frail and weak machines, of what-

ever pretensions, are out of the question, and will, if attempted, surely result in loss of time and money. The individual holder of a dredging lease, unaided by capital, can never place the required dredger on it. In all likelihood, individual leases will fall into the hands of incorporated companies by transfer (as some already have done), who will, in that event, be in a position to commence and carry on work on a large scale and on business principles, and to effect this will require time and careful examination of the river and its banks. The company who acquire individual leases by transfer are then subject to the terms, conditions, and penalties of the leases in like manner to the original licensee. The working condition in such cases may be impossible to comply with, and I think every reasonable allowance should be made to any *bonâ fide* company prepared to risk capital in an undertaking that I have no doubt will, sooner or later, add very materially to the mineral wealth of this Province.

COAL.

Two prospecting licences were issued to parties on the North Thompson during the year. On the lignite deposit on Hat Creek a small quantity is, I believe, mined annually for local consumption. Coal was discovered on the west side of the Fraser, below St. Mary's Creek, and also near Big Bar, during the past year. From the former I forwarded a sample to Mr. Carmichael, Government Assayer, who pronounced it to be lignite. As such it would be of but little value, unless in mass and of easy access, and then only for local use. Prospecting, to a limited extent, was carried out, showing only thin seams. As this discovery is in the immediate neighbourhood of bars on the Fraser likely to be worked by steam power, further exploration may bring to light enough of this class of coal that would be of value for steam generating purposes, wood, other than drift, being a scarce article there.

The following statement shows the number of Free Miner's certificates issued in this district for the past year, and the number of leases issued and applied for:—

Free Miner's certificates issued	166
Mining receipts, general	$4,790.75
Mineral claims recorded	27
Placer claims recorded	13
Placer claims re-recorded	9
Hydraulic mining leases in force	32
Hydraulic mining leases applied for	6
Dredging leases in force	18

I enclose herewith sketch map of the mineral locations, &c., on Cayoosh Creek, the data for which I am under obligation to Mr. A. W. Smith, M.L.A.

I also enclose sketch map showing the location of mining leases near the town of Lillooet.

I have, &c.,

(Signed) F. SOUES,

Gold Commissioner.

To the Honourable
The Minister of Mines.

MR. D. T. HUGHES' REPORT.

LILLOOET, 19th December, 1895.

DEAR SIR,—In compliance with your request for a report on the prospecting done under my superintendence at Lillooet during the past season, I submit the following statement:—

Mining at Lillooet and along the Fraser River, throughout the Lillooet Basin, during the past year, has been limited to a few operations in a small way, but a large amount of prospecting has been done by the Lillooet, Fraser River and Cariboo Gold Fields Mining Company on the gravel benches around Lillooet, but the hydraulic plant proposed to be erected to wash off these terraces has been postponed for the present. The same company, however, are still at work on the Vancouver-Enterprise mine, which they have bonded, endeavouring to bottom the ancient bed of Cayoosh Creek below and east of the Falls, where at one time the waters of the

original Cayoosh Creek passed around the present Falls, afterwards closed in by a prodigious land slide from the high mountain above forcing its waters to find another channel over the present Falls and forming what is now known as the Cayoosh Basin above, taking advantage of the outward portion of the old Vancouver tunnel, below the Falls, inside of which the company sank a shaft. In this they found the rim rock dipping into the channel and afterwards sunk another further over the channel where they struck the same rim rock, with much water, still dipping towards the centre of the channel. This induced the Company to drive a new tunnel, which was driven in 145 feet and a shaft sunk at the end 46 feet, when the water became too strong for hand power. Then, after considerable delay, suitable machinery was obtained and put up, taking advantage of the Falls above to utilize the water of Cayoosh Creek for power. A very compact plant was erected, consisting of a four-foot Pelton wheel, with gearing to match, connected by suitable rods through the tunnel with a 6½-inch plunger pump in the shaft at the end. Since, the work is progressing favourably, until the cold weather set in, which forced all operations to be suspended until the weather modifies. The feasibility of this undertaking is clear enough, and all, of course, depends on the amount of gold found on the bottom, and whether in paying quantities or not.

Quartz along the mountain slopes, bordering along Cayoosh Creek, has received considerable attention the past season.

The Lillooet, Fraser River and Cariboo Mining Company have undertaken, under a long bond, to prospect and investigate the Bonanza Quartz mining property, and they have done much work to date, and still working a number of men in prospecting the two lower claims of the Bonanza Company. From the Bonanza shaft on the high, rugged and narrow ridge at the upper boundary line of the above claims to the lower cropping and works of the Bonanza Company (this point is about 300 feet perpendicular above Cayoosh Creek and the principal base of operations of the present workings), considerable prospecting has been done on both sides of the ridge and at different points, and considerable quartz is shown up in several places, carrying more or less gold, but no extensive openings have been made except at the lower old workings. This having the most promising outlook and the largest outcrop of auriferous material in sight at that time. Although aware that many geological complications might arise, the Company went at this in earnest, and as fast as circumstances permitted increased the force, excavating and breaking down the face of the bank and which resulted in a short time in showing up a long face of auriferous paying material spread out like a blanket vein—5 to 10 feet thick and apparently without any defined walls. This rather peculiar conglomeration of vein matter consists of a mixture of schistose material twisted and contorted in all ways with stringers and bunches of quartz intermingling all through in every conceivable form, and below the line of decomposition all this vein matter is well impregnated with iron and arsenical pyrites, all carrying gold.

Having in view the theory that there must be connection between this auriferous material and a better defined vein, sinking was then commenced together with some persistent prospecting on the other side, finally this work showed up a regular vein connecting with the surface outcrop. It is well defined, varying from 2½ to 4 feet in width with a trend of a little east of south dipping at an angle of about 35 degrees east. The vein matter is somewhat similar to that of the outcrop, with the exception that a narrow stratum of a hard and much altered dyke material follows the foot-wall and forming a part of the veins carrying more or less iron pyrites and gold. The foot-wall is schist and generally well defined, frequently passing into a seamy shiney black schistose material resembling plumbago.

The hanging wall is not so well defined, except at intervals, and susceptible to many changes from hard argillaceous slate to a softer and a more yielding slatey foundation—thus the wall is sometimes smooth and again not so well defined as these changes occur. On discovering this vein a tunnel was at once commenced and pushed ahead and now in 150 feet in a similar formation, but expecting to intersect a larger deposit of ore at any time, and by next spring the showing then made will have much bearing as to the merit of the lower end of this property. Later in the season further prospecting have been carried on by this Company on the north or opposite side of Cayoosh Creek on what is known as the Marshall locations, but without attaining any satisfactory results owing to the closing in of the season, the snow and cold weather making it impractical to continue work any longer until next spring opens.

Much prospecting for quartz, in a small way, has been done along the mountains bordering Cayoosh Creek and vicinity for many years past, and generally speaking, with rather poor success, not for the lack of quartz, or of the finding of a little gold, but by not finding uniform and well defined veins and gold in paying quantities. From a short distance above the mouth

of this creek up to the granite belt above, some 15 miles or more, the mountains on both sides are high, precipitous and rugged down to the water's edge, or where the lower slopes are less precipitous it is heavily talus laden from the creek high up on the mountain sides. These great masses of loose rock of débris are the result of accumulations from the disintegration of the rocks above and unfortunate for the prospector. It hides from view the general formation that, with the ruggedness of the mountains, make it a hard country for the miner to operate in. Besides the geological conditions throughout this region are a marvel of complications and seem to have been roughly handled by the hand of Nature—a more disturbed locality is seldom met with anywhere. Along the steep and bare mountain declivities, from the highest pinnacle to the water's edge, can be seen dykes of intrusive rocks of all widths, cutting the slatey formations in all conceivable forms and angles, from horizontal to perpendicular, and rents and fissures are not uncommon, causing dislocation of the strata. Often the slates are contorted and twisted and in such a way that it would seem as if the whole rigon was at one time the seat of some great dynamic movement. Nevertheless, these dykes are not conclusive evidence but that auriferous quartz in paying quantities does not exist along this part of the country and in veins, such as are shown up in the Bonanza; but on the contrary, the formation of these dykes may possibly have been the means of forming fissures favouring the conditions for vein formations. The numerous quartz bunches or deposits, and clusters of quartz stringers with stratas of schist intervening, carrying iron or arsenical pyrites with here and there a little prospect of gold, indicate the strong probability that most of this auriferous material was formed through the action of such agency. With the exception of this dyke material the formation in general is argillaceous slates and schists showing considerable metamorphism in places and passing in belts into micaceous talc and chloritic slates and schists, and through all these classes of rock the quartz bunches and stringers pass. Sometimes in conformity with the plane of the stratifications, in other places cutting the formations at all angles, such is the Cayoosh country, and nothing but time and much capital can show whether this has much merit as a quartz mining region or not.

Yours very truly,
D. T. HUGHES.

F. Soues, Esq.,
Gold Commissioner, Clinton.

EAST KOOTENAY.

MR. J. F. ARMSTRONG'S REPORT.

DEAR SIR,—I have the honour of submitting to you my report on the mining operations of this district for the year ending 31st December, 1895.

The number of free miners' certificates issued during the year is 404, and the other mining receipts amount to $2,203.10.

Placer mining shows a considerable decrease from previous years in the estimated output. The profits from individual placer mining is now so small that the number of white men thus employed decreases from year to year, and 80 per cent. of this year's yield was taken out by Chinamen. The different companies who are interested in hydraulic mining are not yet far enough advanced in their operations to be able to show any results. Further on I give a statement of the estimated output and a description of the various works now in course of construction.

Mineral claims have this year, for the first time, become productive in reality. A large quantity of ore is now awaiting the opening of navigation for shipment to smelters. The demand for means of transportation has resulted in the commencement of the construction of

two new steamers and the enlargement of a third to ply on the Kootenay River. There has been a large increase in the number of prospectors in the southern part of the district. Development work has not kept pace with the prospecting, but it is expected the successful working of some of our mines will attract capital, and that next year will show an improvement in this branch of mining. Further on I give particulars of the development of the principal mines in the district.

Coal mining has made no progress during the year. Coal is here in enormous quantities, but it must remain unused until the coal-fields are reached by railways. The principal beds are in the Crow's Nest Pass, but a promising seam has lately been discovered on the St. Mary's River.

The oil fields in the south-eastern corner of the district remain undeveloped. I heard that oil indications have been found outside of the territory which was previously known to be oil-bearing.

PLACER MINING.

The yield of gold from various creeks is estimated at—

Wild Horse Creek	$13,000 00
Moyie River	2,000 00
Perry Creek	1,500 00
Bull River	700 00
Findlay Creek	200 00
Lost and Man's Creeks	175 00
Canyon Creek	.....
Total	$17,575 00

No amount is put opposite Canyon Creek, as cold weather came on before the companies were ready for the clean-up, and the result of their work will not be known till spring.

I would report as follows on the different creeks, commencing at the north :—

Canyon Creek.

A company under the management of P. Leake, Esq., has been working at a point about a mile and a half above the mouth of the canyon. The canyon here is about 800 feet deep, with steep rocky sides. A tunnel through solid rock, 7 feet by 5 feet, and 275 feet in length, and a dam, 70 feet in length by 16 feet in height, have been constructed, and the whole of the creek has been diverted, laying bare workable gravel 500 feet in length by an average width of 100 feet. Six hundred feet of sluice-boxes, averaging 17 inches in width, are in use. A bed-rock ditch is under way, 500 feet, of an average depth of four feet, having been excavated before frost. Work will be resumed at the beginning of April.

One mile lower down the creek a flume, 5 feet by 7 feet and 350 long, takes all the water of the creek until medium high-water mark is reached. A shaft had been sunk 25 feet, *when the work stopped on account of cold weather; it will be continued in the spring.*

In November and December two leases were granted for grounds below the canyon, and one for grounds above the described works, and an application is under consideration for another portion higher up the creek.

Toby Creek.

A considerable amount of work on wing-dams was done in the spring on the lease of one and a half miles described in last year's report. The high water carried away most of the improvements, but the lessee intends to try again. Eight leases, covering four miles of the creek, were granted in December, and it is expected that this locality will we active next summer.

Findlay Creek.

A little washing has been done, and leases covering a mile and a half have lately been executed, and it is hoped that this well-known creek may again be a productive centre.

Wild Horse Creek.

This, the most ancient of the Kootenay placer grounds, has been worked during the season by Chinamen, and the output shows a decrease from former years. More scientific methods

are required. The East Kootenay Exploration Syndicate are meditating an enlarged hydraulic plant. The old Nip and Tuck claim has passed into strong hands. The International Placer Company are driving a tunnel to a supposed old channel, and had penetrated over 200 feet at the end of the year, and will work all winter if necessary. Several applications for leases have been made, and livelier times are expected next year.

Perry Creek.

No new developments have occurred on this creek during the year.

Moyie River.

Work on the tunnel toward an old channel has been continued whenever the water permitted, and fair pay has been made.

Bull River.

A company has been tunnelling for a back channel, and are still at work, not having reached it yet.

Gold Creek, near the Boundary Line.

A little desultory work has been done, but the results are not promising.

Mineral Claims on Vermont Creek, a tributary of the Spillamacheen.

The development work has been discontinued and a large increase made in the amount of ore in sight. An experiment has been made in the way of transportation. It has been found that the heavy horses needed for economical sleigh hauling are not adapted to the soft roads which are an accompaniment of a heavy snowfall. It was determined to try toboggans with the ordinary cayuses. The want of snow during the first part of the winter caused delay, but I am now informed that the experiment has proved a success, and the ore mined last fall will soon be on the bank of the Columbia River. Work on this mine is stopped for the winter, but will be resumed in the spring.

Bobbie Burns Claim, in the Bobbie Burns Basin, Spillamacheen River.

This valuable gold property, on which so much money has been expended, has lain idle on account of litigation. A Crown grant has now issued, and it is expected that work will be resumed as early next spring as the season will permit.

International Claim at the head of the Middle Fork, Spillamacheen River.

This is another developed gold property which has lain idle during the year. The owner died in 1894, and the property is in the hands of his administrator, who was not in a position to work the mine.

Hidden Treasure Claim on Spillamacheen Mountain.

This copper mine is only seven miles from the Columbia River. A considerable amount of development work was done some years ago, and the assessment work of this year developed a valuable copper ore, and work was then continued on a larger scale. Ore has been extracted for a test shipment.

Giant Claim on Spillamacheen Mountain.

A tunnel has been driven 42 feet, penetrating the ore body eight feet. The ore is galena.

North Star Mine on Mark Creek, west of Fort Steele.

This is the first mine in the district to be worked on a large scale. A large body of ore had been exposed in 1893, and subsequently the shaft had been sunk in it to the depth of 65 feet. At the 20-foot level a tunnel has been driven 30 feet. From the tunnel drifts have been run 10 feet both ways in solid ore. A force of 25 men has been at work since last spring. Cars are used in the tunnel and a steam hoist in the shaft. Thirty tons a day are being hauled to the Kootenay River, over a good waggon road with only one up grade. Sleighs are

found more economical than waggons, and are used when there is enough snow on the ground. A shipment of 32 tons was made by the last boats of the season. It is reported to have produced $68.70 to the ton. Steady systematic work is now being done, and a large output is expected next year. Contracts have been entered into with two steam navigation companies for the transportation of 5,000 tons of ore.

Sullivan Group on the North Side of Mark Creek.

This group is about two miles from the North Star, but on the other side of the creek. The first claims were located in 1892. The discoverers have been working on them steadily and have exposed a large area of ore, and are now sinking a shaft to prove the value of the property.

St. Eugéne, on Moyie Lake.

This mine, situate on a mountain side at a slope of 45 degrees, is being well developed. A continuous vein of 800 feet has been exposed, and one tunnel of over 100 feet has been driven. The owner claims that one thousand tons of ore have been taken from this tunnel, and that three thousand tons more are in sight. Lower down the mountain side, another tunnel has been driven, and it is reported that at 150 feet from its mouth the vein has been found 120 feet below the level of the upper tunnel.

Peter, on Moyie Lake.

This claim is being developed with a view to economical working. It is only a quarter of a mile from the St. Eugéne. A waggon road will have to be constructed from the lake to Cranbrooke, from which point there is a good road to the Kootenay River.

The Dibble Group on Lost Creek, in the Rocky Mountains.

A sample shipment of four tons of ore was sent from these mines to a smelter at Everett, and gave returns of 132 ounces of silver, $1.75 gold, and 3 per cent. copper to the ton. The group has been bonded to a Mr. Chisholm, of Helena, Montana, who is having a 200-foot tunnel driven.

Other Mineral Claims.

On the other mines of the district, little more than assessment work has been done. Valuable prospects are numerous, but capital is needed to work them. Large tracts of land are still unexplored, and with the influx of capital an impetus will be given to further prospecting.

The following is a list of the localities in which there are now mineral claims in force:—

MINING DIVISION.	LOCALITY.	ORE.
Donald	Hen Basket Lake	Galena.
Do	Prairie Mountain	Gold quartz.
Do	Porcupine Creek	Gold quartz.
Golden	Field Mountain	Galena.
Do	Otter Tail Creek	Galena.
Do	Cariboo Basin	Galena and gold.
Do	Bobbie Burns Basin	Gold quartz.
Do	McMurdo Creek	Gold, galena.
Do	Carbonate Mountain	Gold, bismuth, galena.
Do	Crystal Creek	Galena.
Do	Vermont Creek	Galena.
Do	Jubilee Mountain	Copper, galena.
Do	Spillmacheen Mountain	Copper, galena.
Do	Bugaboo Creek	Gold quartz.
Do	Driftwood Creek	Gold quartz.
Do	Salmon River	Gold quartz.
Do	Steamboat Butte	Gold quartz.
Windermere	Horse Thief Creek	Copper.
Do	Shuswap Creek	Copper.

The following is a list of the localities in which there are now mineral claims in force.—*Concluded:*—

MINING DIVISION.	LOCALITY.	ORE.
Windermere	Toby Creek	Galena.
Do	Windermere Mountain	Copper.
Do	Thunder Hill	Gold quartz and galena.
Fort Steele	Sheep Creek	No report.
Do	Wolf Creek	No report.
Do	Wild Horse Creek	Gold, iron sulphurets.
Do	Boulder Creek	Gold.
Do	Brewery Creek	Gold.
Do	Lost Creek	Grey copper, galena.
Do	Man's Creek	Gold, iron pyrites.
Do	Bull River	Galena.
Do	Sand Creek	Copper pyrites.
Do	Mark Creek	Steel, galena, iron, etc.
Do	St. Mary's River	Gold, copper.
Do	St. Mary's Lake	Gold.
Do	Perry Creek	Gold.
Do	Tracey Creek	Grey copper and gold.
Do	Copper Creek	No report.
Do	Morris Creek	No report.
Do	White Grouse Mountain	Copper.
Do	Moyie Lake and River	Galena.

I have, etc.,
J. F. ARMSTRONG,
Gold Commissioner.

The Honourable
The Minister of Mines.

WEST KOOTENAY.

Nelson Division.

MR. N. FITZSTUBBS' REPORT.

SIR,—I have the honour to submit the annual mining report and statistics for the southern portion of West Kootenay for the year 1895.

The following is taken from a comprehensive report furnished by Mr. A. Sproat, Mining Recorder, Slocan Division, West Kootenay.

SLOCAN RECORDING SUBDIVISION.

Of the many claims in the above subdivision, the following are chosen for particular mention:—

Slocan Star.

This claim has probably been more systematically developed than any other within the subdivision. No. 4 Tunnel has been driven in 750 feet, and an upraise, which is within 10 feet of being connected, has been put through from No. 4 to No. 3 Tunnel. The ledge in No. 4 Tunnel was struck at a distance of 575 feet, the ore being of a little higher grade than in No. 3 Tunnel.

No. 3 Tunnel is in 650 feet, and on this level most of the ore shipped has been obtained.

No. 4 Tunnel will be worked for ore, and more men employed as soon as the upraise is connected.

Since July, 1894, 2,000 feet of tunnelling have been run.

400 tons have been shipped from Three Forks, and now that the railroads have reached Sandon, about one mile from the mine, a carload is being shipped every day. Thirty-one men are employed.

A concentrator, of 112 feet by 42 feet dimensions, with a capacity of 120 tons per diem, is now under construction, and some of the machinery has arrived. A large amount of concentrating ore is awaiting the completion of the concentrator, which is about 1,500 feet from the mine, and is connected by a tramway. The motive power will be water. At present the mine is shipping to Tacoma, Wash, U.S.A.

Noble Five Group.

The Bonanza King is the claim of this group upon which most work has been done. No. 3 Tunnel has been driven in 400 feet, which gives a depth of 350 feet. 1,000 feet of tunnelling has been done this year. Have 200 tons of ore ready to be rawhided to Cody Creek; 100 tons have been shipped this summer. Twenty-four men are at present employed.

