ANNUAL REPORT

OF THE

MINISTER OF MINES

OF THE PROVINCE OF

BRITISH COLUMBIA

FOR THE

YEAR ENDED 31ST DECEMBER

1940

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1941.

BRITISH COLUMBIA DEPARTMENT OF MINES.

VICTORIA, B.C.

Hon. W. J. ASSELSTINE, *Minister.*
JOHN F. WALKER, *Deputy Minister.*
JAMES DICKSON, *Chief Inspector of Mines.*
G. CAVE-BROWNE-CAVE, *Chief Analyst and Assayer.*
P. B. FREELAND, *Chief Mining Engineer.*
R. J. STEENSON, *Chief Gold Commissioner.*

To His Honour ERIC WERGE HAMBER,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

The Annual Report of the Mining Industry of the Province for the year 1940 is herewith respectfully submitted.

W. J. ASSELSTINE,
Minister of Mines.

Minister of Mines' Office,
May, 1941.

THE MINING INDUSTRY.

BY

JOHN F. WALKER.

The value of mine production in 1940 was $75,352,730, an increase of $9,761,183 over 1939. This figure of $75,352,730 is somewhat below the actual figure because the value for copper is based on the London price, whereas British Columbia copper is sold at the New York price. The London price is used so that value figures in the tables will correspond closely with Provincial figures published by the Dominion Bureau of Statistics. The Dominion Bureau uses the London price because most of Canada's copper is sold through London.

The customary summary and the usual tables reviewing and showing detailed mine production are not being given at the present time, as authorities at Ottawa do not consider it in the best interests of the country to divulge certain detailed information.

DEPARTMENTAL WORK.

MINERALOGICAL BRANCH.

Douglas Lay continued his investigation of the drainage history of the Fraser River in connection with placer-mining in the Cariboo area. A report supplementing Bulletin No. 3, 1940, is in course of preparation.

B. T. O'Grady, besides working with the Superintendent of Brokers, carried out a number of investigations in connection with transportation to mining properties throughout the central part of the Province.

J. T. Mandy carried out investigational work along the main line of the Canadian National Railway between Prince Rupert and Prince George, and also in the Portland Canal area, in connection with Sampling Plant work at Prince Rupert. He also carried out investigational work and made recommendations in regard to transportation in connection with mining properties in the northern part of the Province.

H. Sargent continued geological mapping in the Bedwell River-Drinkwater Creek area of Vancouver Island and did investigational work in the vicinity of Pender Harbour. A report supplementing Bulletin No. 8, 1940, is in course of preparation.

M. S. Hedley, attached to a topographic party surveying in connection with the proposed Alaska Highway, made a geological reconnaissance in the area of the headwaters of the Kechika River. The result of this work has been published in Bulletin No. 12, 1941, under the joint authorship of M. S. Hedley and S. S. Holland.

J. S. Stevenson continued the study, commenced four years ago, of the minor metals such as tungsten, chromite, manganese, and molybdenum. The results of this work have appeared in Bulletins Nos. 5 and 10, 1940, and bulletins on manganese and chromite are in course of preparation.

J. M. Cummings continued investigational work in connection with industrial minerals. As much of the field-work has been completed in past seasons, Mr. Cummings, for the next year, will be confining his attention chiefly to laboratory-work in connection with these studies. This work includes a study of bentonites, diatomites, roofing granules, fillers, and beneficiation of sands.

R. J. Maconachie carried out investigational work in connection with transportation facilities in the south-eastern part of the Province.

S. S. Holland, attached to a topographic party surveying in connection with the proposed Alaska Highway, carried out a geological reconnaissance in the vicinity of the lower reaches of the Kechika River and westerly up Turnagain River. A report on this work has been published in Bulletin No. 12, 1941, under the joint authorship of M. S. Hedley and S. S. Holland.

RETIREMENTS.

J. B. Adams, Chief Analyst and Assayer, retired on superannuation at the end of March, 1941, after twenty-three and one-half years' service with the Department. Before coming to the Department Mr. Adams served as assayer to the Canadian Bank of Commerce in the Yukon and was there during the gold-rush.