On the World's Fair, also in the above group, a tunnel has been driven 150 feet, and this claim is working in conjunction with the Bonanza King. These claims are being worked by the original locators, who estimate thousands of tons of ore "in sight."

Recau Group.

Work this year was commenced in August with a force of 40 men; in all, 6 tunnels, each of which has been extended 150 feet.

All this work has been done on the Recau. There are 100 tons of ore ready to ship, which it is said will average 400 oz. of silver per ton. There is a depth of 700 feet on one lead which at present is strong and continuous.

A trail on a fairly good grade has been built to Sandon, on which about $1,200 has been expended.

Deadman.

A tunnel has been driven in about 400 feet. There are about 300 tons of high grade ore ready for shipment.

A shaft has been sunk 60 feet, and ore is at present being taken out from it. A total depth of 200 feet has been obtained. Twelve men are at work.

Goodenough.

This claim is a fraction, lying near the Recau, and has a small lead of very rich ore; at present the owners are driving a tunnel, and are in about 200 feet. No. 2 Tunnel is in about 150 feet, and is 65 feet below the surface. 35 tons of ore are ready for shipment. 20 tons of ore were shipped this summer and realized $6,875. Ten men are at work.

Last Chance.

Work has been by tunnelling and shafts. Ore is obtained from each opening and 500 tons have been blocked out, which it is estimated will yield $150 per ton. Two cars of oar shipped this autumn netted respectively, $210 and $200 per ton.

This claim is regarded as one of the most promising in Slocan. Twelve men are at work.

Payne Group.

On the Payne mine a tunnel has been driven on the ledge 180 feet, giving a depth of 75 feet; 2 upraises have been driven to surface. Thirty tons of ore have been shipped this year.

Mountain Chief.

Tunnels have been driven on the ledge 400 feet, giving a depth of 150 feet; 3 upraises to surface. 160 tons of ore shipped during the year.

Maid of Erin.

Tunnel on ledge, 60 feet. From this group it is intended by the end of March, 1896, to ship 500 tons of ore. Twelve men are steadily employed.

American Boy.

One tunnel has been run for 90 feet, another for 135 feet. One shaft sunk about 40 feet. From these openings 100 tons of ore have been taken out and will be shipped from Cody Creek as soon as practicable. Ten men are at work.

Washington.

This claim, which has remained unworked all summer, has just now started up with 15 men. A tramway from the mine to the concentrator, now under construction, is 1,500 feet in length. Twenty thousand tons of concentrating ore are now on the dump. A waggon road has been completed from McGuigan Basin to McGuigan Siding on the Kaslo Railroad. Fifteen men are working.

Surprise.

Owners are running a crosscut to cut the vein, at present in about 150 feet, and expect to run 50 feet more. Ten men are steadily employed.

Antoine.

Ten men are at present engaged in putting up winter quarters and erecting hoist for the purpose of sinking shaft. About 40 tons of ore have been shipped.

Ruby Silver.

A tunnel has been run 120 feet, and 12 men are now employed stoping ore and erecting buildings for the winter.

Ajax.

About ten men engaged in putting up winter quarters. Probably 35 tons of ore are ready for shipment. It is expected 100 tons of ore will be shipped this season.

Best.

Five men are at work on a contract to run a tunnel for 300 feet, which will give a depth of 175 feet. One shaft has been sunk 100 feet. The owners are pursuing development work.

Rambler.

One tunnel in 75 feet, another 50 feet, another 45 feet. Forty-seven tons of ore have been shipped. Six men are at work.

Dardanelles Group.

The claims in this group have been idle all summer, but are now leased to parties who will at once commence shipping, and it is expected that 100 tons of ore will be shipped by the end of the year. Six men are at work.

Slocan Boy.

Owners have let a contract to extend the shaft 100 feet. Two carloads of ore are ready for shipment. Five men are employed erecting winter quarters and building several houses.

R. E. Lee.

Thirteen men, working at present, are building a short tramway. Thirty-five tons of ore have been shipped, and 50 tons are now awaiting transportation.

Mountain Chief No. 2.

This property, which has shipped altogether 700 tons of ore, has been worked very little lately. Two men have contracts to drive development tunnels. One tunnel is to be driven 500 feet, another 300 feet, which will give a depth of about 600 feet from the surface.

Roulette.

Development work was done on this claim during the past summer. No. 1 Tunnel, 80 feet long, No. 2 Tunnel, 50 feet, and No. 3 Tunnel, 30 feet, giving a depth of 80 feet.

Lucky Jim.

The Company expect to work all winter. This claim is situated alongside the Kalso & Slocan Railway. About 40 tons of ore have been shipped, and a tunnel extended 80 feet.

Ivanhoe.

Owners have let contract to drive a tunnel 400 feet, at a depth of 350 feet below other tunnels, for the purpose of development. Five hundred feet of tunnelling were done during last summer, and about 150 tons of ore were shipped. Two hundred tons are expected to be shipped by the middle of January, 1896. Eighteen men are at work.

Ruth.

This company have run tunnels about 400 feet, and are now upraising to the surface. Twelve men have been principally engaged in stoping ore from the level. The carbonates from this claim run very high in silver. One hundred tons of ore have been shipped this summer, and 100 tons are now ready for transportation; they expect to ship 200 tons in addition by March next. The ore is taken to Pilot Bay Smelter. A contract was let for a lower tunnel, 200 feet, which is now completed; this gives a depth of 400 feet from the surface, and in the face of this tunnel there is a little galena.

Carnation.

There is a good showing of ore on this claim. The owners have lately started to work, and will rawhide ore to Sandon. Five men are employed. The ledge has been crosscut 22 feet, without reaching either of the walls.

Eureka.

Three hundred feet of tunnelling have been run on this claim. Work will soon be commenced. The ledge is supposed to be the same as the Slocan Star.

Richmond.

The Eureka lies between this claim and the Slocan Star. A tunnel has been run on the Richmond for 40 feet, and there is now in sight one foot of ore. One carload has been shipped, and it is expected shipments will be made through the winter.

Currie.

This claim contains a very large quantity of concentrating ore.

A shaft has been sunk 50 feet and a drift run for development purposes from the bottom of the shaft to strike the ledge which at the point of connection contained 7 feet of concentrating ore.

Alpha.

Four men have a contract to drive a development tunnel at a depth of 225 feet from the surface. This property, which has shipped 1,400 tons of ore, requires development before it can again be a producer.

Adams.

Work for development has been done as follows:—1 tunnel, 45 feet; 1 crosscut, 20 feet; another crosscut, 15 feet.

Brandon.

Two tunnels, 40 feet and 20 feet.

Britomarte.

One tunnel, 200 feet, and about 18 inches of ore in sight.

The above three claims have been idle this year.

Elkhorn.

One shaft has been sunk 45 feet, and 1 tunnel run for 290 feet. Six hundred feet of work has been done, principally for development.

Alamo.

This property has been systematically developed since it was taken hold of by the company at present operating it. 1,400 feet of tunnelling have been run, the lowest tunnel giving a depth, vertically, of 360 feet; all the openings show ore. The ore from this claim is taken down on a tramway about 4 miles long to a concentrator built last year. All the ore is concentrated, running $2\frac{3}{4}$ to 1 ton, and averaging 153 ounces. Twenty tons of ore are treated every day. Forty-six men are employed at the mine.

Idaho.

This company have been doing developing work this year, with 10 men. Lower tunnel is in about 400 feet; have 250 tons of ore ready for shipment and 600 tons of concentrating ore to go through the mill.

Cumberland.

Owners are running 2 tunnels for development; 1 tunnel is now in 240 feet and the other 285 feet. This lower tunnel is 900 feet below the surface. Some distance must be run before the ledge can be struck. Eight men are at work.

Sunshine.

This mine is shut down for the winter. One tunnel has been run 165 feet. The other development work consists of 2 tunnels, 115 and 125 feet respectively.

Yakima.

Three hundred feet of tunnelling have been run on this claim, and 45 tons of ore shipped. Operations on the above two claims will commence next spring.

Enterprise & Slocan Queen.

Situated up Ten-Mile Creek, Slocan Lake, are the first to have been worked by any force of men south of New Denver or directly tributary to Slocan Lake below Four-Mile Creek.

They have been bonded for a year. One tunnel is in 100 feet and another 80 feet, both on the ledge. The ore body averages about 5 to 8 in width all the way in the tunnels. The ledge is small and is granite. The ore is a dry one and of a good grade. Twelve men are at work.

Mattawa.

This claim is a dry ore property, being rich in silver. A tunnel has been run 65 feet on the ledge developing about 8 inches of ore.

Kalispell.

This claim has been leased for 12 months to four men. A tunnel bas been run for 80 feet and 6 tons of ore shipped. About a carload will be ready by February next. It is a rich dry ore.

Howard Fraction.

This claim was located last August and has been worked by five men, the original locators. Seven tons of ore have been shipped to Pilot Bay, realizing, net, $103 per ton. The owners intend working all winter. The ore carries gold and silver and is a reddish dry quartz.

Exchange.

Is of the same character and quality as the preceding and is being worked by the locators who are driving a tunnel on the ledge. Five tons of ore have been shipped, the owners realizing enough to pay for their winter supplies.

Silver King.

Owners are running a tunnel and are now in 55 feet.

The above three claims are situated on the divide between Springer and Lemon Creeks. Assessment work has been done on about 25 claims in this vicinity since August. Owing to this mineral country being mostly discovered in August and September, prior to the completion of the trail, but few prospectors erected winter quarters, the report therefore on the workings of these claims is limited.

In addition to the claims above mentioned a few small properties have been leased to two or three men who will work them, and who expect on account of improved transportation facilities to make more than wages.

Ore can now be taken from Sandon and other points and delivered to Pilot Bay for $4.00 per ton. This rate enables the small producer to get his ore out at a small cost, and to receive quick returns.

The following claims are now under lease, and are worked by the holders of the leases:—"Soho," "St. Keverne," "Keystone," "Slocan Boy," "Ajax," "Ruby Silver," "Dardanelles," "Kalispell," "Lucky Jim," "Chambers," "Red Fox. Probably from each of these and others small lots of ore will be shipped during the present winter. In many cases the claims are in the hands of poor men, who proceed to obtain ore and ship it. Frequently claims are entirely dug out on the surface, necessitating a long interval of development work before they can be again made remunerative.

Prospecting during the year has been principally confined to Springer Creek, Lemon Creek, and their tributaries.

At first locations were made from three to seven miles up Springer Creek, tending up to the summit of the divide between Springer and Lemon Creeks, and over into the basins of the latter. A great number of claims were staked in red quartz, lying in the granite. Upon assays being made this red quartz was found to contain native silver, and in several cases gold. Prospectors who have been through to Kootenay Inlet, from the foot of Slocan Lake, have found a comparatively easy route, and estimate the distance across to be twenty-two miles.

Three hundred records have been made from this part of the Slocan Subdivision this summer, and of this number one man holds interests in sixteen claims, three men hold interests in twenty-one, and six other men hold interests in eighteen, all by location and records of nominal transfers.

Of other creeks, 10-Mile Creek, Slocan Lake, received the most attention. The ore is similar to that discovered along Springer, but different from that on the Lemon divide, which carries gold. Both Springer and Lemon Creeks have trails along them.

A number of claims have been located round and about Sandon and Cody Creeks, but most of them are re-located and fractions. These are regarded as of doubtful value. They were probably staked for speculative purposes, as two railroads terminating there it is expected there will probably be a boom.

Three tramways have been built in the Slocan Subdivision, one concentrator completed, and two are under construction.

It is confidently expected that at least 30,000 tons of ore will be shipped from this subdivision during the year 1896.

Number of Records made (claims)	630
Number of Certificates of Work issued	500
Number of Bills of Sale recorded	400
Number of Certificates of Improvements issued	14
Number of Crown Grants issued	15
Number of Bonds and Agreements recorded	27

From the Trout-Cariboo Creeks, section of Slocan Subdivision, the resident Government Officer, Mr. F. G. Fauquier, reports increased mining activity and augmented numbers engaged.

The early locations were made principally on Mineral and Granite Creeks, and Blue Grouse Canyon, western tributaries of Cariboo Creek, and later, on Canyon and Snow Creeks, flowing from the east, while some claims were located at its head.

Several branches have been made along the various creeks from the trunk trail cut by the Government. Assessment work has been recorded on 25 claims within the field, and work has been done on others, notice of which is not yet on the books.

Though little comparatively is known of the value and extent of the discoveries in this section they have been of sufficient importance to attract the attention of practical miners and investors. In September last mineral was discovered on Van Houten Creek running into Lower Arrow Lake, nerly opposite Fire Valley, in the neighbourhood of which 53 locations have been recorded. Ore from one of these assayed 115 ounces in silver and 76 per cent. lead.

The following are the statistics of this portion of the subdivision :—

Number of Records made (claims)	210
Number of Certificates of Work issued	25
Number of Bills of Sale recorded	89

AINSWORTH RECORDING SUBDIVISION.

Of the Ainsworth Recording Subdivision, Mr. John Keen, Recorder, reports as follows :—

The favourite localities this year for development work have been the Whitewater and Lyle Creeks, commonly called the "dry ore" belt, Jackson Basin and Creek, White Grouse Mountain and Creeks, the north side of Kootenay River, and east side of Kootenay Lake; also the Duncan River, East River, Howser Lake and creeks tributary thereto. In this particular locality, several heavy bonds have been entered into for the purchase of the Wagner group, Gallop group, and other small groups of claims which are being tested this winter.

A much larger proportion of the claims is being worked this year, and a larger number of men are employed thereon than in any previous winter, owing doubtless to the increased facilities for the economical transportation of ore, and the delivery of provisions at the camps.

In proof of this statement, I have obtained from the Customs Officer the amount of ore exported to the United States and Pilot Bay during the year.

To the United States	3,855,511 lbs.
To Pilot Bay	403,000 lbs.

The following are the statistics :—

Number of claims recorded	410
Number of certificates of work issued	363
Number of transfers recorded	384

Of the Ainsworth or Hot Springs camp, in the above subdivision, Mr. T. J. Lendrum, J.P., residing there, says :—

During the years 1893-4, very little work was done in this camp. However, owing to the slight rise in silver, and more particularly to the fact that the Kootenay Mining and Smelting Company's smelter at Pilot Bay was completed and successfully run in the early part of the present year, a stimulus was given to mining generally on Kootenay Lake, and especially to this camp, situated as it is about 7 miles north-west of the smelter. Since the early part of the present year several mines have been working, and the ore mined has been shipped to Pilot Bay, viz. :—

Skyline	1,500	tons.
Number One	1,530	,,
Lady of the Lake	7	,,
Dellie	12	,,
Mile Point	55	,,
Highlander	5	,,
Can. Pac. Mg. Co.	75	,,

To the United States there has been shipped as follows :—

Little Phil	100	,,
Black Diamond	249	,,
Total shipments	3,533	,,

Skyline.

This is supposed to be one of the best properties in the camp, and on which the greatest amount of development work has been done. A main shaft, 200 feet, has been sunk. An incline shaft, 200 feet deep on the ledge, has also been sunk. From the bottom of the first shaft at the 200-foot level, a crosscut tunnel has been run to connect with the incline shaft. All the ore and waste is thrown into the incline and hoisted by a powerful hoist up the perpendicular shaft to the surface.

The character of the ore is what is termed dry ore, and is in great demand at the different smelters for its fluxing properties.

The ore body has an average of seven feet in width, and an average value of 75 ounces in silver to the ton. About 15 tons per day have been shipped to Pilot Bay, and since the first of August 1,500 tons have been shipped. Twelve men have been constantly employed in the mine since work started. This mine is situated six miles west of Ainsworth, at an altitude of 5,500 feet.

Number One.

This mine is now being worked under lease. Over three thousand feet of tunnels, upraises, drifts, etc., have been run on the property.

The ore body has been exposed for a distance of 50 feet in the lower drift, and has an average width of 3 feet. It will average in value 75 ounces in silver per ton. One thousand five hundred and thirty tons of ore have been shipped to Pilot Bay during the year, which gave a net return of $38,000. About 1,000 tons of concentrating ore are now on the dump, which will be run through the concentrator during the coming spring. This ore is a dry ore and like that of the Skyline is a good flux. A 50-ton concentrator is erected on the claim, and has worked continuously during the year. Twenty men are steadily employed.

Little Phil.

A crosscut tunnel has been run between this claim and the Black Diamond, which serves as a working tunnel for both properties; distance, 440 feet. The tunnel cuts two ledges or veins. On the first there is a drift 200 feet long, which shows the vein to be 36 feet wide of concentrating ore, which produces 10 to 30 ounces in silver, and 15 to 30 per cent. lead per ton, with occasional bodies of clean ore. One hundred tons of this clean ore have been shipped, which averaged 30 oz. in silver, and 65 per cent. lead per ton.

On the second vein a drift, 45 feet, has been run, which shows the ledge to be 16 feet wide, carrying a concentrating ore body on the hanging wall of 4 feet. From 2 to 4 men have been constantly employed on this claim during the year.

Black Diamond.

Two hundred and forty-nine tons of clean ore have been shipped from the first vein of this property, and is of the same character of ore as that shipped from the Little Phil. It is expected that the owners of these two claims will erect a concentrator in the near future for the purpose of treating their ores.

Mile Point.

About 380 feet of tunnels and drifts have been run on this property. The ledge is about 6 feet wide, and shows the ore body to have an average width of 3 feet, and an average value of 75 ozs. in silver and 10 per cent. lead per ton. Fifty-five tons of the ore have been shipped to Pilot Bay smelter. The ore carries considerable iron and manganese, which makes it good for fluxing.

Pumping machinery will be shortly erected to keep the mine clear of water as depth is attained, the mine being situated on the lake shore. Six men are employed.

Highland.

This is a very promising property, and a great amount of development work has been done during the year. The main tunnel has been run in 600 feet. From this tunnel an upraise has been made, connecting with an upper tunnel 75 feet in length. Several crosscuts have been made on the workings, which show the vein to be about 25 feet in width. All

tunnels and upraises are in ore, principally concentrating. It will concentrate 4 to 1, and make a value of 40 ozs. in silver, and 70 per cent. lead per ton. It is the intention of the owners to erect concentrating plant next spring. Four men are constantly employed.

Highlander.

A crosscut tunnel has been run, cutting the vein 125 feet from the surface, and a drift, 100 feet, has been run south on the vein.

A shaft, 60 feet deep, has been sunk in the drift, but owing to the great amount of water encountered work was discontinued.

The vein is about 28 feet wide, showing ore bodies, that on the foot wall being about 1 foot in width of solid ore, which will assay 40 oz. in silver and 50 per cent. lead per ton. The ore body on the hanging wall is about 14 inches in width.

A small shipment of this ore was made to Pilot Bay, which gave a return of 150 ozs silver and 12 per cent. lead per ton. The ore is of much the same character as that of the Mile Point claim.

Amazon, Budweiser, and Wakefield.

Considerable work has been done on these claims. Four hundred feet of tunnelling have been run, which show a vein 6 feet wide, principally concentrating ore. Seventy-five tons have been shipped to Pilot Bay smelter, which have given good returns. An air compresser is being erected to expedite the work, which will be run by water.

Rand.

One hundred and forty-eight feet of tunnels and shafts have been run on this property, which show a vein 6 feet wide, principally concentrating ore. A small shipment has been brought down to the lake shore, which assays 40 ozs. silver and 65 per cent. lead per ton.

A great many promising properties have been lying idle in this camp on which considerable work has been done in the past 4 years. On some of these it is expected that work will be resumed during the coming year.

The subjoined list of claims, with amount of work done on them, may be of interest:—

Name of Claim.	Amount and description of work done.
Maestro	150 feet of tunnels and shafts.
Gallagher	40 " " "
Spokane and Trinket	300 " " "
United	300 " of shafts and drifts.
Krao	380 " " "
Eden and Crescent	70 " of shaft.
Dellie	80 " of shafts and tunnels.
Neosha	250 " " and drifts.
Fourth	500 " of tunnelling.
E. W. R	50 " of shaft.
Lady of the Lake	40 " "
Dictator	150 " of tunnel and shaft.
Maimie	100 " of shaft.
Banker	75 " of tunnel and shaft.
King Solomon	70 " of shaft.
Libby	90 " of tunnel and shaft.
Early Bird	75 " "
New Jerusalem	90 " " "
Last Chance	70 " of shaft.
Crow Fledgling	50 " "
Union	100 " "
Bugaboo	75 " "
Tenderfoot	200 " " and crosscut.
Ohio	50 " "
Alpha	45 " "
Sunlight	75 " "
Noble Three	50 " "

Pilot Bay Smelter

Is in the Ainsworth Recording Subdivision, and for the following notice in respect to it I am indebted to the courtesy of A. B. Hendryx, Esq., part owner and general manager:—

The first visit to the Kootenay Lake country by those owning and controlling the Company's interests was made eleven years ago last October in a row-boat from Bonner's Ferry, Idaho, for the purpose of examining and purchasing the Blue Bell properties.

The purchase of the property was made, and a force of men immediately put to work on it, the stock interests being largely taken by our President, Edwin W. Herrick, of Minneapolis, Minn., and myself, who are still the principal owners of the Company's stock.

The Koonenay Mining and Smelting Co. at present own, upon a peninsula extending into the Kootenay Lake, and called the Hendryx Peninsula, ten claims and two water rights, which include the Blue Bell, Silver King, Golconda, Arcade, Calicum, and Hendryx Nos. 1, 2, 3, 4. The Company also own several claims in the Ainsworth Camp, which is on the opposite side of the lake, a little south of the Hendryx Peninsula. The principal ones are the Blue Bird and Siberia.

The Company's works for sampling, concentrating, roasting or calcining, and smelting, are located upon the east side of the Kootenay Lake, ten miles southerly from the peninsula, and directly opposite the Kootenay Lake outlet, through which all incoming waters to the Kootenay Lake discharge. The outlet is the water communication between the works and Nelson, a distance of about 20 miles.

The works are so located as to command two good harbours, the neck of land between them being only a few hundred feet wide, being also midway between the north and south ends of Kootenay Lake.

The machinery in the various departments is of the latest and most improved type, as shown by the results during the brief period the works have been completed and working, and consist of an automatic sampling works, capable of sampling 250 to 300 tons of ore per diem; a roasting department, consisting of five roasting or calcining furnaces; one 100-ton water-jacket furnace.

The concentrating works, blower for smelting stack, and electrical plant, are each run by a separate engine. The machine shop is completely equipped with lathe, planers, compound drilling machine, bolt and pipe-cutting machines, together with blacksmith and carpenter shops, all supplied with up-to-date machinery.

The works were complete enough to commence the treatment of ores in March last. A shipment of bullion was commenced March 16th, since which time to December 30th, 1895, there have been shipped 3,220 tons of silver-lead bullion, and the furnace or smelting stack has not been in blast half the time. From January 1st to December 31st, 1895, 52,000 tons of ore were mined from the Blue Bell claims and transported to the works, consisting of first and second class or concentrating ore, lime rock for fluxing, etc. A considerable percentage of this ore is yet in the works, and being submitted to the various necessary treatments before smelting.

The Company bought of the neighbouring mines located on and near the Kootenay Lake, during the year 1895, 2,500 tons of ore, which contained a gold, silver, and lead value of $156,404; and although it has been demonstrated the Company can successfully run on the Blue Bell ores alone, it is and will be the policy of the Company to purchase any and all ores produced in the Kootenay country, making the plant a custom smelter, that is, desirous of purchasing ores from neighbouring mine owners.

Although this Company is really but just entering upon the first stages of its possible developments, a review of some of the expenditures may be interesting.

Since commencing operations to finish the works, July 10th, 1894, to 31st December, 1895, the Kootenay Mining and Smelting Company have expended in cash for purchases of machinery, labour, ores, etc., a sum exceeding $650,000. During the year 1895, the Company have averaged to employ over 200 men daily, and have paid from their office on labour account $170,000; for supplies, $85,622; for duties, $70,000; for freights, $92,500; for ores purchased, over $150,000.

White Grouse Mountain Camp,

Situated about 17 miles east of a point known as Davie, 8 miles south of Pilot Bay, has about thirty locations. Assessment work has been done on fourteen. The character of the ore is grey copper.

The ledges, so far as developed, average 5 feet in width. The claim owners are sanguine as to the richness of the camp. The assays, up to the present, average 60 ounces in silver, $10 in gold, and 15 % copper per ton. A good trail has been made, and there is now no difficulty in reaching the camp with horses.

GOAT RIVER RECORDING SUBDIVISION.

Compared with other subdivisions of the Southern Division of West Kootenay, the work done at Goat River is insignificant.

This is due chiefly to its remoteness from established lines of certain transportation.

The claim owners, however, express themselves as being satisfied with their prospects and the richness of the section generally, and look hopefully forward to conditions under which they may soon steadily prosecute their labours.

Official statistics are unobtainable, the Record Office being almost wholly isolated.

The following is taken from a report furnished by Mr. W. J. Goepel, Mining Recorder, Nelson Recording Subdivision.

NELSON RECORDING SUBDIVISION.

Hall Mines, Limited.

The main group of claims owned by this company is comprised of the Silver King, Kootenai Bonanza, American Flag, and Koh-i-noor, which are situated on Toad Mountain, four and one-half miles south of Nelson.

The development work during the year has been confined chiefly to the Silver King mine.

A winze has been sunk in the main ore body to a depth of 135 feet from the No. 4 tunnel, and is still in ore. In No. 3 tunnel a shaft has been sunk for 65 feet, and is also in ore.

No. 5 tunnel has been driven from a point 210 feet below No. 4, on the main vein, which is exposed on the surface. This tunnel is in 85 feet, and shows more or less ore throughout its entire distance. Ore of a high grade has been proved beyond this point by a diamond drill, which gives certain assurance of a continuous ore body.

Boring operations have also been carried on to the south of No. 4 tunnel, and at that point two separate ore bodies have been proved. The first was struck at a depth of 280 feet from the surface, and continued to 340 feet. The second was struck at 416 feet from the surface, and continued to 449 feet. The core shows heavy yellow and grey copper, with traces of peacock. Another hole was sunk to prove the depth of the vein, and ore was tapped at 820 feet, showing grey copper. On the Kootenai Bonanza, an adjoining claim, boring operations have been crowned with equal success.

The Company estimate the ore in sight to be upwards of 120,000 tons.

In addition to the above work other improvements have been made.

An aerial ropeway has been erected, extending from the Silver King mine to the Town of Nelson, a distance of four and a half miles. This line is supplied with 875 buckets, of a combined delivering capacity of ten tons of ore per hour. The ropeway has so far delivered 2,000 tons.

At the Nelson terminus a one-stack water-jacket smelter is in course of erection, and is expected to be finished about the 15th January next. This smelter will have a daily capacity of 100 tons. By this method the ore is concentrated into a "matte," and on a basis of reduction of 7 tons to 1, the matte should have a value of 300 ozs. in silver, 45 per cent. copper, and ½ oz. gold per ton.

The value refers to the low grade ore at present being transported from the mine dump.

Two engines, 80 and 50 H.P. respectively, are in position, supplied by a horizontal tubular boiler, 60 inches in diameter by 16 feet long. The former engine will run the smelter "blower," and the latter the machinery in the sampling mill. The sampling mill is supplied with crushers, rollers, and samplers, and has a capacity of 100 tons per diem.

It is the intention of the Company to build a "roaster" in the spring in connection with their works, and possibly add another stack; this would more than double the capacity, and enable the Company to treat outside ores.

The Company have expended during the year about $140,000.

One hundred men are steadily employed.

Other claims owned by the Company on Toad Mountain are the J. M. B., Jessie, Daylight, and Bid.

Dandy.

On this mine, adjoining the Silver King on the west, little has been done this year in the shape of development work. Owners anticipate opening up in the spring, and putting the mine in proper condition for shipping.

Grizzly Bear, Ivanhoe, and Iroquois.

On these claims, and many other old locations on Toad Mountain adjacent to the Silver King, little or no work has been done, but it is reasonable to suppose that, with the successful operations of the Hall Mines, a general impetus will be given to mining in this particular locality.

Starlight.

This claim lies parallel to the Silver King, about half a mile west, in the gold-bearing belt. A large amount of development work has been done this year; about 500 feet of tunnels and drifts have been run on the vein, costing about $7,000. The vein is about 5 feet wide, and averages $15 in free gold per ton. Fourteen men have been steadily employed. Work is now discontinued, but will be resumed in the spring. On the Golden Star claim, an extension of the Starlight, a small amount of work has been done, showing the ore to be of similar character.

Princess.

This claim is situated about three and a half miles south from Nelson, and is now under bond to Eastern capitalists. The ore is base, gold; the deposit is very large, and averages about $30 per ton.

Fern Group.

On the Fern and Eureka, situated at the head of Hall Creek, also gold-bearing properties, a stamp mill has been erected for the purpose of thoroughly testing the claims. The vein on the Fern is well defined, about 4 feet wide, and runs about $15 to $25 per ton. These claims are under bond for sale.

GOLD LOCATIONS.

Owing to transportation facilities offered by the Nelson & Fort Sheppard Railway, a great deal of attention has been paid by prospectors to the district lying immediately south of Nelson, and extending for a distance of 35 miles. Over 200 claims have been recorded, which are tributary to that line. The camp which has come mostly into prominence is that section between Lost Creek and Sheep Creek, which empty into the Salmon River, and known as Iron Mountain, being about 10 miles south-east from Salmon Siding. Experts claim that the ore from this locality is of the same quality as that produced by the War Eagle and Le Roi mines on Red Mountain. Assays from the surface have shown as high as $70 in gold per ton. Up to the present, however, little has been done to prove the permanence of any of the veins.

Gold claims have also been located on the West Arm of Kootenay Lake, seven miles east from Nelson, which assay well on the surface, and, having large ore bodies, warrant further development. Notably among these may be mentioned the Ray of Hope.

Claims of similar character have also been located at the head of Yuill Creek, 15 miles east from Nelson, and through this pass prospectors claim an easy route to the Slocan Lake, distance 22 miles.

Of the claims situated west of Nelson in the gold belt, excepting on the Poorman Group, little work has been done. On that claim a shaft has been sunk 90 feet in the main drift,

which has also been extended 40 feet in ore, and an upraise made to the surface 50 feet. One thousand tons of ore have been stoped, crushed, and put through the 10-stamp mill owned by the Company, the returns in gold bullion amounting to $20,000.

Royal Canadian.

On this claim, situated two miles west from the Poorman, about $2,000 have been expended in development work.

A large number of claims have been located between the above and Rover Creek, covering a distance of seven miles, showing good free milling prospects.

At the headwaters of Rover Creek, on the Whitewater group of claims, only development work has been done.

Present indications point to a large gold production from the gold belt to the west and south-west of Nelson.

Number of claims recorded	403
Number of transfers recorded	143
Nunber of certificates of work issued	110

PLACER MINING.

In this connection, brief mention must be made of the operations of the Nelson Hydraulic Company, who hold a lease of one and one-quarter miles on 49-Creek, about nine miles west from Nelson.

This Company have been working steadily all summer with one monitor, and their clean-up is estimated at $4,000. A very small proportion of the claim has been worked, and the Company look forward to good returns during the coming season.

On Hall Creek, south of Nelson, a small amount of placer mining has been carried on, and the total yield from all sources on this creek is estimated at $1,000.

On the Salmon River little more than sufficient work to hold leases has been done, and the output of gold is therefore nominal.

On the Pen d'Oreille River a large amount of money has been expended by the Kootenai Hydraulic Company in erecting pumping machinery for the purpose of supplying water to work their claims on the north side of the river, and it is expected that the coming year will show a great revival of placer mining on this river. The Company own leases over seven claims, and employ about twenty men.

Number of claims recorded	8
Number of transfers recorded	0
Number of leases existing	17

Statement showing Leases existing.

Pen d'Oreille River	7
Salmon River	7
Hall Creek	1
Forty-nine Creek	2
Total	17

Statement showing Gold Production.

Quartz, Poorman mine	$20,000
Placer, Hall Creek	1,000
Placer, Forty-nine Creek	4,000
Placer, Salmon and Pen d'Oreille Rivers	500
Total	$25,500

Statement showing Mining Revenue for the year ending 31st December, 1895, in the Southern portion of West Kootenay.

	F.M.C.	Mining Receipts.
Nelson	$ 3,042 00	$ 3,154 45
New Denver	3,217 00	4,246 35
Kalso	3,644 00	3,238 71
Nakusp (North Riding)	791 00	825 00
Goat River	331 00	224 00
Trail (North Riding)	9,026 00	8,782 95
Total	$20,051 00	$20,471 46

TRAIL CREEK RECORDING SUBDIVISION.

The following is Mr. Kirkup's (Recorder) report:—

Number of claims recorded	1,997
Number of placer claims recorded	4
Number of bills of sale, bonds, etc., recorded	1,155
Number of certificates of work issued	213
Number of certificates of improvements recorded	4
Number of abandonments recorded	12
Number of water grants recorded	1

In addition to the above, Mr. H. C. Jackson kindly sends the following, which, in view of the frequently recurring published reports of the discoveries, working and progress of mines in this subdivision, will, I trust, be deemed sufficient.

During the year 1895 the Trail Creek Mining Division has experienced a most wonderful development. As evidence of this the following facts may be recited:

Two thousand mineral claims were recorded at Rossland, making a total of 2,200 live mineral claims in the division on the 31st inst.

The customs collections at Rossland for the last five months of the year were $25,000; at Trail, $10,000; at Waneta, $8,000, amounting to one-half of the collections of the port of Nelson, which includes practically the whole of the West Kootenay District, except Revelstoke. The collections for the first seven months undoubtedly equalled, if they did not exceed, these figures.

The population of Rossland and surroundings a year ago was about 300, now it is estimated at possibly 3,000.

The Town of Trail a year ago had a population of less than 50, to-day it has nearly 800.

The value of the ore produced in the subdivision in 1894 was about $125,000, in 1895 it exceeded $1,000,000, while in 1896 it is estimated that it will be from $3,000,000 to $5,000,000.

The railroads operating in the subdivision in 1894 were the Nelson & Fort Sheppard Railway, and the Columbia & Kootenay Railway. Now, at Trail, a narrow gauge railroad is in course of construction, for the purpose of connecting that town with the mines at and near Rossland.

A smelter, of a daily capacity of 250 tons, is now completed at Trail, and expects to "blow in" about the 1st February, 1896.

The War Eagle and Centre Star Companies have announced their intentions of erecting smelters of their own at or near Rossland, which will together have a capacity greatly in excess of that already built at Trail. It is almost certain that two more railroads will be built into Rossland during the coming year—the Red Mountain Road, from Northport, Wash. (a branch of the Spokane Falls & Northern), and a branch of the C.P.R. from Robson.

About 40 miners were employed in the shipping mines of Rossland in the winter of 1894-5. About 500 men are now at work in the same localities.

During 1894 no properties were being worked except the Le Roi, War Eagle, Josie, Nickel Plate, and O. K., all situated within a short distance of the town, except the last-

named, which is about one and one-half miles west. Throughout 1895, and at the present time, dozens of mines are employing men, 10 or 15 of which can ship ore, if they so desire. These mines lie in all directions from Rossland, and some of them across the Columbia River. Properties outside the immediate vicinity of Rossland are probably employing 200 men at the time.

I am indebted to the courtesy of Mr. E. H. Wedekind, the Superintendent of the Trail smelter, for the subjoined particulars.

The British Columbia Smelting and Refining Company decided to build its works at Trail Creek Landing on account of its natural advantages. The works were commenced about October 10th, and will be completed about March 1st, 1896. The object of the Company's operations is to treat the ores of Red Mountain Camp and the surrounding country.

The capacity of the works, when completed, will be about 300 tons per diem. The works consist of a sampling mill, ore bins necessary to contain a daily output and reserve capacity of about 2,500 tons. The main smelting building is 310 feet long by 60 feet wide, and the cone of the roof 62 feet above the ground. Under this roof the power plant and driving shaft are situated, with four large reverberatory furnaces and one blast furnace. Besides this, a building sufficient to contain two "O'Harra" furnaces and dust chambers, with main stack to receive all fumes and dust discharged by the calcining and blast furnaces. The main scheme is so to handle the ore that it will, by its gravity, go through the sampling mill through the different roasting furnaces, and so to the blast and reverberatory furnaces, to be drawn out in the shape of "matte," without any additional handling. The promoter and main owner of the plant is Mr. August Heinze, of Butte, Montana.

There is a company formed, namely, "Trail Creek Tramway Company, Limited," which will build a tramway line from the mines at Red Mountain to the British Columbia Smelting & Refining Co.'s works at Trail, for the purpose of transporting ores and freight to and from the mines and smelter. The tramway line is so designed that it shall, in its meandering path, be accessable to the principal mines of the camp. The total length of this line is about 13 miles, while the direct line from Trail Creek Landing to Rossland is about 4½ miles, in which there is a rise of about 2,500 feet; hence the necessary length of line. The earth work of the line is now under construction, but due to some contests in regard to right of way, which appear to be incidental to all railway construction, the work is delayed. However, the Company expects to have its line in operation in the near future. The President and Superintendent of this Company is Mr. F. P. Geutelius.

The following are the Customs returns showing tonnage produced from the various subdivisions during the year 1895:—

Nelson	1,871	tons.
Ainsworth	54,327	"
Trail Creek	23,361	"
Slocan	9,264	"
Total	88,823	tons.

In conclusion I have the pleasure in stating that the experience of the past year justifies the hopes of progress and prosperity for the district that have been entertained.

The mines now being worked look well generally, and prospecting has been actively pursued.

The improvement of railway and other means of transport and the wholesome competition that exists between railway companies have been beneficial, particularly in enabling individual mine owners to market their ores.

One of the signs of progress has been the construction of tramways, concentrators and smelters, as adjuncts of the healthy development of the mining industry. The general opinion is that the district will, in the near future, become a very remarkable producer of both gold and silver, and one very well worthy of the continued attention of mining investors.

I have, etc.,

N. FITZSTUBBS,

Gold Commissioner.

To the Honourable
The Minister of Mines.

REVELSTOKE DIVISION.

MR. GRAHAM'S REPORT.

REVELSTOKE, B.C., January 20th, 1896.

SIR,—I have the honour to submit my annual mining report and statistics for the Revelstoke Division of the West Kootenay District for the year ending 31st December, 1895.

The Trail Creek excitement attracted a good many prospectors from this section, consequently this section has not advanced as much as was expected.

The present year will no doubt be a good one, more especially for the Big Bend country. Enquiries are being made by capitalists as to the nature of the ground and facilities for working the same.

I have, etc.,
J. D. GRAHAM,
Gold Commissioner.

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

REVELSTOKE MINING DIVISION.

Mineral claims recorded	44
" " re-staked	3
Placer claims recorded	3
" " re-staked	4
" leases held	19
Certificates of work recorded	4
Bills of sale recorded	53

REVENUE COLLECTED.

Free miners' certificates	$ 841 00
Mining receipts	1,370 40
Total	$2,211 40

PLACER MINES.

French Creek Consolation Mine (creek claim).

The owners of this property have done considerable work this year to replace losses caused by last year's high water. The work done consists of re-building wheel-house, bunk-house, and a wing-dam 170 feet long, 12 feet high and 12 feet wide, filled in with large boulders; this was necessary to protect their shaft-house and prevent a recurrence of last year's disaster.

This year they have taken out very little gold on account of encountering a rock-slide, whereas last year they extracted in a few months over $6,000.

Little Falls (creek claim).

Considerable work was done on this claim erecting buildings, flumes, putting in pumps, etc., but nothing taken out, as they have not yet reached bed-rock.

Nugget (bar diggings).

The work done on this claim is similar to the Little Falls, and with like results.

Gold Drop (bench diggings).

Two men were employed on this claim this year, with satisfactory results. Amount of gold taken out, $2,000.

Bahamas (bench diggings).

Very little work was done on this claim beyond testing the ground.

True Blue (bench diggings).

Similar to the Bahamas.

Bellingham Bay and Fairhaven (bench diggings).

Quite a large amount of development work was done on these two claims this year. A wing-dam 700 feet long was constructed, a ditch 254 feet long, and a drift put in to crosscut the old channel. The owners are well satisfied with the results of their investigations, and intend pushing on the work next year for all it is worth.

All the above bench claims, from tests made, averaged between twenty-five and thirty-five cents per yard.

McCULLOCH CREEK.

Ophir Bedrock Flume Co. (creek diggings).

No work has been done on this property this year, which is considered by practical miners to be the best claim in the Big Bend.

McCulloch Creek Tunnel Co. (creek diggings).

This company intend next year to sink a new shaft on their property. They have built a new shaft-house, 65 feet long by 24 feet wide, with a large pumping wheel.

A large pump was purchased from the Albion Iron Works Co., but did not arrive soon enough to be sent up to the claim, bad weather having set in, making the trail impassable to animals with heavy loads.

North Star (creek diggings).

A great deal of development work has been done on this claim. A tunnel, 1,000 feet long, has been driven, beside considerable preparatory work.

CAMP CREEK.

Imperial Claim (creek diggings).

Messrs. White and Haley, the owners, have put in a large wheel and 250 feet of flume preparatory to sinking to bedrock.