J. G. Biggs, Inspector of Mines at Princeton, retires on superannuation on May 31st, 1941, after twenty-one years' service with the Department. Prior to joining the Department Mr. Biggs was engaged in coal-mining for many years on Vancouver Island and obtained his First-class Coal-mine Manager's Certificate in 1908.

The services of Messrs. Adams and Biggs with the Department are appreciated and the Department wishes them many pleasant years in which to enjoy their leisure.

SAMPLING PLANT, PRINCE RUPERT.

In 1937 a sampling plant was built on the waterfront at Prince Rupert and put into operation on August 20th. The object in erecting a sampling plant at this point was chiefly for the purpose of stimulating prospecting and development of properties along the Prince Rupert branch of the Canadian National Railway. The sampling plant was erected on the Coast so that full advantage could be taken of special freight rates arranged especially for shipments of ore to the plant.

The sampling plant is, as its name implies, only a sampling plant and not a concentrator. Ores containing sufficient value to ship direct to the smelter are purchased and assembled at the plant until sufficient tonnage is accumulated to warrant shipment to the smelter. By mixing lots at the plant it is possible also to reduce smelter penalties on individual shipments and so give the prospector the benefit of a mixed lot.

The plant may also be used by those developing properties for the purpose of bulk-sampling.

For the calendar year 1940, 40 lots for shipment, 117 lots for testing, and 27 samples for assaying were received at the plant. These lots aggregated 170 tons. During the year $15,637.17 was paid to shippers.

GOLD PURCHASING.

Late in 1935 the Department of Finance, co-operating with the Department of Mines, undertook to purchase small lots of placer gold under 2 oz. in weight from the individual placer-miner. The Gold Commissioners throughout the Province are paying a cash price of $29 per ounce for clean placer gold and are purchasing dirty placer gold and amalgam on a deferred-payment basis. Purchases in 1940 amounted to 1,336 lots, valued at approximately $31,600. The total price paid has been almost exactly the same as that received from the Royal Canadian Mint, except for the Mint's handling charge of 1 per cent.

GEOLOGICAL SURVEY OF CANADA.

By an arrangement made at the time the Province of British Columbia entered Confederation, all geological investigations and mapping in the Province were to be carried on by the Geological Survey of Canada; this agreement has been fully adhered to by the Dominion of Canada and has proved of great benefit to the mining industry of the Province. Each year several geological parties are kept in the field and in the aggregate a vast amount of information is made available to the prospector and the mining engineer in the many excellent reports and maps covering British Columbia which have been issued by the Geological Survey of Canada.

For some years a branch office of the Geological Survey has been maintained in Vancouver, where copies of maps and reports on British Columbia can be obtained. The officer in charge of the British Columbia office is W. E. Cockfield, and the address is 305 Federal Building, Vancouver, B.C.

In 1936 a reorganization of several departments in the Federal Government was effected, and the Department of Mines and Resources created. One of the main branches of this Department is that of Mines and Geology, with sub-branches known as the Bureau of Geology and Topography and the Bureau of Mines. The Geological Survey of Canada and the Topographical Survey are now a part of the Bureau of Geology and Topography. During the season of 1940 the Bureau of Geology and Topography had the following officers employed on field-work in British Columbia:—

Geological Parties.

1. A. H. Lang: Manson River, east half. Longitude 124° to 125°, latitude 55° to 56°. This is 4-mile work and is less than half completed.

2. J. E. Armstrong: Manson River, west half. Longitude 125° to 126°, latitude 55° to 56°. This is 4-mile work and is less than half completed.

3. W. E. Cockfield: Ashcroft, east half. Longitude 120° to 121°, latitude 50° to 51°. This is 4-mile work and is nearing completion.

4. H. M. A. Rice: Examination of deposits of manganese, antimony, mercury, and tungsten in British Columbia.

Topographical Parties.

No topographical parties operated in British Columbia during 1940.

METHOD OF COMPUTING PRODUCTION.

The total mine output of the Province consists of the outputs of metalliferous minerals, coal, structural materials, and miscellaneous metals, minerals, and materials, valued at standard recognized prices in Canadian funds.