Spellumchene (creek diggings).

A lease was issued to Messrs. Caley and Hyatt, who put in a flume 400 feet long, and a 17-foot wheel. A shaft was sunk 20 feet deep.

GOLDSTREAM.

Forest Queen.

Two men are employed on this claim putting in a wing-dam to divert the stream, so that the owners may work the bedrock.

Hidden Treasure.

Six men are employed on this claim putting in wing-dam to allow of working the bedrock, when good returns are expected.

Big Hole.

Four men are employed, who have built a flume, 400 feet long, to carry all the water of this stream and allow them to work the ground immediately below the first falls. This has been a very expensive undertaking, and it is hoped they may get good returns for their trouble and energy.

Two other claims are being worked on this stream by what is usually known as sinping.

Columbia Hydraulic Mining Co.

This company's ground is situated a little above the mouth of Smith Creek on the Columbia River and is owned by a Chicago Co. Eight men were employed during the greater portion of the year doing development work and testing the ground.

A shaft was sunk 90 feet deep, 6 feet by 4 feet. A contract has been let to repair the flume and ditch, and get everything ready for the monitor next season. 4,200 yards of gravel were moved, which I am given to understand averaged 28 cents to the yard.

Gold extracted, $420.

SMITH CREEK.

Smith Creek Mining Co. (creek diggings.)

Very little work was done on this ground this year beyond development work.

Park's Claim.

A shaft was sunk on this claim 66 feet deep, but did not strike bedrock when they closed down for the winter.

Good prospects were obtained from the gravel at the bottom of this shaft.

CARNES CREEK.

The Prospect.

This claim was taken up by R. Whitmore who has built a flume for the purpose of carrying the water of this creek a considerable distance so that he may be able to work the bed of the creek.

Two placer leases have been issued on this creek and eight men will be employed on them all the winter testing and trying the ground. They are working at present on an old shaft from which good prospects have been obtained.

Quartz veins have recently been located in which the ore, as assayed, has returned from $1 to $48 per ton in gold.

MINERAL CLAIMS.

Big Bend.

Thirty mineral claims were recorded in the Big Bend this season, most of which are gold and silver propositions.

The Ole Bull,

Situate on Ground Hog Basin, McCulloch Creek, is the only claim upon that creek that has had any practical work done on it. The ledge is a well-defined milling (free) proposition. The owner, Gus Lund, has a stamp mill packed up to the claim, but no results can be obtained.

From specimens sent to the Government Assayer, $43 in gold is the average per ton from the ore.

CARNES CREEK.

Assessment work was recorded on four claims on this creek this year, and from reports received the ore is improving as depth is obtained. Assays not to hand.

JORDAN PASS.

A new camp was struck this year about five miles up Jordan Creek opposite to the Town of Revelstoke, and seven claims were recorded. These properties from surface indications show the ore to be concentrating properties and carry about 80 per cent. lead, 30 ounces in silver and a trace of gold.

A new camp was also struck about twenty miles north of Albert Cañon on the headwaters of the Downie Creek. Seven claims were recorded, and from assays made show the ore to carry both gold and silver in paying quantities. This is considered by competent judges to be the best camp struck north of the Slocan.

A few claims were located below Revelstoke, a few miles on Akolex Creek, but no reports are to hand.

ILLECILLEWAET MINING DIVISION.

Mineral claims recorded	24
Bills of sale, etc., "	7
Certificates of work recorded	29

Revenue Collected.

Free Miners' certificates	$170 00
Mining receipts	176 30
Total	$346 30

Only development work has been done in this camp beyond the Lanark, Maple Leaf, and Isabella.

The Maple Leaf has been plodding on all the year developing the property, and by all appearance they are in possession of a valuable claim. The assays of this property are about 130 ounces silver, 30 per cent. lead, and $5 in gold.

The Lanark Mining Company started to work two of their claims this fall, the Lanark and the Isabella. Twelve men are employed on the two claims. The assays on the Lanark and the Maple Leaf are about the same, and the Isabella runs about $500 in value to the ton in silver, gold and lead.

It is fully expected that this camp will be in full blast next year on account of its closeness to the C. P. Railway.

New locations have lately been made at the head of North Fork of Illecillewaet and on Downie Creek, in which fine ore has been discovered that assays from 200 to 400 ounces in silver and also high in gold.

LARDEAU MINING DIVISION.

Mineral claims recorded	33
Certificates of work	14
Permission to restake	2
Records made	4

Revenue Collected.

Free Miners' certificates	$ 45 00
Mining receipts	141 50
Total	$186 50

This office was only re-opened in the month of June, 1895.

Very little work has been done in this division beyond development work, owing to want of trails and the inaccessability of a large number of the claims.

The Agnes claim, situate on Sable Creek, has been tested by putting in a tunnel 20 feet long. One assay shows 15 per cent. of copper, 65 ozs. silver and 1 oz. 149 grs. in gold.

The Livingstone group of claims are showing large bodies of galena.

The Glengarry group are also looking well and prove the ore to be of high grade.

TROUT LAKE MINING DIVISION.

Mineral claims recorded	75
Bills of sale, etc., "	38
Certificates of work "	48
Placer claims "	5
Placer leases held	2

Revenue Collected.

Free Miners' certificates	$320 00
Mining receipts	792 30
Total	$1,112 30

PLACER MINES.

On Lardeau Creek last year quite a large number of men were working. This year there seems to have been a change, as most of the placer miners have found work with the owners of mineral claims who are working this winter.

Last year there were 22 placer claims recorded and this year only 5.

Two placer leases are held on this creek, but little or no work has been done by the owners. There are about twenty men employed placer mining on this creek.

TROUT LAKE MINING DIVISION—MINERAL CLAIMS.

The mineral claims in this division are attracting considerable attention this year, but lack of cheaper transportation acts against its progress to a great extent. The completion of the waggon road to Trout Lake and extension of the existing trails have done considerable assistance towards improving the prospects of the mines.

There is a gratifying increase in the revenue this year from this office, and I have no doubt each year will see a similar improvement.

The Pool Group

Consists of seven claims, and is situated between the North and South Forks of the Lardeau Creek. Assays made show that it averages $30 in gold, 40 ounces in silver, and a small percentage of copper to the ton.

The Seven Mile Creek Group.

There are five claims on this creek, which is a tributary of Lardeau Creek. Assays average 100 ounces of silver to the ton.

The Silver Cup.

A Crown grant was issued to the owners of this claim this year. Assays made average 150 to 1,500 ounces of silver to the ton.

The lead or vein runs from 18 inches to 24 inches in width.

This claim has been bonded to D. McGillivray and others, who have seven men employed. It is the intention of the owners to ship ore this winter by rawhiding to Trout Lake, boat it up to the waggon road, and then team it to Thomson's Landing.

The Gold King Group.

These claims are located on Eight Mile Creek, a tributary of Lardeau Creek. From assays made they carry $50 in gold and 40 ounces in silver to the ton.

The Wild Swan.

This claim is located on the South Fork of Lardeau Creek. It shows a well defined lead of asbestos, and from assays received is considered to be of excellent quality.

Professor Nason, geologist, stated the asbestos was of very good quality and free from impurities which are usually found in that commodity in the eastern provinces, and no doubt would improve as it was opened up.

Gainer Creek.

Several locations have been made on this creek, showing good strong ledges, carrying rich grey copper ore.

The Horne Group.

Thirteen locations have been made on this ledge which is situated on the North Fork of Lardeau Creek. Assays run 75 ounces silver and 70 % lead to the ton.

The Knowles Group

Consists of five claims, which average $10 in gold and 22 ounces in silver to the ton taken from the surface.

The Great Northern Group.

This group consists of eight claims, and is situated about six miles from Trout Lake.

Old Sonoma.

One of the above group, was bonded by a Butte, Montana, company, and considerable development work was done on this claim to test it. A tunnel sixty feet long was run in, and the assays show $3\frac{3}{5}$ in gold, 145 ounces in silver, and 7 % copper to the ton.

The Great Northern and Hillside.

Two claims in the above group have been bonded to Montana capitalists, who intend working and testing its merits this winter. Five men will be employed. Assays average $47 in silver and copper to the ton.

True Fissure.

One of the above group is under bond to some Boston capitalists, who have done considerable development work on the claim this fall. They have stripped the lead, which is 800 feet by 300 feet of ore, which is as far as they have exposed it.

The ore has been quarried for 150 feet by 70 feet by $2\frac{1}{2}$ feet, and some 600 tons lie on the dump.

The American.

This claim has working this winter five men extracting and sacking ore. They intend shipping to Thomson's Landing this winter. The average assays are 90 ounces in silver and 75 % lead to the ton.

Lardo River,

At the head of Trout Lake. Several locations have been made in this locality this year, the ore carrying about $12 to the ton in free milling gold.

Trout Lake.

Many claims have been located on both sides of the lake, nearly all carrying gold.

The Abbott Group.

Two of the claims in this group, viz., the "Abbott" and "King William," have applied for Crown grants to their property. The owners have seven men employed developing their property and getting ready for shipping. Assays average 150 ounces in silver and 60 % lead to the ton.

The Blackburn Group.

These claims average 70 ounces in silver and $18 in gold to the ton.

The Wagner Group

Are situated near the headwaters of Haley Creek. Considerable development work has been done on this group, but lack of easy communication acts against this claim shipping ore at present, though they have large bodies of ore, assays averaging from 110 ounces to 3,000 ounces in silver to the ton.

The Lime Mountain Group.

These claims are situate near the headwaters of Grainer Creek, and consist of five claims. Considerable work has been done on the Bad Shot, one of the claims, and a rich body of ore was exposed, which assays 225 ounces in silver, 80 % lead, and a small percentage of bismuth to the ton. About 40 tons of ore are now on the dump.

The Black Prince

has a tunnel 180 feet long. This claim has a lead showing from 9 to 18 inches of high grade ore, assaying from 200 to 1,200 ounces of silver to the ton. A Crown grant has been applied for this claim.

Most of the above claims have from one to four years assessment work done on them. More interest from the outside world is being taken in this camp, and it is hoped a marked improvement will result next year.

YALE.

MR. TUNSTALL'S REPORT.

KAMLOOPS, January 9th, 1896.

SIR,—I have the honour to submit the annual mining report for the Kamloops and Yale Divisions of Yale District, that for the Similkamen Division having been previously forwarded you by Mr. Hunter, the Mining Recorder at Granite Creek.

KAMLOOPS DIVISION.—PLACER MINES.

The Thompson River Hydraulic Mining Company, Tranquille River, have not encountered the success anticipated. Operations were carried on last summer under the superintendence of Mr. James Cummings, a miner of long experience. But a small amount of work was accomplished, owing to the tight gravel encumbered with boulders, on which the small pressure of water available for the purpose had little or no effect.

The Cosmopolitan Claim, situated on the left bank of the river, taken up as a bench claim, about two and one-half miles from the mouth, has been worked by J. A. Russell, and averaged $3 per day to the man.

At the junction of the north and south forks, Gilbert Smith obtained a prospect of 25 cents to the pan on a bench about 30 or 40 feet above the level of the river. The gold is coarse and washed smooth by the action of water. The locality is evidently an old channel at one time occupied by the stream. It is possible that a considerable extent of this ancient water-course still extists. The fact that it has so long escaped the attention of miners who have worked in the vicinity may be ascribed to its distance from the present bed of the creek, where most of the mining has been effected.

The usual number of Chinese, some eight or ten in number, still engage in mining in the most favourable localities, and are contented with small returns. About ten white men were employed, principally working on mining leaseholds.

Scotch Creek, an affluent of Little Shuswap Lake, which in the later sixties yielded considerable gold, attracted but two miners last summer.

The yield of gold for the past year is $2,000, of which $1,880 was purchased by the Bank of British Columbia at Kamloops.

MINERAL CLAIMS.

Adams Lake Group.

The principal mineral veins in this division are embraced in the Adams Lake Group, situated in the vicinity of the lake mentioned, comprising ten or twelve locations, which are intersected by two parallel lodes, pursuing a north-easterly course, possessing a width respectively of 12 feet and 3 feet. The first consists of a crystallized lime, containing copper, silver, glance, and antimony. The second vein is composed of baryta, running from 30 to 200 ounces of silver to the ton.

The most important locations are owned by Mr. R. M. Marpole and associates, who purchased them from Messrs. Buchanan and Olsen. The Elephant and Mountain Whale exhibit an immense deposit of mineral matter, on which considerable cross-cutting has been done, which exposed a vein of copper at a depth of four feet.

A large quantity of low grade ore, which will not bear the expense of transportation, will require to be treated on the ground. Several processes have been suggested, but the one best adapted for the purpose has not yet been selected. About 1,800 tons are lying in the dump, of which about 1,760 tons will average $10.79 in silver and $1.80 in gold. Forty tons will yield over $100 in silver and gold. Work has been suspended in these mines for some time past, pending negotiations for their disposal to a New York company. These valuable properties only await the application of capital to render their wealth available.

On the line between the Homestake and Troublesome, 250 feet of tunnelling and an upraise of 125 feet have been constructed during the past summer.

Cheap transportation is provided by a waggon road twelve miles long, which connects with navigation on the Thompson River at the mouth of Louis Creek. The distance from the latter point to Kamloops is 45 miles.

Cherry Creek Group.—Glen Iron Mines.

The Glen Iron Mines are situated at Cherry Creek, Kamloops Lake. Twelve hundred tons of ore were exported the past season to the Tacoma smelter, where it was used as a flux. This demand has since ceased, and the supply is now provided by the Trail Creek ores.

The bond, mentioned in last year's report, for a sum of $60,000 has lapsed, in consequence of the arrangements for the erection of extensive iron works at Seattle, which these mines were intended to supply, having been abandoned. The ore is a pure and excellent quality of magnetite, capable of being converted into Bessêmer steel without any intermediate treatment. The lodes are four in number, varying from 10 to 20 feet in width, and possess the great advantage of being located near the track of the Canadian Pacific Railway. The works are provided with a chute, 300 feet long, and an aerial tramway, 1,300 feet in length, which can deliver 100 tons in ten hours on the cars.

Copper Creek Copper Mines.

On this group of mines only the annual assessment work has been effected. Mr. W. R. Bellamy, a gentleman of high standing in regard to mining matters, visited them a few weeks since, and expressed his opinion that development would very probably prove them to be of great value. They are situated only a couple of miles from the track of the Canadian Pacific Railway, on the north side of Kamloops Lake, and therefore possess unusual facilities for cheap transportation. This is an excellent investment for capital, which only demands publicity to secure.

Cinnabar Mines, Kamloops Lake.

I regret to say I have not been able to ascertain the particulars concerning these mines from Mr. Leighton, the Superintendent, who subsequently referred me to the Secretary at Vancouver, from whom I have not heard, the snow-slides in the Cascade Mountains having interfered lately with railway communication. I can therefore only give such limited information as lies at my disposal.

These mines, comprising the Rosebush, Yellow Jacket, Blue Bird, and Lakeview, were sold last summer by the original locators to the Cinnabar Mining Co. of British Columbia.

Since the transfer, work has been prosecuted with diligent activity, under the superintendence of Mr. H. L. Leighton, with a force of over twenty men. A plant has been erected for the treatment of the ore. The yield of quicksilver has not been ascertained, but I understand it is very satisfactory. A considerable body of rich ore was discovered a few weeks since in the Yellow Jacket, and development work will be effectively prosecuted without intermission.

These mineral claims enjoy the distinction of being the only quicksilver mines operated in the Dominion of Canada.

Hardie Mountain.

Last August a discovery of cinnabar, which may turn out to be of great importance, was made by Messrs. McCartney and Irving on Hardie Mountain, about three miles north of the Cinnabar Mining Co.'s property. The deposit is of a low grade character, but of great extent. Some samples were sent to the Geological Survey Office, Ottawa, for assay, but the results have not been made public.

YALE DIVISION.—PLACER CLAIMS.

The Fraser River, since the first discovery of gold on its bars, has always attracted a considerable mining population, which now consists principally of Indians and Chinese, who pursue this industry in spring and fall when a favourable stage of water permits them to work to advantage with sluice or rocker, as the case may be. But few white men participate in mining along its banks, as more remunerative employment is obtained by them elsewhere in the Similkameen and Cariboo placers, and in some of the hydraulic claims which are being prepared for work on the benches of the river.

The golden harvest is perennial. The same localities which are favourably situated for the retention of the float gold deposited by the action of the current is mined every year with varying results. This is explained by the fact that the high auriferous gravel banks skirting the upper reaches of the Fraser and its tributaries are undermined at a high stage of water by the powerful tide, and the gold contained carried away and lodged on some bar many miles lower down, eventually reaching the places where it is afterwards reclaimed by means of a rocker.

About two hundred and fifty Indians and Chinese are engaged in this industry, which is necessarily of a desultory character, and subject to interruptions by a sudden rise of the river. The yield averages from 75 cents to $1.50 per day to the hand, and sometimes much larger returns are obtained.

Of the numerous leaseholds taken up for mining purposes in this division within the last few years, but few have been developed by the lessees. In the majority of instances they were merely obtained for speculative purposes, frequently irrespective of their value as mining properties, with the object of disposing of their rights for a considerable amount. When this expedient failed, the rentals simply remained unpaid, and the leases were allowed to lapse. The Fraser River and Siwash Creek offer many examples of this description.

Van Winkle Hydraulic Mining Company.

The Van Winkle Consolidated Hydraulic Mining Company have steadily prosecuted work in their ground, but with smaller returns than anticipated, the main obstacle being an inadequate supply of water to carry off a large enough body of gravel to prove remunerative. I am told it is the intention of the Company to remedy this deficiency by constructing a ditch to utilize the water of Styne Creek. The yield of gold for the past summer's work is $2,168.

Ottawa Hydraulic Mining and Milling Company.

The property held by this Company is situated at Boston Bar, and is principally owned by Captain Gardner, who, at a heavy expense, has diligently prosecuted the work to a successful completion.

The following is a summary of the work accomplished since last spring:—A flume three miles in length, 4 feet wide, and from 2 feet 6 inches to 3 feet deep, constructed and laid, in some places, on a bed excavated in the solid rock.

Owing to the precipitous nature of the bank, a bridge 180 feet high had to be constructed to carry the water across Four-Mile Creek. A steel cable, one inch in diameter, 775 feet long, was stretched across the Fraser for the purpose of taking machinery over the river. A saw-mill, with a capacity of 5,000 feet per day, was erected on the side hill, about 2½ miles from the creek, where good timber could be procured. The lumber cut amounts to 3,000 feet daily, principally used for fluming, etc.

Eight hundred feet of pipe, 22 inches, and 1,000 feet, 15 inches in diameter, has been placed in position in connection with a monitor that will deliver a powerful stream of water under a pressure of 256 feet. The diameter of the nozzle to be used I have not yet learned.

These improvements necessitated last year an expenditure of $15,000, which is amply justified by the large body of gravel available in which the gold is thoroughly disseminated. The location is considered one of the best on the Fraser River. The water rights acquired are sufficient for all purposes, and an excellent dump completes the advantages possessed by this Company.

Columbia Mining Company.

This Company is operating on Hill's Bar Flat, near Yale, and is making active preparations for piping in the spring. A new ditch is being constructed, and laying fluming and iron pipes, 18 inches in diameter, is being proceeded with. A prospect clean-up was made about a month ago, which the Superintendent considered as being exceedingly satisfactory.

Hager and Gardner Company.

Messrs. Hager and Gardner are busily engaged making preparations for mining their ground at Eight-Mile Hill, including the digging of ditches, laying of flumes and the erection of dwelling houses. Very good prospects have been found.

The Wendell Co.

This Company has a leasehold on the left bank of the Fraser River, nearly opposite to North Bend.

Considerable work has been done this year. The water is brought from Four-Mile Creek, about three-quarters of a mile. An old ditch was re-opened and flumed where required. All the necessary lumber was brought from the coast, and taken across the river on the Ottawa Mining Co.'s cable, whence it was hauled and packed to where it was used. The ditch was completed in November, and a large quantity of gravel washed.

Present indications prove that the cut is in the vicinity of an old bed of the river. Owing to unfavourable weather, work was closed in December, but will be resumed early in the spring.

Amount expended last summer in development closely approximates $4,000.

RIVER DREDGING.

Three small plants, supplied with pumps for sucking up the auriferous gravel from the bed of the river, have been operated on the Fraser with the object of obtaining the gold deposits supposed to exist in its channel. Two of these proved failures; the third one, under the management of F. E. Young, has been kept at work in the vicinity of Mormon Bar, above Lytton. I cannot state whether it paid expenses, but the proprietor seems to be satisfied with the amount of gold obtained under adverse circumstances, which improved machinery will remove and render the work effected more remunerative.

The Fraser River Mining and Dredging Co.

The Fraser River Mining and Dredging Co., which has a lease of several miles of the bed of the river, has expended, it is stated, over $25,000 in constructing a dredger at Lytton, provided with all the appliances that experience could suggest to overcome the difficulties produced by a strong current and an accumulation of large boulders at the bottom. The first test took place a few weeks ago, and after working for a few hours further operations were suspended by the breaking of some portion of the machinery. The lateness of the season,

when the river was apt to be encumbered with floating ice, precluded further operations until after the expiration of the winter months, when the problem as to whether this branch of mining can be profitably prosecuted, in the face of the obstacles encountered, will, it is hoped, be successfully solved.

The British Columbia Gold Dredging Co.,

Under the superintendence of W. A. Shahan, has constructed a steam dredger at Vancouver for working on the river in the vicinity of Yale. The machinery has a capacity of 3,500 cubic yards every 24 hours, and will require a crew of 12 men. The estimated cost is $30,000.

The large amount of capital invested by these two companies shows the confidence displayed by their shareholders in the schemes in which they are interested. The results will be watched with deep interest. The long river stretches available for mining of this nature embrace an extent of several hundred miles. Should these undertakings be attended with favourable results, the development of this wide field will employ a large amount of capital and labour, and increase to an unlimited degree the prosperity and resources of the Province.

Siwash Creek.

The placer diggings situated on this creek have during the past season experienced increased activity. The desultory mining done on the surface in former years, which yielded coarse gold of a different character from what is generally found on the benches and bars of the Fraser River, associated with a favourable formation belonging to the carbonaceous system, presented indications of so promising a nature as to induce two companies, named the Tacoma and New Whatcom, to engage in the sinking of shafts to the bedrock. They obtained leases of one-half mile each of the creek, and have incurred considerable expense in cutting water-races, erecting flumes and constructing water-wheels, 15 feet in diameter. A depth of 25 feet has been obtained in the shafts, two in number, securely timbered and safely protected for an early start in the spring. The results will be observed with deep concern, and if successful will lead to the prospecting of a considerable tract of country.

The yield of gold in this division is estimated at $48,400. No returns have been obtained from three Chinese merchants at Hill Bar Flat and Keefers. The following amounts have been purchased by the traders at the places mentioned, and are therefore reliable:—

Agassiz		$ 400
Huntersville		500
Hope		258
Yale		8,050
Prince Albert Flat		700
Spuzzum		2,852
North Bend		3,900
Keefers		1,755
Lytton		18,818
Spence's Bridge		1,175
Ashcroft		5,000
		$43,408
Taken away by private hands and unaccounted for		5,000
Total		$48,408
Number of Free Miners' certificates issued	290	$1,450 00
General mining receipts		4,296 44
Total		$5,746 44

MINERAL CLAIMS.

Harrison Lake Group.

The Harrison Lake mines are situated about six miles north-east of the Hot Springs and have attracted much attention since their discovery last October. So far little work has been accomplished on them in consequence of the fall rains having set in, and the country being covered with a dense growth of vegetation. On the return of spring mining exploration will be vigorously pursued to fully determine their value. I beg to quote the following particulars in a communication received from Mr. W. Teague, of Yale, to whom I am also indebted for other information of which I have availed myself in connection with that supplied by Mr. Dodd, the Mining Recorder:—

"The gold prospects found at Harrison Lake seem to have attracted considerable attention to the gold-bearing quartz found in the belt lying between Harrison Lake, on the north-east, and the Fraser River. Certificates of two assays of rock taken from the Discovery claim, made by Mr. Pellew Harvey, metallurgist and assayer, of Vancouver, are considered of a highly satisfactory character. The first sample exhibited a yield of 2 oz. per ton, the second one, alleged to be an average of the lode across its width, showed $22.64 to the ton of 2,000 pounds. These are the results of assays made from the out-croppings.

"The favourable reports induced me to visit the locality, but owing to there being a thick carpet of moss covering the whole surface of the mountains I was unable to discover and trace the general lithological surface bearings of the indications of mineral veins to my satisfaction.

"The Discovery claim seems to be more exposed at the surface by disintegration caused by the action of water across it from the creek. There is a large body of mineralized rock to be seen in a basaltic formation carrying arsenical and iron pyrites with occasional signs of molybdenum showing in the interstices in the rock, which are sufficient indications to encourage immediate development to prove the character of the ledge, at points where advantages existed for running a tunnel and cross-cutting to a medium depth below the surface.

"The Discovery claim is, in my opinion, the key to the other locations."

Siwash Creek.

Merely assessment work has been performed on the mineral claims on this creek.

I have, etc.,

G. C. TUNSTALL,

Gold Commissioner.

The Honourable
The Minister of Mines.

HARRISON LAKE REGION.

HARRISON HOT SPRINGS, January 12th, 1896.

DEAR SIR,—In answer to your request for a few notes relative to recent mineral discoveries near Harrison Lake, permit us to state that it gives us much pleasure to comply, but we are afraid that you will find the information rather meagre at this early stage of development, opportunity only occurring to examine the underlying formation at such points as the mountain streams have cut into and through the overlying iron capping and the wash or débris which has accumulated on the depressed portions of the vein or veins.

Leaving the granite formation, which is very regular and runs in a north-westerly and south-easterly direction, which can be followed on this course for some miles and joining with this formation on its west side is a heavy capping of ironstone, varying in depth from 10 to 20 feet near the granite and extending over mountain and valley for several miles to the westward, often showing a thickness of over 150 feet near the mountain tops. Where the mountain streams have cut through this iron capping there is exposed a stratified formation, the stratifications running in the same general direction as the granite and of widths varying from

three to twenty feet. Apparantly there are five or six different varieties of rock in the formation which extends in this order through the entire extent of country crowned by the iron cap, judging from the classes of rock brought in from different points on the lake. These stratifications, which are severally silicious slate, metamorphic slate, quartz—a highly silicious, granular rock very hard and of a pinkish colour—are all highly mineralized on the surface showing plenty of pyrites of copper and iron, and judging from our recent development on the Empress claims, where we are now in a distance of about 30 feet, cutting the formation, becomes very highly mineralized as depth is gained, and assumes the fine solid grain of the arsenical pyrites of the Trail Creek country. The character of the surface has also changed, the matrix being now principally quartz, although the pyrites predominate in the rock. So far, we can recognize no confining walls for any particular portion of the vein-matter in this great stratified formation beyond the foot wall of granite to the east and the basaltic rock some miles west of the granite, but as the country has not yet been sufficiently prospected to state with any conviction that such do not exist, and although while trying to trace supplementary walls by surfrce indications, and while running our drift we have so far found none. We find, however, that cross veins or lodes intersect this formation at right angles occasionally, and we are under the impression that the formation directly underlying the iron capping and which we have tried to describe, will eventually lead into chutes of ore probably of large size and which are not in any way governed in their general trend by that of the overlying formations.

This formation of stratifications dips about 30 degrees to the west, and with the hill on the side next the granite, keeping exactly the same dip and into the hills or mountains, west of the granite, another proof of being in same vein formation owing the granite foot wall.

Although we have had some years' experience mining and prospecting, both in the United States and Canada, we have never before had any experience with a similar formation, or with one showing better surface indications or greater regularity.

It is yet too early to judge by assays what will be the value or extent of this new discovery. The work so far done is simply in search of a high grade gold ore body. In driving our tunnel all the rock from the very start has assayed very well; in fact, we have had no rock assayed which did not show some returns in gold—the dump average would, we believe, be about $2.50 to $3 per ton. The mineral which now predominates over the quartz is improving in value and quantity as depth is gained, and we feel very much encouraged to continue development, with fair prospects of eventually finding the higher grade rock which we are seeking.

So far, owing probably to the lateness of the season when the discovery was first made, but little development has been made here. On the Empress group, where this data has been mainly secured, the drift is in now 30 feet and surface indications are of such a character that 40 feet more should show very great improvement, although from the apparant blending of the character of the different stratas as depth is gained, the surface is considered but an indifferent guide. They are however making steady progress, with every foot showing an improvement.

On the Doctor claim, lying directly to the east of the Empress group, Mr. Cross, the owner, is driving a tunnel and is in a few feet. The formation is very similar to that on the Empresses. No assays have however been made.

The Black Diamond, the discovery claim, is now preparing to tunnel. We are all anxious to see work progress here as Nature has done much to facilitate development, a mountain stream having cut the formation well down, and on this claim the surface assays were exceedingly high, being $42, $22.97, $36 to the ton.

Mr. C. Smith, of Vancouver, and Mr. Wickenden, who are having a cabin built on their claims, propose to start work about the middle of February. Some Vancouver parties contemplate shortly some development work on their claims which are quite close to Harrison Lake. We are of the opinion that a very great extent of rich mineral lands surround the lake and will, in all probability, be well prospected during next summer.

Trusting that you will be able to cull some points of service to you out of our letter,

Believe us, &c.,

BROWN BROS.

Wm. Dodd, Esq.,
Mining Recorder, etc., Yale.

OSOYOOS DISTRICT.

MR. C. A. R. LAMBLEY'S REPORT.

Osoyoos, B. C., 6th January, 1896.

SIR,—I have the honour to submit herewith the annual mining report and statistics for the Osoyoos Division of Yale District for the year 1895.

KETTLE RIVER DIVISION—QUARTZ MINING.

This district, speaking generally, is covered with scattered timber and grass to the summit of the highest mountains, and in almost any part the prospector can travel with his pack-horses, finding abundance of grass, wood, water, and game, and as numerous mineral locations have been made in the past year extending over its entire length from east to west, and from the International boundary line on the south to points 20 and 25 miles north of it, we may reasonably expect that next summer this ground will be well prospected.

Immense bodies of ore, apparently from 3 to 100 feet wide (or even more), carrying principally copper and gold, have been exposed in the different mining camps.

The veins have long uniform trends, running generally in a northerly and southerly direction, and have an easterly dip, generally outcropping and easily traced by the gossan capping.

The formation is principally composed of quartzites and schists, apparently of Devonian age, overflowed frequently by volcanic eruptions of trachyte, and intersected by dykes of diorite, these dykes being a strong and persistent feature of the geology of the country.

Large areas of later granite also occur, and severe geological convulsions must have taken place, as the numerous bodies of volcanic and much contorted metamorphic rocks would indicate. This would also account for the unusually large amount of metalliferous deposits found in all portions of the different camps. These deposits may be roughly divided into two classes:—

1st.—Quartz veins, having definite walls not materially different from ordinary types.

2nd.—Deposits of heavy metallic sulphides and oxides, apparently having no true walls, but skirting erupted dykes of diorite, and probably representing the metalliferous constituents which have in fusion been separated from these dykes and segregated along their outside edges.

Very few of the claims, however, are sufficiently well developed to define what the true width of the ore bodies or character of their wall rocks may be.

On the majority of the claims located during the past summer, little development work has been done, and on some of them it is questionable if more than the required "mineral in place" has been found, and it is therefore impossible at the present time to give any interesting description of them.

The Skylark.

As the vein on this claim is one of the smallest in the district, and has proved to go down as deep as any yet developed, a short history of it may be interesting.

The claim was recorded in July, 1893, by Mr. S. Bloyer, who transferred a half interest to Mr. Jas. Attwood; afterwards they bonded to the Spokane and Great Northern Mining Co. This Company leased 100 feet to Messrs. Symons & Co., who at once started to work, and during the fall and winter of 1893 shipped several tons of high grade silver-gold ore to the Tacoma smelter.

The width of the pay ore was then from 8 to 15 inches, the entire ledge being considerably wider.

The character of the ore is fine-grained, steel galena, with some grey copper, and assaying from 100 to 300 ozs. in silver and ½ to 2 ozs. in gold per ton.

The strike of the vein is north and south, with a dip of about 50° to the east.

This claim was the first location in what is now known as Skylark Camp, which is connected by a branch waggon road of about 1½ miles with the main road between Grande Prairie and Boundary Creek.

Messrs. Symons & Co. worked on their leased ground until February, 1894, when the original bonders took hold, and commenced mining on a larger scale. At a depth of 50 feet, the vein apparently pinched out, and they continued sinking to a depth of 103 feet, but did not again find the vein, so from the bottom of this shaft a 15-foot drift was run in an easterly direction in the hope of striking the vein, but this failing, further search for it was abandoned. The Company then began stoping out all the ore in sight above the 50-foot level, and this being accomplished they abandoned the claim, allowed their bond to lapse, and the claim reverted to the original owners, the general opinion being that the claim was "dug out." In the meantime, Mr. Jno. Douglas bought Mr. Bloyer's interest, and Messrs. Wake & Johnson becoming equally interested with Mr. Attwood, they began a systematic search for the vein at the 50-foot level where it had faulted. The hanging wall was broken into, and, at a distance of 6 feet, the vein was found. The shaft was then continued to a depth of 75 feet on the vein, when it again faulted, and a drift of 25 feet (easterly) again struck the vein. This, however, was found not to be in place, but at a depth of 42 feet from the 75-foot break the ledge, apparently in place, was found. The ledge here is 30 inches between walls, with 6 to 8 inches of ore on the hanging wall, and a narrow seam on the foot wall, as rich as any yet found in the mine. A total depth of 117 feet shaft and drift, with an actual depth of 87 feet on the vein has been reached, thus tending to prove, in a large measure, the continuity of the veins in this district.

Messrs. Farrel and Migeon have done considerable development during the past year on their several properties.

On the Golden Rod, situate in Central Camp, a shaft of 60 feet has been sunk, and a second shaft of 85 feet, with a cross-cut on the ledge, at the 55-foot level.

On the Emma, situate in Summit camp, one shaft is down 110 feet in solid mineral and another 20 feet, exposing a fine body of ore.

On the Enterprise, in Copper camp, the old shaft was continued to the depth of 70 feet.

On the Stemwinder, in Greenwood camp, a new double department, vertical shaft, 4 x 8 feet, has been sunk during the past few months, to a depth of 60 feet, and a 25-foot drift from the bottom of the shaft, where the vein is found 8 feet wide. A second drift is now being run from the same level, in a westerly direction, with the expectation of finding a parallel vein which outcrops on the surface 20 feet wide and 70 from the outcroppings of the other. About five tons of ore, principally from the 60-foot level, have been shipped as a mill test; the returns have not yet been learned.

The Winnipeg

Is situated in Wellington camp, and was recorded on the 25th of June last, by D. McIntosh, was bonded on the 29th of October last to Mr. John Toole (presumably for Messrs. Marcus, Daly & Co., of Anaconda, Montana), for the sum of sixty thousand dollars ($1,000 cash). Since then a shaft has been sunk 65 feet, and a drift run therefrom for 15 feet, showing about six feet of high grade ore. The claim, however, when surveyed was found to be only seven hundred feet long on the ledge, and therefore I understand some difficulty has arisen between the parties to this bond.

The Texas.

On this claim, in Graham camp, the old tunnel has been continued to a distance of 76 feet, and a new tunnel lately started is in fifty feet, in which a small vein of very high grade copper glance was discovered.

The Iron Cap,

Situate in Brown's camp, on which the tunnel is now in about 300 feet, has been leased by the owners to Messrs. Larsen and Blewitt, together with two other claims, the Volcanic and Wolverine, both situate in the same camp. Development work on a very extensive scale is shortly expected.

OSOYOOS MINING DIVISION.

Camp Fairview.

There are apparently two strong ledges in this camp, running almost parallel with one another, in some places not over thirty feet apart, the main average direction of each being north 70° west, each ledge from the surface dipping slightly to the north-east. The rock forming the walls of these ledges, is a schistose quartzite, in places containing an appreciable amount of iron pyrites in small crystals, and where decomposition has taken place the rock is coloured from the iron. The ledges follow closely the north-easterly edge of a large body of granite, which forms the greater part of the mountain, on the flanks of which these ledges occur, traceable for over two miles, and varying in width from 10 to 20 feet in their widest places, down to 2 feet or less.

As a rule the quartz is low grade, but there are notable exceptions; for instance, the Stemwinder, Morning Star, Silver Crown, Victoria, Joe Dandy, and Smuggler claims. During the past year active development has been going on in the Morning Star, Joe Dandy, and Smuggler claims, and it is pleasing to be able to state that the energetic owners of these respective claims are being well rewarded for their tenacity of purpose in that the ore has improved in grade as depth has been attained. But on the majority of the other claims little more than the necessary work to comply with the Act has been done, owing to the miners' need of capital, for they hold unshaken faith in the future prosperity of this camp.

Morning Star.

The owners, Messrs. Steve Mangott and Dan McEachern, have been assiduously employed developing this claim, which has every indication of being a most valuable property.

From January to May, in 1895, Messrs. Mangott and McEachern had a lease of the Stratheye Mining Co.'s 10-stamp mill, and during these five months crushed 2,000 tons of ore which, with 20 tons of concentrates, yielded them a return of $30,000, the concentrates netting $100 per ton. Since the expiration of the lease they have been steadily sinking and drifting on the ledges, of which there are two, almost parallel, some 90 feet apart.

The wider ledge, varying from 12 to 20 feet in width, has been stripped 300 feet, 2,000 tons of ore being taken from the surface, while a shaft has been sunk 100 feet to strike the ledge which dips slightly to the north-east.

On the other ledge, which dips in a similar manner to the north-east, a shaft has been sunk 100 feet, and at this depth a north-easterly drift of 20 feet caught the ledge, on which a drift of 100 feet has been run, the ledge here being from 6 to 10 feet wide, and the ore exceptionally rich.

The Black Diamond

Is an adjacent claim on the south-west, and also owned by Messrs. Mangott and McEachern. The ledge is from 4 to 6 feet wide, on which a shaft has been sunk 30 feet.

The Joe Dandy,

Owned by T. Davies and E. Hammond, shows a 3-foot ledge of free-milling ore that can be traced 1,500 feet on the surface. A 60-foot tunnel has been run on the ledge, tapped by a 55-foot shaft. The ore averages $20 to the ton. Mr. Davies is in hopes of being able to lease the Strathyre Mining Co.'s quartz mill in the spring.

The Smuggler,

Owned by Thomas Elliot, has this year come into prominence, owing to the rich ore that has been taken out. The outcropping of the ledge was of smelting character, but as depth was attained the ore changed to free-milling. Some very fine specimens have lately been taken out of this claim, in which the free gold is plainly visible to the naked eye.

A shaft has been sunk 100 feet on the ledge, which is, at this level, 5 feet wide. Three tons of assorted ore out of the shaft, sent to the Tacoma Smelter, gave a return of $143.70 per ton. Sixteen hundred pounds of unassorted ore gave a return of $39, also at the Tacoma Smelter. A Crawford mill is about to be erected on this property.

There have been 34 new locations made in this camp in 1895, but little being done on them, it is impossible to give any particulars.

OSOYOOS.

There was some little excitement during the summer on what is known as Kruger Mountain, which rises gradually from the western shore of Osoyoos Lake, and forms the water-shed between the Okanagan and Similkameen Valleys.

Three years ago several claims were located here, but little attention, more than the necessary assessment work, was paid to them till this year, when the owners of the Gold Dust, Messrs. Engle and Keller, shipped some 60 pounds of ore to the Tacoma Smelter, which gave them a return of $37 per ton, copper and gold.

Many claims were then located, miners from Rossland pronouncing the ore to be similar to that in the now famous Trail Creek Mines.

Large bodies of ore of the same character have been located on the Rock Creek Mountain, 15 miles east from Osoyoos Lake, and again over on Boundary Mountain, which would lead to the supposition that this ore runs continuously through the southern portion of the district.

Camp McKinney.

The Cariboo Mining and Milling Company have been running their 10-stamp mill almost continuously during the past year, realizing the handsome sum of $97,861.50 in free gold, and $7,000 in concentrates, making a total of $104,861.50 for the year, the ore milled being from the Cariboo and Amelia Claims. At the 140-foot level, where the work is now being carried on, a splended body of ore is in sight, the vein averaging 6 feet in width. A run of 12 days during the latter part of December on the ore from this level, gave a return of 500 ounces of free gold, the value of the gold being $13.50 per ounce.

It is estimated that there is now sufficient ore in sight to keep the mill constantly running for two years. On an average 25 men are employed in the mine and about the mill.

The Fontenay

Is situate about one mile east of the Cariboo, and has a 80-foot shaft down through a fine body of ore.

To the north of the Cariboo several locations have been made, but the work done has been confined to prospecting.

The Highland Chief.

On this claim, situate three miles north-east of the camp, a 98-foot tunnel has been run, 12 feet of the work having been done during the past year.

The Old England,

Situate three miles east of the camp, has a 65-foot inclined working shaft, 25 feet of the work having been done during the past summer. This shaft has been sunk to tap a chute of telluride ore carrying gold and silver, the ore being a talco-schist formation.

The Anarchist

Is situate about two miles west of the Cariboo, and has a 35-foot shaft, a 16-foot drift on the surface of the ledge, and a prospect hole of 10 feet.

The character of the ore is gold, pyrites, and galena, in rose quartz.

There are three veins running parallel for 600 feet and within a width of 30 feet. The vein sunk on averages 4½ feet in width, and assays, gold $9.13, silver $3.79. Picked rock goes, gold $27, silver $9, total $36 per ton. The concentrates of the whole ledge average, gold $68.76, silver $22.91, total $91.67 per ton.

The vein is exposed on the surface for 600 feet, the formation of the footwall being granite, and of the hanging wall gneiss.

Upon the remainder of the claims in the camp and vicinity nothing more than the annual assessment work has been done.

VERNON DIVISION.

In this Division during the past year there were 126 locations recorded, the localities ranging from Camp Hewitt, on the west of Okanagan Lake, to points north of Enderby, a distance of about 80 miles, a large majority of these claims being recorded since the 1st October, and owing to the lateness of the season very little development work has been done, though where assayed the rock has shown very encouraging results, assaying from $17 in gold to the ton at Camp Hewitt, to $236 in gold at the BX camp, situate about five miles from Vernon.

PLACER MINING.

On Rock Creek a number of companies have been engaged during the past summer endeavouring to bottom the creek, but so far without success, the water proving more than could be managed with wooden pumps.

The First Chance Placer Mining Co. have expended in money and labour during the season about $3,700, sinking a shaft 34 feet, erecting 1,100 feet of flume, and putting in a water wheel with sufficient power to work two 8-inch pumps and do the hoisting.

The old Laura Hydraulic Mining Company's property, at the mouth of the creek, has been worked by a few Chinamen, who realized about $700.

A few men have been working further up the creek and made good wages.

Altogether about $8,500 has been taken out of the creek during the year.

Cedar Creek.

Mining here has been confined to a few Chinamen, about $400 being taken out.

Cherry Creek.

On this creek ten Chinese have been working, taking out some $2,500.

Siwash Creek.

This creek, running into Okanagan Lake on the west side, has produced about $1,000, six white men and a few Chinese working on the creek.

The total yield of gold from placer mining in the district for 1895 is, approximately, $12,400.

Owing to the rapid development of the mining interests in the southern portion of the District, and the large increase of revenue, more particularly in the Kettle River Division, I would draw the attention of the Government to the urgent necessity for the construction of roads and trails to the principal mining camps in this Division.

Following is an abstract of all the mining records and free miners' certificates issued in the different Divisions of the District during the year 1895:—

KETTLE RIVER DIVISION.

Free Miners' Certificates		451
Claims recorded	(Mineral)	771
Certificates of work	"	140
Certificates of improvements	"	11
Permits to re-locate	"	3
Abandonments	"	12
Water grants	"	3
Mill site leases	"	3
Conveyances	"	244
Claims recorded	(Placer)	9
Conveyances	"	3
Abandonments	"	1
Water grants	"	3
Permits	"	2

OSOYOOS DIVISION.

Free Miners' Certificates		111
Claims recorded	(Mineral)	128
Certificates of work	"	30
Certificates of improvements	"	2
Permits to re-locate	"	9
Abandonments	"	2
Conveyances	"	16
Claims recorded	(Placer)	10
Permits	"	1
Water grants	"	2

VERNON DIVISION.

Free Miners' Certificates	126
Claims recorded (Mineral)	126
Transfers "	22
Claims recorded (Placer)	5

I have, &c.,
C. A. R. LAMBLY,
Gold Commissioner.

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

SIMILKAMEEN DIVISION.

MR. HUNTER'S REPORT.

GRANITE CREEK, B. C., December 7th, 1895.

SIR,—I have the honour to forward the annual mining report for the Similkameen Division of Yale District, also mining statistics and sketch plans of placer claims in operation.

The Anglo-American Gold & Platinum Hydraulic Co.'s Claim,

Situated on the South Fork of the Similkameen River, about nine miles up stream from Princeton, consists of some 640 acres of bench land. Work on this claim was started early in March of the present year—putting up buildings and laying out ditch line—under the general supervision of Capt. S. F. Scott, with Mr. W. Wills as engineer. Actual work on the ditch was begun June 6th and completed September 14th. The ditch is 8,910 feet in length, 6½ feet wide on top, 3 feet on the bottom, and 3¼ feet deep, with a grade of 13⅓ feet per mile.

There is also a flume 4,026 feet long, 4 feet wide and 3 feet high, with a grade of 20 feet per mile. The capacity of ditch and flume is 2,600 inches, with a pressure of 266 feet.

The main pipe line is 848 feet long, the pipe being 30 inches in diameter, diminishing to 24 inches. The 24-inch pipe is Birmingham wire gauge No. 10. This pipe line connects with two monitors, with nozzles ranging from 4 to 9 inches.

A bedrock flume has been constructed 324 feet long, 6 feet wide, and 3 feet deep, paved with blocks 9 inches square.

Work was entirely suspended the latter part of October on account of severe frost, everything being ready to start piping when next season opens.

The Gold Point Mining Claim,

Owned and worked by W. J. Waterman, mining engineer, is also situated on the South Fork of the Similkameen River, some five miles below the Anglo-American Co.'s claim. The character of the operations has been essentially the same as pursued in other hydraulic gold mines in British Columbia, with the exception that owing to the inadequate supply of water at present obtainable, in addition to the ordinary plant, a "bucket" or self-acting reservoir has been constructed eighty feet above the hydraulic pit, with capacity to discharge two thousand inches of water, at intervals of thirty minutes, through a six-foot flume into the diggings. The bedrock now being worked is twenty feet above the river, and the fall from the sand-box at the head of the pipe line is one hundred feet. Dump is made directly into the river. Water is obtained from Bromley Creek, and the total length of ditch at present completed is four and three-quarter miles and one thousand feet of fluming. A preliminary run of twelve hours water excavates 800 cubic yards of gravel, producing gold at the rate of fifty cents per yard and a considerable percentage of platinum.

It is proposed to construct a branch from the main ditch, and to work the claim at three different points simultaneously. A ditch seven miles in length, with a carrying capacity of 2,000 inches, will be built to bring on the water from the Similkameen River.

Mr. Waterman is also interested in another mining claim about fifteen miles up the river from Princeton. A hydraulic plant has been put in and is in readiness for an early start next season.

The Tulameen Hydraulic Co.,

Whose claim is situated on the right bank of the Tulameen River, about four miles below Granite Creek, have been prospecting their ground this summer. A small plant was used for this purpose, consisting of a No. 1 monitor, new model, and 420 feet of pipe from eight to seven inches, with a pressure of 150 feet. As results proved entirely satisfactory the Company intend putting in a larger plant and bringing water from the Tulameen River.

The Stevenson Gold & Platinum Hydraulic Mining Co.'s Claims

Are situated on Granite Creek. The work on these claims commenced early in April under the management of Mr. Robert Stevenson.

A saw-mill, with a capacity of twenty-four thousand feet of lumber per day, has been purchased by the Company and placed in position on their property to cut lumber for fluming, &c.

On account of the ground over which the water has to be carried being for the most part solid rock, it has to be flumed for the whole distance. A trestle of 7,500 feet has been completed, which brings the work to the first North Fork of Granite Creek, from which they intend to get a temporary supply of water, and about 3,000 feet of flume has been laid.

The Company intend to extend their flume next spring, so as to tap the main stream at a distance altogether of about two and one-half miles from point of commencement.

A first-class hydraulic plant is on the ground, and, should nothing happen to prevent, Mr. Stevenson expects to start piping early in May.

The Pogue Co.'s Claim

Is situated immediately above and adjoining the Stevenson Gold & Platinum Hydraulic Co.'s ground on Granite Creek. The ground was located as a hill placer claim, and is operated by a tunnel some 1,300 feet in length. It has been worked continuously for the past ten years, the present owners being Messrs. Murphy, Kyle and Newton, who also operate it. The claim is at present paying from three to five ounces per set of timbers (eight feet caps).

Much difficulty has been experienced heretofore in running the tunnel on account of bad air, but this difficulty exists no longer, as the tunnel is clear from end to end.

The Granite Creek Gold Mining Co.,

Whose property is situated on the South Fork of Granite Creek, and owned by R. C. Campbell, Johnston and others, drifted some 650 feet under the bed of the creek to find bedrock, but did not succeed in reaching it. The work was laid over in consequence until next spring.

A number of other leases of mining ground have been granted in this section, on which little or nothing has been done.

A number of placer claims on the various creeks in the district were recorded, and from what I could learn the majority paid fairly well, especially those on Granite Creek, which have yielded a much larger amount of gold than for a number of years past. One claim situated above the Pogue Co.'s ground, consisting of about 100 feet, was worked by two men for two months, and yielded $500 in gold and platinum, including a nugget which weighed 10¼ ounces.

Twenty-six mineral claims have been located this season, among them one of asbestos, but nothing has been done except in one or two cases, where the owners have satisfied themselves with performing their assessment work.

I have, &c.,

HUGH HUNTER,

Mining Recorder.

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

REPORT FROM THE ASSAY OFFICE AND LABORATORY.

I have to report a very large increase in the number of assays made during the past year (ten times more than the year before). There have been more samples of ore coming in for assay from all parts of the Province, but principally from the District of Alberni. A considerable number of assays for Mr. W. J. Sutton's report on this district were made. Taking the whole of the assays, they give the following averages, viz.:—

Gold.....$12.5 per ton of 2,000 lbs., and
Silver..... 1.5 " "

The following are the more important of the assays made during the year:—

From Skeena River; examined for Mr. Geo. Robinson.
Quartzose rock-matter and pyrites; weight of sample, 6 ozs.
Gold..... $6.25
Silver..... 1¼ oz.

From Bonanza Claim, Lillooet; examined for Mr. J. McB. Smith.
No. 1 sample, quartz; weight of sample, 4 ozs.
Gold..... $15.00
Silver..... Trace.

No. 2 sample, semi-decomposed slate; weight of sample, 8 ozs.
Gold..... $30.97
Silver..... Trace.

From Vancouver Island; examined for Mr. Jos. Hunter, M.P.P.
Quartz and pyrites; weight of sample, 7 ozs.
Gold..... $144.55
Silver..... Trace.

From Vancouver Island, Alberni District; examined for Hon. C. E. Pooley.
Quartz and pyrites.
Gold..... $295.25
Silver..... 1/10 oz.

From Alberni District; examined for Mr. Jas. Dunsmuir.
Mill test quartz and pyrites.
Gold $13.39
Silver ..... Trace.

Tailings from above.
Gold $3.9
Silver ..... Trace.

From Vancouver Island; examined for Mr. T. B. Hall.
Mixed rock matter; weight of sample, 5 ozs.
Gold $12.36
Silver ..... $\frac{1}{10}$ oz.

From Alberni District; examined for Mr. Jas. Dunsmuir.
Quartz and pyrites, mill test.
Gold $72.15
Silver ..... $\frac{3}{10}$ oz.

From Alberni District; examined for Mr. Jos. Hunter, M.P.P.
Quartz and pyrites, with free gold; weight of sample, 6 ozs.
Gold $4,811.45
Silver ..... 20 ozs.

From Lillooet District; examined for Mr. A. W. Smith, M.P.P.
Quartz and pyrites; weight of sample, 3 ozs.
Gold $9.27
Silver ..... $\frac{1}{10}$ oz.

From Starlight Claim, Alberni; examined for Hon. D. W. Higgins.
Gray quartz and pyrites; weight of sample, 8 ozs.
Gold $17.00
Silver ..... $\frac{1}{10}$ oz.

From Alberni District; examined for Mr. Jas. Dunsmuir.
Quartz, mill test.
Gold $18.05
Silver ..... None.

From Alberni District; examined for Mr. A. J. Galletly.
No. 1 sample, mixed rock-matter and galena; weight of sample, 12 ozs.
Gold $164.80
Silver ..... $4\frac{1}{4}$ ozs.

No. 2 sample, quartz, pyrites, and galena; weight of sample, 10 ozs.
Gold $20.65
Silver ..... 1.35 oz.

No. 4 sample (Missing Link), quartz; weight of sample, 5 ozs.
Gold $30.85
Silver ..... $\frac{6}{10}$ oz.

From Lillooet District; examined for Mr. A. W. Smith. M.P.P.
Arsenical pyrites; weight of sample, $2\frac{1}{2}$ ozs.
Gold $30.85
Silver ..... $\frac{3}{10}$ oz.

From Barclay Sound, Alberni; examined for Mr. Wm. Wilson.
No. 1 sample, copper and iron sulphides; weight of sample, 10 ozs.
Gold $6.18
Silver ..... $\frac{9}{10}$ oz.

No. 2 sample, copper and iron sulphides; weight of sample, 11 ozs.
Gold $8.25
Silver ..... $\frac{3}{10}$ oz.

From Big Bend, *Kootenay District*; *examined for* Mr. J. M. Kellie, M.P.P.
Quartz, pyrites, and free gold; weight of sample, 25 lbs.

Gold	$43.00
Silver	1 oz.

From Lillooet District; examined for Mr. A. W. Smith, M.P.P.
Quartz; weight of sample, 6 ozs.

Gold	$20.00
Silver	½ oz.

From B. C. (exact location unknown); examined for Mr. H. Lea.
Black sand and rock-matter, containing platinum; weight of sample, 4 ozs.

Gold	$144.00
Silver	Trace.
Platinum group of metals	9.6 oz. per ton (2,000)

Several saline springs, coals, and building stones have been analyzed during the year, but there is nothing of importance in them to report; the usual number of criminal analyses have been made.

I hope, when in the new laboratory which it is proposed to fit up, to be able to make far more extended researches than has been possible under the present circumstances.

I have, etc.,

HERBERT CARMICHAEL,

Public Analyst and Assayer for the Province of British Columbia.

COAL.

The following table shows the output of each year from 1874 to 1895, inclusive:—

Year.	No. of Tons.
1874	81,000
1875	110,000
1876	139,000
1877	154,000
1878	171,000
1879	241,000
1880	268,000
1881	228,000
1882	282,000
1883	213,000
1884	239,070
1885	365,000
1886	326,636
1887	413,360
1888	489,300
1889	579,830
1890	678,140
1891	1,029,097
1892	826,335
1893	978,294
1894	1,012,953
1895	939,654

REPORT OF THE INSPECTOR OF MINES.

NANAIMO, B.C., February, 1896.

To the Honourable James Baker,
Minister of Mines,
Victoria, B.C.

SIR,—I have the honour, as Inspector of Mines, to respectfully present my report for the year ending 31st December, 1895, for your information, in accordance with the requirements of the "Coal Mines Regulation Act" of British Columbia.

The collieries in operation during the year 1895 were:—

Nanaimo Colliery of the New Vancouver Coal Mining and Land Company, Limited.
Wellington Colliery, owned by Messrs. R. Dunsmuir & Sons.
Union Colliery, of the Union Colliery Company.

The output of coal for 1895 amounted to 939,654 $\frac{8}{20}$ tons, produced by the several collieries, as follows:—

Nanaimo Colliery	338,198 $\frac{8}{20}$ tons.
Wellington "	336,906 "
Union "	264,550 "
Total output for year 1895	939,654 $\frac{8}{20}$ tons.
Add coal on hand 1st January, 1895	38,579 $\frac{1}{20}$ "
Total coal for disposal in 1895	978,233 $\frac{9}{20}$ tons.

The exports of coal by the collieries for 1895 are 756,333 $\frac{16}{20}$ tons, as follows:—

Nanaimo Colliery, export	234,321 $\frac{16}{20}$ tons.
Wellington " "	394,878 "
Union " "	227,134 "
Total coal exported in 1895	756,333 $\frac{16}{20}$ tons.
Add home consumption in 1895	188,349 "
Coal on hand January 1st, 1896	33,550 $\frac{13}{20}$ "
Total	978,233 $\frac{9}{20}$ tons.

The returns for the year show a home consumption of coal amounting to 188,349 tons, as against 165,776 $\frac{18}{20}$ tons last year (1894). It must, however, be noted that the coal used in the collieries is in most instances included under this heading.

The coal exported was shipped at the Port of Nanaimo, Departure Bay, and Union, near Comox, on Vancouver Island, British Columbia. The exports were principally made to San Francisco, San Pedro, and San Diego, in California, U. S. Shipments were also made to Oregon and Washington States, U. S., Alaska, Petropavloski, Hawaiian Islands, and to Acapulco in Mexico.

In order to show the standing of British Columbia coal in the California market, the following returns are set forth, for the year ending December 31st, 1895:—

"British Columbia	651,295 tons.
Australia	268,960 "
English and Welsh	201,180 "
Scotch	4,098 "
Eastern, Cumberland, and Anthracite	26,863 "
Seattle, Franklin, and Green River	150,888 "
Carbon Hill and South Prairie	256,267 "
Mount Diablo and Coos Bay	84,954 "
Japan, etc	9,015 "
Total for the year 1895	1,653,520 "
" " 1894	1,527,754 "

"To insure a correct statement of the entire amount of coal consumed, I have included all the arrivals by water at San Pedro, Port Los Angeles, San Diego, and Santa Barbara, aggregating 199,100 tons.

"The quantity consumed this year was greater than any other year since 1891. This is mainly attributable to the very low prices of fuel which have ruled, being the lowest known to the trade, and the outlook is that low prices will prevail for several months to come. The reduced values of all characters, Australian and English coal, are materially interfering with our northern collieries.

"The total amount of coke imported into California was 28,688 tons, all foreign, mainly from England and Belgium. The owners of the Union Colliery at Comox, B.C., are putting up 100 ovens on a large scale, with a view to supplying this (California) market with coke, as the coal is reputed to be well adapted for coke producing, but it will be several months before they are equipped."

I am obliged to Mr. Harrison's report for the above.

The ovens above referred to are under way, but it will be nearly midsummer before they are filled with coal. In addition to those now in use, there will be 100 new ovens that, when all in working order, will make about 140 tons of coke per day, for which this coal is well adapted to make a first-class article. Thus they will be able to supply fuel to the smelters on the Mainland of this Province. The ovens above referred to are being built near the shipping wharf, and close to them is a large coal-washing machine, known by name as the Luhrig Washer. This was only started in January last, but it is expected to cleanse 500 tons of coal in 10 hours, with a loss of not more than 3 per cent. of the fine coal (dust). This alone will assure the Union Colliery Company of having an efficient plant, so that nothing may be lost, as the finest particles of coal will make the best coke. This Company has also got, near their mine, the Shepherd improved washing machine. This alone can clean about 350 tons of coal per day, but there is quite a loss of fine coal, this fine stuff being just what is wanted to make coke, as they can market the lump coal.

This district never had a better showing of coal than there is now, taking all the working mines and the new find on the south slope of Mount Benson into consideration. In this latter I cannot put an estimate upon the coal, but I think that it is quite safe to say that the coal which will yet be mined from this district by both the Nanaimo Colliery Company and Messrs. R. Dunsmuir & Sons will be many times greater than all the coal that has yet been shipped from British Columbia. Now that we have the coal and plenty of it, of a first-class quality, it is to be hoped that they will have a good market, where they can dispose of it at a fairly remunerative price, so that it will pay the companies and the miners who dig it.

In connection with our coal, we must not lose sight of our valuable beds of fire-clay. The demand and output of this article for 1895 was three times larger than it was in 1894, and we will expect to see it much increased during the year that we have now entered on, apart from the preparation being made for its manufacture in this district near where it is mined.

NANAIMO COLLIERY.

No. 1 Shaft, in Nanaimo City.

This shaft, as mentioned in a previous report, is within the limits of the City of Nanaimo, and belongs to the New Vancouver Coal Mining and Land Company, Limited. This has proved to be a valuable property, and, to all appearance, will be for a long time to come.

As I have mentioned in previous reports, this shaft is 650 feet deep, and most of the mining done here is in a northerly direction from the shaft, the principal openings being what are known as Nos. 1 and 3 north levels, and a slope driven in a north-easterly direction. All the working of this extensive mine is under the waters of Nanaimo Harbour, except a small part, which is under Protectien (or Douglas) Island and the Gulf of Georgia. The workings are generally dry, but not dusty, and are quite safe from any influx of water, as there is a thickness of from 450 to 1,000 feet of rock and débris between the water and the workings of the mine. All the workings are on the pillar and stall system, as well as on the panel principle; the pillars which are left are fully two-thirds of all the coal that was in the mine, this being left to protect the mine, but still remaining in store for mining some future day.

The workings of No. 1 level are now in, in a northerly direction, 4,900 yards, but they are not working at the face at present, the coal being thin, all the working being done to the west side, going towards Newcastle Island, where this Company at one time had an extensive mine in operation. Coal in these places has been good in general, and has varied from 3 to 10 feet thick, being overlaid by a strong rock roof, yet in some places this is much cut with slips, which make it dangerous. From the shaft to the face of the inside incline it is over 5,000 yards, and is the longest hauling road in our mine.

No. 3 level.—The workings from this level have been described in a previous report as working up to the lower side of No. 1 level, leaving about 40 yards between the two levels. There are now only a few places being worked here, and they will be stopped soon, yet there is coal in this district that will take years to work out.

Early in the year work was resumed in what is known in this mine as the "slope," which has been standing for several years, and is now down in a north-easterly direction 1,500 yards,

and 1,050 under tide-water, and I am sorry to say that there is yet very little coal, but it has now the appearance that there will be a change soon, and any alteration would almost be sure to be for the better. As this is now the principal exploring place in this mine, it would be a great relief to see good coal discovered at this point.

Ventilation is good, and by motive power, using a large Guibal fan, as described in a previous report. When I was down in December there were 103,400 cubic feet of air passing per minute for 135 men. The above is conducted on the separate split system as follows, with Protection Island shaft the principal intake:—To the level and inside incline there were 16,800 cubic feet of air passing per minute for 38 men; to long incline, 28,000 cubic feet per minute for 64 men; No. 3 level, 27,000 cubic feet per minute for 13 men (the last-mentioned quantity having a large area of old workings to keep clear, hence the large volume); to the slope and men about the shaft there are 31,600 cubic feet of air passing per minute for about 20 men, this coming down No. 1 shaft. In addition to the men above enumerated, there are about 12 mules.

In the levels above mentioned is where the New Vancouver Coal Company has been, and is now, hauling the coal out by electricity; of this there is a full description in the report of 1894. This system of haulage is quite a success with this Company in long roads.

PROTECTION ISLAND SHAFT.

This is also the property of the New Vancouver Coal Company, and is situated on the south point of Protection Island.

This mine opens out from the shaft to the north and south sides, with two slopes as the principal opening out and cutting places, together with the north level. The slope on the east side, mentioned in a previous report as down 800 yards to a fault, has been continued and pushed with all haste through the fault, and is now down 1,500 yards, and 1,500 feet below the surface of the water at the entrance of Nanaimo Harbour, and for quite a long distance they have had good coal, but not quite as thick or hard as might be expected, or as it was on the upper side of the fault, but it will give it quite a different appearance when they work it in stalls. On the upper side of the above fault there is a fine face of stall. In both the north and south sides of the slope the coal is very good and hard, but these places are getting used up towards the No. 3 level of No. 1 shaft, and here they will have to stop for a time again, as in the low side of No. 1 level, leaving a large piece of coal, as well as the pillars, for some future day. All the mining being done here is under the water of Nanaimo Harbour.

From the north level, and about 100 yards from the shaft, here branches off what is called the "diamond slope," that is being driven in a north-easterly direction, and is now down 1,100 yards, and fully 1,000 feet below the tide-water of the Northumberland Channel, which separates Protection from Gabriola Island. This slope passed through a long stretch of very fine coal, varying in thickness from 4 to 7 feet, and about 900 yards from the top of this slope another very large downthrow to the coal was encountered, which was somewhat discouraging; yet they kept at it, and, after a long rock tunnel, their perseverance was rewarded by again getting the coal on the low side, 5 feet thick, and of its usual good quality; and it is to be hoped that this will continue good until they get to Gabriola Island, where this Company has large interests. You will have seen that both in the north and south slopes they have recently passed down over a very large fault (or faults), and it is possible that they may be both one and the same disturbance, and, if that should prove the case, they have here a very extended field of coal awaiting them. There is one level working to the north of this diagonal slope, and on the east side they have started another side slope, which is down about 400 yards, in good coal all the distance, this lying to the dip of the diagonal. The prospects at present in this pit look well for coal, and we may yet hear of the Manager of the New Vancouver Coal Mining and Land Company, Limited, travelling from Nanaimo to Gabriola Island without the use of a boat.

Ventilation is good and on the separate split system, the intake being this shaft and the upcast No. 1 fan shaft. In the Diagonal Slope, and working from it, there were 31,250 cubic feet of air passing per minute for 19 men, and 24,420 cubic feet of air per minute going down the slope for 80 men and 3 mules. This was split as follows:—South level, 16,420 cubic feet per minute for 56 men and 3 mules; to north side, 8,000 cubic feet of air passing per minute for 24 men. All the works above referred to are on the pillar and stall principle.

There has not been any work done in the lower seam during the past year, except keeping the water out, but there has been quite a few holes bored from the upper coal to the lower seam, giving good prospects.

This Company has large bunkers near the wharf at Protection Island, which can hold 1,200 tons, in addition to the bunkers at Nanaimo, which can hold 2,000 tons, so that when a large steamship is expected the bunkers are filled with coal so that they can give it a quick dispatch, there being no difficulty to load a 4,000-ton ship in 30 hours.

No. 5 Shaft, Southfield.

This mine is also the property of the New Vancouver Coal Company, and is the only mine they now have in operation in this section of their estate. Here they have been much troubled with faults of one kind and another, and have not got clear of them yet, although they are not quite so formidable as they have been, coal being much harder and of very good quality—in some places 20 feet thick, in other places quite thin.

The leading places in this mine are working to the east. The one known as the east level goes out from the shaft to the west side, but in its windings gets into the east level; this is in 1,200 yards from the shaft, and has been considerably "troubled," but in the stalls from this level there has been got some very fine coal. The other main opening is from the south side and up the east incline, and then to the south-east side. Here they are getting some very good coal, although somewhat rolling and hard to get roads in to the place. At present there is a large output of coal per day when they work.

Ventilation is good, motive power being a fan and on the separate split system, the division being from the bottom of the shaft. To the west there were 25,400 cubic feet of air passing per minute for 45 men and 8 mules, and to the south and east side 29,000 cubic feet of air passing per minute for 44 men and 7 mules. After both currents have passed the working places they come again into one volume and pass on to the upcast shaft. There is very little gas seen in this mine, and it is also free from dust, everything being kept in the best of order, so that it may be safe and free from any accidents to the workmen. The workings of this pit are connected with the old No. 4 slope, and there is quite a quantity of air going that way not mentioned in the above quantities.

Northfield Mine.

This mine is also part of the Nanaimo Colliery and belongs to the New Vancouver Coal Company, being in the northern part of the large estate. There were a few men working here in the early part of the year prospecting, but not being successful in finding the coal as thick as they thought would justify them in carrying on the work, they thought it was to their best interests to suspend operations for the present.

Prospecting.

The New Vancouver Coal Company has done much exploring and expensive prospecting in their mines during the past year, among which being the large downthrow of the coal in the main and diagonal slopes of the Protection Island shaft, in the first place the coal going down nearly 100 feet, and in the diagonal about 50 feet; but they have been rewarded by finding good coal in both places.

In addition to what has been done in the mine, they have done much exploring and boring with the diamond drill from the surfaces in what is known as the Wake-Siah Park, about one mile west of Nanaimo. This Company put down two holes here, but the results of their borings are not yet made public. At present they are busy with another hole in Chase River Valley, near to the Nanaimo Water Company's dam, and I hope that they will be successful in finding something good and valuable here. There is much other work that has been done by this Company in the woods, but it will not be possible for me to describe, in addition to what has been done in No. 1 shaft, Protection, No. 5, and Northfield mines, some of it very heavy and expensive work, but I hope that it will yet be the fortune of this New Vancouver Coal Company to find a good field of coal in hand on this their large estate. If perseverance and pluck can find it, the present management of the Company will not miss it.

WELLINGTON COLLIERY.

No. 1 PIT.

This Colliery belongs to Messrs. R. Dunsmuir & Sons, and, as I have said in a previous report, is near Departure Bay, their shipping point, where they have their extensive wharves for the shipping of the coal, and near the eastern boundary of the Wellington estate. Work has been carried on almost steadily during the past year. Most of the time the mining was in rock, but by perseverance coal was struck, very thin at first, but after a while good coal was reached, and also a connection was made with No. 5 pit, working where the coal had to be hauled up hill for about one mile to the shaft bottoms. There is a long face of good coal opened out here, worked on the long-wall system, all the coal being hauled out by mules, on a level road to No. 1 shaft.

Ventilation was good (but as there is much powder used here at times there is considerable smoke), and on the separate split system, known as the inside and outside divisions. On the outside division there were 18,000 cubic feet of air passing per minute, with 47 men at work, having No. 1 shaft as the return; on the inside split 10,000 cubic feet of air passing per minute, with 27 men working, the air from this place going out at No. 5 fan shaft, and this being the long-wall system, the air mostly passes along the face where the men are at work.

Everything about the top and bottom of this shaft is fitted up on good principles, and is convenient for the handling of a large output.

It is in this mine where they have a strata of fire clay 30 feet thick, and of good quality, of which they send out enough to supply any order they may get; but in place of sending away this clay as at present, we yet expect to see it going away in a manufactured state, which can be done near the pit mouth.

No. 3 PIT, WELLINGTON COLLIERY.

This mine, mentioned in a previous report, was idle, excepting the pumping of water and ventilating, but now work has been resumed, taking out some coal and cleaning up and putting it in order, both roads and airways. There is yet a large quantity of coal to be worked from this mine, where there will be employment for quite a number of men for some years to come.

No. 4 PIT, WELLINGTON COLLIERY.

This is one of Messrs. R. Dunsmuir & Sons' extensive mines, and is the same that has on two different occasions been filled with water, owing to fires in the mine, which blocked up roads, stopped airways, and to all appearances wrecked this valuable property, but, as I have said in a previous report, everything is again in working order, and this property is now one of the most productive mines in this colliery. With the exception of part of the south side, all the mining is at the pillars (coal), which comprise fully two-thirds of the original coal. There is yet every indication that it will last for quite a number of years to come.

Ventilation is good; motive power, fan, worked by steam engine, and the mine is ventilated on the separate split system as follows: When down in December there were to the north division 21,000 cubic feet of air passing per minute for 30 men; south split 13,000 cubic feet per minute for 38 men; east side, 17,280 cubic feet passing per minute for 60 men. In addition to the above, there are 12,000 feet passing that escape at different places, keeping the old works clear. In addition there are yet 10,000 feet of air which goes out at No. 3 fan shaft. This is for 27 men. Besides all the men above referred to, there are 20 mules scattered throughout the works at different places in the mine.

There is now very little gas found in this mine, yet the greatest care is taken, and as it is not possible to get into the old works, where the pillows have been taken out, the firemen gives the face of the old caved roof particular attention, also the shot-examiner, to see if they can find any gas collecting.

No. 5 PIT, WELLINGTON COLLIERY.

This is yet the only mine of Messrs. R. Dunsmuir & Sons where the locomotives of the Esquimalt & Nanaimo Railway Company can go under the shute and get coal for their own use, and here the railway company's cars can also come to the mine and be loaded with coal for the Victoria Market.

No. 5 pit of this colliery is yet the greatest producing mine, the coal being brought to the shaft bottom from the east level, Horn's heading and new diagonal slope, by a tail-rope system of haulage, and from the north by a slope, with a steam engine as a motive power. Much of the coal is worked here on the pillar and stall system, as well as on the long-wall principle and at the pillars (coal).

There is a large amount of coal in sight here, which will last for a long time. This mine, as you will have seen, is now connected underground with No. 1 shaft, having a good road to No. 1, as well as a good travelling road to No. 6 pit.

Ventilation is good, although sometimes there is considerable powder smoke directly after blasting time, but this has been much improved since a connection was made with No. 1, and in a short time there will be further improvement. In December, near the bottom of the fan-shaft, there were 110,000 cubic feet of air passing per minute, but at the different splits there were only 99,150 cubic feet accounted for, for 184 men, thus showing for loss and expansion 10,850 feet. This mine is also ventilated on the separate split system.

To the west side of the slope there were 27,000 cubic feet of air passing per minute for 33 men and 4 mules; No. 2 side slope, 3,450 cubic feet of air per minute for 14 men; Barber's level, 13,000 cubic per minute for 28 men and 2 mules. The mining here is done on the long-wall principle, and the coal will be worked out in a short time. In the long-wall split there were 25,700 feet of air passing per minute for 52 men and 4 mules. In the east side 30,000 cubic feet of air per minute, and split as follows: New diagonal slope, 22,500 cubic feet of air for 52 men; Horn's heading, 7,500 for 5 men. This is all pillar work. This mine is free from dust.

In addition to the manager there are the overman, fireman and a large staff of shot examiners, so that the mine is examined several times each day, and the smallest change anyway can be soon detected.

All the pumping from this mine, particularly the slope, is by compressed air and electricity, each of which gives good satisfaction.

No. 6 Pit, Wellington Colliery.

This pit belongs to Messrs. R. Dunsmuir & Sons, and is about 900 yards east of No. 4 shaft, but with not any connection under ground, leaving a barrier about 40 yards thick between the two mines as a safe-guard in case of accident in either place, this strip of coal having already proved very useful, as No. 4 had on two occasions to be filled with water, owing to fires in the mine.

This is now an extensive mine, most of the coal taken out during the past year coming from the north, south, and east levels from the shaft, having been re-mined after a mixed system, some by pillar and stall, at another place by long-wall, and much of the mining was at the pillar (coal). The coal is very good, and it will be waste of time for me to say that the quality is good, as that is well known.

In the report of 1894 mention is made there that they had started in the upper seam, but as this is thin, and not requiring it, operations were stopped, so that there has been very little done here during the past year.

Ventilation was good, motive power being a fan. When I was there, on December 21st, there were 47,000 cubic feet of air passing per minute on the return, and on the different splits, as follows: On the east side, 14,500 cubic feet per minute for 53 men; south side, 9,600 cubic feet per minute for 24 men; east incline, 13,200 feet per minute for 43 men, and on the north and west sides 9,700 cubic feet of air per minute for 35 men; and as most of the mining done here is long-wall and pillar work, the air has got to pass along the gob or old waste works, and this is where great attention has to be paid to ascertain whether there is any gas collecting or not.

No. 1 Shaft, East Wellington.

In the report of 1894 mention is made of no work being done here, the mine being full of water. Since that time this property has changed hands, and is now the property of Messrs. R. Dunsmuir & Sons, and may be considered part of the Wellington Colliery. Shortly after getting possession they commenced to make preparations to get the water out of the mine from No. 2 shaft, and after they commenced to take water out, it only took a few weeks till they got to the bottom of No. 2 shaft. Then their attention was turned to No. 1 shaft. Here

they also soon reached the bottom. Now there are a few men working in the mine exploring and prospecting, and sending out a few tons of good coal per day, so that we may yet expect to see good shipments from here. The railway has been extended up the valley, and is now in connection with the Wellington railway system, the rails being taken out of the old East Wellington track.

ALEXANDRA MINE.

This is also the property of Messrs. R. Dunsmuir & Sons. Work has been resumed here during the past year, after standing for some years, with a slope down 700 yards on an easy grade.

The water was got out, and the slope driven down to the distance of 600 yards. Here two levels were started, with counter levels as airways, and after a short distance the one to the south was stopped. The north level is now in 150 yards. Part of this distance they passed through some very good and hard coal, but I could not say how thick it was, as they did not get to the top, while at other places there was much dirt mixed with thin coal.

Ventilation is good, motive power a large furnace in the bottom of the up-cast shaft, the sides being well protected from fire by bricks and iron sheets. When down I found that there were 8,250 cubic feet of air passing per minute for six men, this being about the average at present.

NO. 2 SLOPE, WELLINGTON COLLIERY.

There is nothing yet being done here.

E. & N. WELLINGTON EXTENSION.

It is with pleasure that I have now to report to you this new work and discovery of Messrs. R. Dunsmuir & Sons. This coal was first seen about last midsummer, where a large tree had fallen, tearing up its roots, the same having been standing on a thick bed of coal. This a Mr. Hodgson discovered when travelling in the woods, and this discovery was reported to Mr. Dunsmuir, as it was on the property of the E. & N. Railway Lands. Mr. Dunsmuir lost no time in going to see what was reported to him, and here he saw what appeared might be so valuable to him that he paid Mr. Hodgson handsomely for the information.

This discovery is about seven miles south-west of Nanaimo, in Douglas District, and on the south slope of Mount Benson, with an altitude of about 900 feet above sea level, this being the highest point of the cropping out of the coal. At this point they have run down a slope in a southerly direction about 200 yards, with an easy grade, and at the entrance at the surface the coal was 9 feet thick, but it kept getting thicker as they went down, until at the above distance it is 11 feet thick. This coal is hard and of good quality, and proves itself to be the famous Wellington coal. At this slope they have a steam engine for hoisting the cars, and a steam pump for the water.

In addition to the slope at the above cropping out, they have put a bore-hole down the slope in a southerly direction, near the Nanaimo River, which, without being measured, I would say is two and one-half miles distant. Here the coal was also struck, although not quite so thick, yet it was very hard. From the indications and look of the surface, there must be a great many square miles in this new coal-field not yet broken into, but we will wait for further developments that are sure to follow soon.

There have been some other exposures out in this district, but those mentioned are the principal places where coal has actually been seen, and there are big times in store for the Douglas District.

WEST WELLINGTON MINE.

This mine is west of and adjoining the Wellington Colliery of Messrs. R. Dunsmuir & Sons, and is owned by Dennis Jordan, Esq., of San Francisco. There was considerable work done here some years ago by putting a tunnel into the coal, but it was stopped for some reason best known to the owner.

During the past summer work was resumed here, and this time by opening out the old tunnel and running a slope down to the coal, which varies in thickness from 4 to 6 feet, and, being the Wellington seam, it is of the usual good quality of that famous coal. This slope is not far down yet, but they have started two levels, one to the east and the other to the west

side, and are in but a short distance, as they had to hold back until they could see a way of taking the coal to market. A few cars of this coal were sent to Victoria on the Esquimalt & Nanaimo Railway, but Mr. Jordan's ambition was to have a road of his own to the salt water, where he could ship his coal. This was soon accomplished by having a tramway five or six miles in length built to Nanoose Bay, where he has a wharf, and now he is sending away what coal he gets out by water; but as they are only getting the works in order, and winter being on, he cannot do much outside, still we look to see this mine further developed and become a most productive work during the year we have entered on, and I hope to see Mr. Jordan one of our successful mine operators.

No. 1 SLOPE, UNION COLLIERY.

This Slope is the property of the Union Colliery Company, No. 1 slope being the first extensive mine of this Company, and one from which there has been a large quantity of good coal mined and shipped to the California market. The coal was being taken out of this mine up to a few months ago, when it was stopped, when they took out the rails, pumps, and everything that was of any value, then built up the entrance so that no person could get into this once valuable mine, now filled with water, and not likely to be pumped out.

No. 2 Slope, Union Colliery.

This slope is now down about 700 yards from the surface, and quite a long distance of this is in rock, much disturbed with faults, and thin coal, but there has been quite a change for the better, as for a considerable distance the coal has been 4 feet 6 inches thick, very hard and of good quality, overlaid by a strong roof. This being on the south side of the valley, and opposite to all the other mines of this Company, excepting Nos. 1 and 2 tunnels, which are in an upper seam of coal and above the workings of this No. 2 slope. I think it is almost safe to say that on this side will yet be seen the great productive mine of the Union Colliery, the surface showing this to be a fine country.

Ventilation was good, motive power being a fan, on the upcast shaft. When I was down in December, there were 17,000 cubic feet of air passing per minute for 54 men. There are not any men working to-day, but the above is fully the average of men in the mine when all at work. When I got to the mine, I found gates on the entrance to the slope locked to keep any persons from entering when there is nothing doing below.

No. 4 Slope, Union Colliery.

As has been mentioned in a previous report, this slope is the most extensive mine in the Union Colliery, and is the longest hauling slope in the district, being 2,000 yards long from the entrance to the face, in addition to 700 feet outside. The first 500 yards is almost flat, this part being worked on the tail-rope system; after this distance there is an easy grade, so that the empty cars take the rope down to the lowest landing, which is about one mile down from the entrance. There is also a diagonal slope, which is known as No. 2 slope, in No. 4; this leaves the main slope near its entrance to the east, at an angle of about 45 degrees, this slope being now down 1,000 yards, and having a much greater pitch, so that at the face it is now almost as low as the main slope.

From the main slope there are six levels working, 11, 12, and 13 to the west side, in all of which places the coal is good and hard, averaging 6 feet thick; on the east side there are also 11, 12, and 13 levels working, the coal in here being good, but not quite so thick as on the west side of the slope. In some places the coal is somewhat soft, but always of good quality. As the diagonal slope intersects all the levels from the main slope down to 10 east, the coal is similar to that mentioned in the levels from the east side of the main slope, and as the engine on top takes the coal from both slopes, there is much labour saved in running the cars underground.

Ventilation is good, motive power a large Guibal fan worked by a steam engine. This fan was built last summer, as the fan mentioned in a previous report was burned down during the dry weather of last summer. The intake for the air is by the slope and travelling road, this latter running parallel with the slope, about 12 yards apart to the west side. This mine is also ventilated on the separate split system, and when I was down, on the 11th December,

there were 54,320 cubic feet of air going down the two ways above referred to. To the west side there were 11,400 cubic feet of air passing per minute for 37 men and 2 mules; to the slope and east side 24,200 cubic feet of air per minute for 56 men and 3 mules; in the diagonal slope, 13,530 cubic feet per minute for 65 men and 6 mules; leaving yet 5,190 cubic feet of air to be accounted for. This is allowed to escape from the main slope, and is caught in the upper levels of the diagonal slope. I may here mention that when I was down there was no person at work in the mine, but the above figures indicate fully the average number employed in the mine when at work. The fan was also running somewhat slower than usual.

All the appliances and arrangements about this mine are on the most improved system at their disposal for the saving of labour and the handling of coal from this extensive mine.

No. 5 Shaft, Union Colliery.

This is the new shaft mentioned in 1894 report as being put down by this company, about one and a half miles to the east of the bottom of No. 4 slope. After everything about the surface was put in order, work was commenced in the shaft and continued almost without intermission until it was completed to the depth of 600 feet from the surface, being finished inside in the following manner:—The first 40 feet being through gravel and cement with water, this water had to be kept from coming in, and this was done as follows:—In sinking, the first timber put in was 12 inches thick, and this size they continued to put in until they reached hard sandstone rock, into which they went down for 10 feet, to make sure that it was solid. Then the bottom was levelled off and the first inside timber put in being 12 inches wide and 6 inches thick, a space 8 inches wide between this and the 12-inch timber was left, and after putting in some of the inside timber, this space of 8 inches was filled with Portland cement, letting the water rise in the shaft with them as they went up. Continuing this on until they got to the top, then they let it stand for a time to harden, and when this was deemed sufficient they pumped the water out, and on reaching the bottom they found that their work was a success, as there was now no more water coming in, the shaft being now perfectly dry. Work was now commenced in the bottom again, and continued, when, at the depth of 275 feet from the surface, the first coal was struck, this 5 feet thick, hard, and of good quality. This was drifted into a few feet, when work was resumed in the bottom and continued. When at the depth of 590 feet from the surface the coal that they were after was found, this being 4 feet 6 inches thick, very hard, and of the usual good quality of Union coal. This shaft is lined inside from the bottom of the cement to the bottom of the shaft, with plank 6 inches thick, and is sunk through hard rock most of the way.

They have now worked into this coal in three different directions from the shaft, *i. e.*, to south, east and west, for 200 feet each from the shaft, the coal keeping very good.

The appliances on top are not yet completed, but as far as they have gone everything is being done with the view of having a very extensive mine at this opening.

There is a double engine, the cylinders being 30x60 inches, winding drum 14 feet in diameter, with four large boilers. There is also a large Guibal fan, worked by a steam engine, about 50 feet from the shaft, connection being made by a tunnel to the rise end of the shaft, this being the upcast in the ventilation of the mine, the shaft having a partition, so that the air goes down the side where the cages work, coming up the other as return. Now the large hoisting engine, fan and engine, headgear and railway, together with all other necessaries are in working order and they are taking out about 100 tons of coal per day. I may here mention that all the machinery about this shaft came from the Albion Iron Works, Victoria, and any person seeing this fine machinery and knowing that it had been made in Victoria, would quickly aver that there was no necessity whatever to send out of the Province for anything required in the above line.

This mine has the appearance of giving good returns from now on, and I hope that the company will find a market giving a good remuneration for all the coal they can put out.

At this Union Colliery they have been making some first-class coke from fine coal that could not otherwise be sold, and now they are erecting ovens by which they will be able to turn out over 100 tons of coke per day, and this will enable them to work soft coal.

ACCIDENTS

IN AND ABOUT THE COAL MINES OF BRITISH COLUMBIA FOR THE YEAR 1895.

January 7th—Sterley Grieves, miner, working in No. 1 slope, Union Colliery, had one arm broken while riding in one of the mine cars.

" 7th—William Thomas, miner, working in Protection Island shaft, Nanaimo Colliery, was slightly burned by an explosion of gas.

" 11th—Oscar Rowa, miner, had is hip dislocated by a fall of coal while at work in his stall in No. 1 shaft, Nanaimo Colliery.

" 24th—B. Belloni and John Ducca, miners, were seriously injured by the premature explosion of a shot while at work in No. 1 shaft, Nanaimo Colliery.

" 25th—The above B. Belloni died to-day.

" 25th—Louis Golasso, miner, working in No. 4 slope, Union Colliery, was bruised about the leg by a fall of coal while at work.

" 28th—William Wright, labourer, at No. 1 slope, Union Colliery, was hurt about the back by falling from the trestle.

" 28th—C. Webster, miner, working in No. 4 slope, Union Colliery, was slightly burnt about the arms and face by an explosion of gas.

" 31st—John Marks, bottomer in the No. 4 pit, Wellington Colliery, was seriously injured by the cage while at work.

February 8th—Peter Borgland, miner, in the No. 4 slope, Union Colliery, had one of his legs broken by a fall of rock while at work.

" 9th—Mat Beyer, miner, in No. 5 pit, Wellington Colliery, got his leg broken by a fall of coal while at work.

" 11th—Ching Wing and Ah Wing were killed while attempting to jump from the mine cars in No. 4 slope, Union Colliery.

" 12th—George Whitehead was burned about the face and arms by an explosion of gas in No. 4 slope, Union Colliery.

" 13th—Mak Gevett had his arm broken by a mine car in the No. 4 slope, Union Colliery.

March 2nd—A. Wonger, pusher in the No. 6 pit, Wellington Colliery, was killed by a blowing-through shot while he was going past.

" 19th—James Read, fireman in No. 2 slope, Union Colliery, was slightly hurt about the head by a piece of rock falling on him.

" 23rd—Peter Muller, sinker in the No. 5 sinking shaft, Union, was injured about the back by a piece of rock falling out of the side.

April 9th—Dan McKeigan, miner, was killed, and Fred Cook had one of his legs injured, by a fall of rock while at work in the face of No. 1 slope, No. 1 shaft Nanaimo Colliery.

" 6th—John Jess, sinker in No. 5 sinking shaft, Union Colliery, was killed by a piece of rock falling down the shaft and striking him.

" 16th—Robert McNeil, mule-driver in No. 1 slope, Union Colliery, was slightly burnt about the face and hand by an explosion of gas.

" 23rd—David Campbell, timberman in No. 3 pit, Wellington Colliery, had his arm broken by a car in the mine.

May 3rd—David Adamson, miner, in No. 6 pit, Wellington Colliery, was killed by a fall of coal while at work.

" 22nd—David Evans, rope-rider in Protection Island slope, Nanaimo Colliery, had his leg broken by the cars in the mine.

June 11th—David Paterson, miner, in No. 5 pit, Wellington Colliery, was injured about the face and arms by a shot while at work.

" 15th—Peter Babba, miner, in No. 4 slope, Union Colliery, had his face cut and jaw broken by a full of coal while at work.

" 24th—W. Stevenson, sinker in No. 5 sinking shaft, Union Colliery, was cut in the back by a piece of rock falling down the shaft.

" 24th—John Davis, driver in No. 4 slope, Union Colliery, had his leg broken by being caught in a coil of rope while lowering a mine car.

" 26th—Jacob Lathi was killed, and Jas. Kallie got his arm broken, by a fall of rock from the roof while at work in the No. 5 pit, Wellington Colliery.

" 26th—Alfred Scales, miner, in No. 5 pit, Wellington Colliery, was seriously injured by the premature explosion of a shot.

July 11th—John Robertson, pusher in No. 5 pit, Wellington Colliery, got his leg broken by being jammed by a car in the mine.

" 12th—A Chinaman had his arm broken by a fall of rock in the Alexandra Mine.

" 16th—J. W. Harley, miner, in No. 1 shaft, Nanaimo Colliery, injured in the back by a fall of rock and coal while at work in his stall.

" 18th—H. McSwain, pusher, in No. 5 shaft, Nanaimo Colliery, was seriously bruised about the head by being jammed by cars.

August 3rd—Richard Walters, (boy) pusher in Protection Island shaft, Nanaimo Colliery, got his arm broken by being jammed between two mine cars.

" 10th—J. Honnok, J. Talentensi, A. Modesta, and one Jap were burned by an explosion of gas in No. 4 slope, Union Colliery.

" 24th—Ah Lee was slightly burnt by an explosion of gas in No. 4 slope, Union Colliery.

" 31st—J. Webster, miner, in No. 4 slope, Union Colliery, had his leg broken by a fall of rock while at work in his stall.

" 30th—Joseph Piconae, miner, in No. 4 slope, Union Colliery, was injured about the back by a fall of rock while at work in his stall.

September 18th—John Rowe, miner in the No. 4 slope, Union Colliery, was killed by a fall of rock while at work in his stall.

October 3rd—John Adams, miner in the No. 4 slope, Union Colliery, was hurt about the head by a fall of rock while at work.

" 5th—Thomas Hayworth, miner working in No. 5 pit, Wellington Colliery, was killed by a fall of rock while at work in his place.

November 6th—William Anderson, miner in the No. 6 pit, Wellington Colliery, got his arm broken by being jammed between a prop and mine car.

" 9th—Mike McFarlan, miner in No. 1 pit, East Wellington, was injured about the spine by a fall of rock while at work in his place.

" 9th—Quong (Chinaman), got his collar bone broken by falling from the pithead of No. 1 shaft, Wellington Colliery.

" 14th—M. Prisadel, John Albertina, and Chas. Albertina were slightly burned by an explosion of gas in No. 4 pit, Wellington Colliery.

November 25th—Albert Thrall, pusher in the No. 1 shaft, Nanaimo Colliery, had one leg broken by being struck with a rope on an incline.

December 4th—Daniel Maguire, fireman in Protection Island shaft, Nanaimo Colliery, was seriously injured by being jammed between a car and a timber on the main slope.

" 16th—James Robinson, miner in No. 1 shaft, Wellington Colliery, had some of his ribs broken, and was squeezed about the hips by a fall of rock while at work in his stall.

It is with sincere regret that I have again, at this the close of another year, to make out the above long list of accidents, a list that shows quite an increase in the number of both serious and fatal, over those of the previous year.

Some of these just mentioned were quite slight; again, some of them were very serious. In some cases months elapsed before they could attend to their work.

In the above list you will observe that there is a total of 56 accidents, 46 of them being reported slight or serious, and ten as fatal, and of the 46 casualties, 4 were with coal, 13 with rock, 12 by explosion of gas, 3 by shots, 9 by cars in the mine, 2 by ropes on incline, 2 by falling off trestle, and 1 by being caught with the cage at the bottom of the shaft.

Of the 10 fatal accidents, 1 was caused by a fall of coal, 5 by rock, 2 by shots, and 2 by cars in the mine.

I have made enquiries into the circumstances and causes of all those accidents, on many occasions being at the place before receiving the notice from the manager. In looking over the list you will observe that all those accidents mentioned took place while the men were at work.

With respect to the fatal accidents, in all cases where an inquest was held all evidence was taken that was found possible to get, and as the evidence of these inquisitions is filed in the Attorney-General's Department I beg leave to refer you to the same.

In addition to each workman looking after his own safety, there are the manager, overman, fireman, shot-examiner, and other persons having authority, all of whom are on the move throughout the mine, not being long in one place, except where their presence is required at some particular place, so that very little can escape their watchful eyes, and it seems strange that accidents should take place so frequently.

All the old works that can be got at, as well as the present working places, are frequently examined for gas, this being the great enemy to guard against in coal mining, and I am pleased to be able to say that there is now very little to be found in our mines, ventilation being so good that there is very little chance of it accumulating, yet it is occasionally found in holes in the roof, and at times in the stalls.

I have here again to mention that the miners of the Nanaimo Colliery are as yet the only workmen who have sent a deputation of the men to examine the mine as to its condition for safety, the result of their finding being posted up in some conspicuous place as well as being entered in a book kept for that purpose, thus letting the workmen, and all those in connection with the mine, know as to its safety.

At neither the Wellington or Union Collieries do the workmen take the benefit of this privilege granted them by the "Coal Mines Regulation Act," and it seems to me to be an oversight on their part, as much good would result from such examinations, letting the men know the general condition of the mine as to its safety. I have no doubt that the managers of the Collieries above referred to would be pleased to have such a deputation of their workmen

examine their mine once a month, so that the miners would thus have a better knowledge as to the condition and safety of the mine, and would do away with much friction and talk that is at times so pronounced.

Again I say that I am sorry to see that there has been this increase of casualties and fatal accidents during the past year. Many of them could have been prevented had greater precautions been used, but we will hope for the better during the year that we have just entered, so that if greater care and all means at our disposal are used by all concerned, good results will be sure to follow.

I append hereto the Annual Colliery Returns for 1895.

I have, &c.,

ARCHIBALD DICK,

Government Inspector of Mines.

COLLIERY RETURNS.

NANAIMO COLLIERY RETURNS FOR 1895.

Output of coal for 12 months ending December 31st, 1895.		No. of tons sold for home consumption.		No. of tons sold for exportation.		No. of tons on hand 1st January, 1895.		No. of tons unsold, including coal in stock, Jan. 1st, 1896.	
Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
338,198	8	101,149	—	234,321	16	3,606	18	6,334	10

Number of hands employed.				Wages per day.			
Whites.	Boys.	Indians.	Chinese.	Whites.	Boys.	Indians.	Chinese.
887	55	.....	145	$2.37 to $3.50	$1 to $2	.....	$1 to $1.25
Total hands employed..... 1,087				Miners' earnings, per day ..... $3 to $5.			

Name of Seams or Pits—Southfield No. 2, Southfield No. 5, No. 1 Esplanade Shaft, No. 1 Northfield Shaft, Protection Island Shaft.

Value of Plant—$350,000.

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 feet; 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, 4½ miles; rails are of steel, 56 lbs. per yard, of standard gauge, viz., 4 feet 8½ inches; 8 hauling and pumping engines, 15 steam pumps, 5 locomotives, 237 coal cars (6 tons), besides lumber and ballast cars; bunkers with a capacity of 3,700 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 1 15 horse-power locomotive; hauling and lighting equipment; wharves, 2,000 feet frontage, at which ships of the largest tonnage can load at all stages of the tide.

SAMUEL M. ROBINS,
Superintendent.

WELLINGTON COLLIERY RETURNS FOR 1895.

Output of coal for 12 months ending December 31st, 1895.		No. of tons sold for home consumption.		No. of tons sold for exportation.		No. of tons on hand 1st January, 1895.		No. of tons unsold, including coal in stock, Jan. 1st, 1896.	
Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
336,906	—	51,084	—	294,878	—	22,939	3	13,883	3

Number of hands employed.				Wages per day.			
Whites.	Boys.	Indians.	Chinese.	Whites.	Boys.	Indians.	Chinese.
862	65	.....	97	$2.25 to $3.50	$1 to $2	.....	$1 to $1.50
Total hands employed..... 1,024				Miners' earnings, per day ..... $2.50 to $3.50.			

Name of Seams or Pits—1, 3, 4, 5, and 6 Wellington, and 1 and 2 East Wellington.

Value of Plant—$150,000.

Description of seams, tunnels, levels, shafts, &c., and number of same—7 shafts, with slopes, airways, and levels; 3 air shafts.

Description and length of tramway, plant, &c—5 miles of railway, with sidings and branches; 6 locomotives; 250 coal cars; 13 stationary engines; 9 steam pumps; 4 wharves for loading vessels, and bunkers.

Output of fire-clay—$664\frac{6}{20}$ tons.

R. DUNSMUIR & SONS.

UNION COLLIERY RETURNS FOR 1895.

Output of coal for 12 months ending December 31st, 1895.		No. of tons sold for home consumption.		No. of tons sold for exportation.		No. of tons on hand 1st January, 1895.		No. of tons unsold, including coal in stock, Jan. 1st, 1896.	
Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.	Tons.	cwt.
264,550	—	36,116	—	227,134	—	12,033	—	13,333	—

Number of hands employed.				Wages per day.			
Whites.	Boys.	Japanese.	Chinese.	Whites.	Boys.	Japanese.	Chinese.
453	20	50	290	$2.50 to $3	$1	$1 to $1.25	$1 to $1.50

Total hands employed 813

Miners' earnings, per day..... $3 to $4.50.

Name of Seam or Pits—Comox.

Value of Plant—$125,000.

Description of seams, tunnels, levels, shafts, &c., and number of same—No. 2 Slope; No. 4 Slope, with airway and levels; No. 5 Shaft, with airway and levels.

Description and length of tramway, plant, &c.—12 miles railroad, 4 feet 8½ inches gauge; 4 locomotives; 150 coal cars (25 tons each); 1 passenger car; 1 diamond drill; 4 stationary engines; 4 steam pumps; 5 electric pumps; 1 dynamo; 1 steam saw-mill; 1 Luhrig coal washer; 2 wharves; 1 pile-driver.

No. of tons of coke sold—451¾ tons.

JAMES DUNSMUIR,
President.

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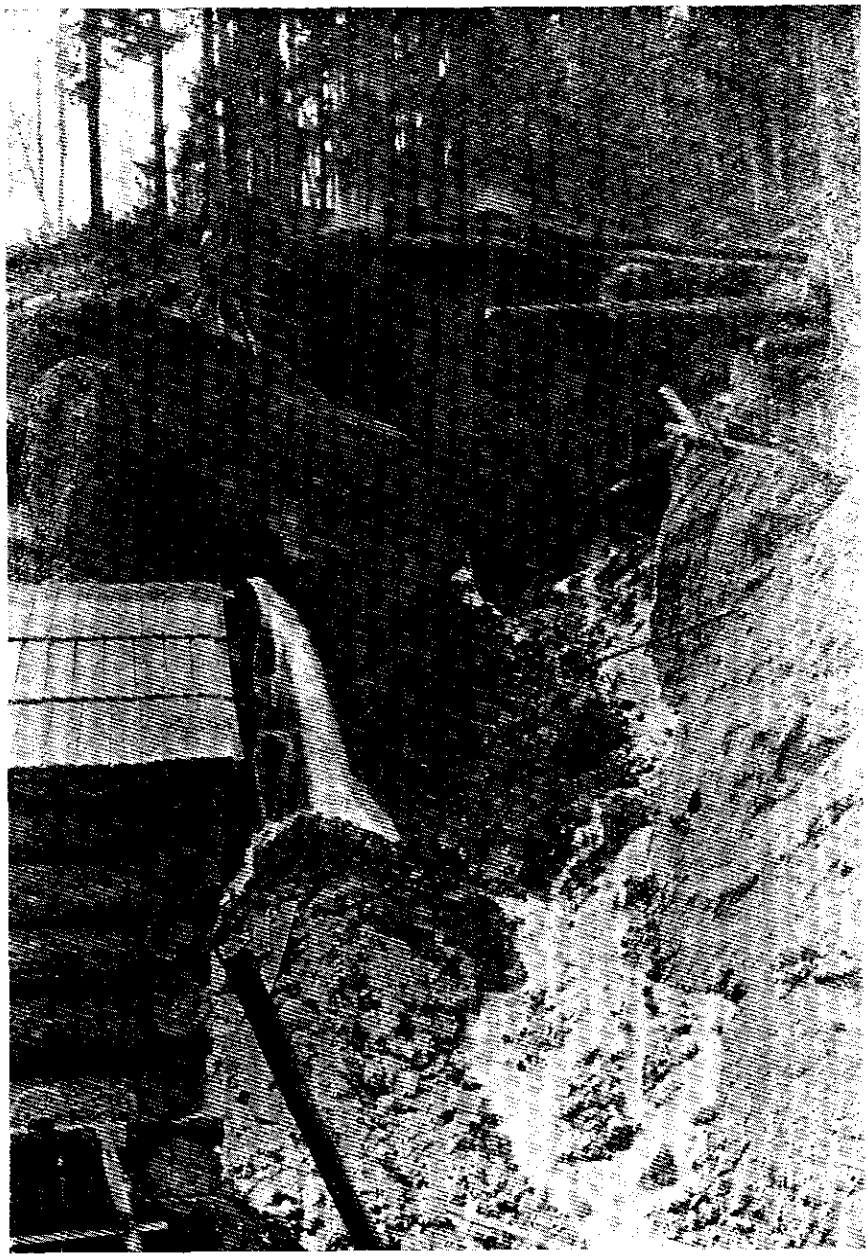
1896.



HYDRAULIC MINING OF SILVER-LEAD ORE.

WONDERFUL MINE, SLOCAN.

(See page 52, Bulletin No. 3.)