In the Annual Report for 1925 some changes were made in the methods used in previous years in computing and valuing the products of the industry, but in order to facilitate comparisons with former years the same general style of tables was adhered to. The methods used in the 1925 Annual Report have been followed in subsequent Annual Reports, with the addition of new tables.

The following notes explain the methods used:—

(1.) From the certified returns of lode mines of ore and concentrate shipments made during the full calendar year by the producers the net recovered metal contents have been determined by deducting from the "assay value content" necessary corrections for smelting and refining losses.

In making comparisons of production figures with previous years, it should be remembered that prior to 1925 in the Annual Reports the total metal production, with the exception of copper, was determined by taking the assay value content of all ores shipped; deductions for slag losses were made by taking varying percentages of the metal prices.

(2.) Gold-placer returns are received from operators giving production in crude ounces recovered; these are converted to fine-gold ounces by dividing the crude-ounce value by the old standard price of gold. The fine-gold content is then valued at the yearly average price of gold, which in 1940 was $38.50 per ounce. On this basis the average crude-gold value per ounce was $31.66 on Provincial placer-gold production.

(3.) The prices used in valuing the different metals are: For gold, the average price for the year; for silver, the average New York metal-market price for the year; for lead, the average London metal-market price for the year; and for zinc, the average London metal-market price for the year. Copper in 1940 is valued at the average London metal-market price. (*See* foot-note to Table I.) Prior to 1932 copper was valued at the average New York price. The change was made because very little copper was being marketed in the United States on account of high tariff charges against importations from foreign countries. The bulk of the lead and zinc production of the Province is sold on the basis of the London prices of these metals and they are therefore used. The New York, St. Louis, and Montreal lead- and zinc-market prices differ materially from the London prices of these metals and are not properly applicable to the valuing of the British Columbia production.

By agreement with the Dominion Bureau of Statistics and the Provincial Statistical Bureaus, the following procedure of taking care of the exchange fluctuations has been agreed upon:—

(*a.*) Silver to be valued at the average New York price, adjusted to Canadian funds at the average exchange rate.

(*b.*) Lead, zinc, and copper to be valued at London prices, adjusted to Canadian funds at the average exchange rate.

(4.) In 1926 a change was made in computing coal and coke statistics. The practice in former years had been to list coal and coke production (in part) as primary mineral production. Only the coke made in bee-hive ovens was so credited; that made in by-product ovens was not listed as coke, but the coal used in making this coke was credited as coal production. The result was that the coke-production figures were incomplete. Starting with the 1926 Annual Report, the standard practice of the Bureau of Statistics, Ottawa, has been adopted. This consists of crediting all coal produced, including that used in making coke, as primary mine production. Coke-making is considered a manufacturing industry. As it is, however, of interest to the mining industry, a table included in the report shows the total coke produced in the Province, together with by-products, and the values given by the producers. This valuation of coke is not, of course, included in the total gross mine production of the Province.

From 1918 to 1930 coal production was valued at $5 per long ton. In 1931 the price used was $4.50, and from 1932 on the price used has been $4.25 per long ton. In making comparisons with former years the decline in dollar value is accentuated by this lowered price.

TABLES.

The collection and compilation of mining statistics and the preparation of statistical tables for this report is in charge of the Bureau of Economics and Statistics, Department of Trade and Industry.

PROGRESS NOTES.

The Progress Notes on the mining industry are compiled from information supplied by the Inspectors of Mines and the Bureau of Economics and Statistics, through the courtesy of the property-owners and also from information obtained by the officers of the Mineralogical Staff in the course of their field-work. The Registrar of Companies and Superintendent of Brokers have also supplied information through their respective offices.

INDEX TO TABLES.*

* Certain detail tables of mine production have been omitted. The numbers of those retained correspond to their number in previous Annual Reports.

TABLE I.—British Columbia Mine Production, 1939 and 1940.

	Quantity, 1939.	Quantity, 1940.	Value, 1939.	Value, 1940.
Metallics.			$	$
Gold, lode* ..... oz.	587,180	574,366	21,221,272	22,113,091
Gold, placer* ..... oz.	49,746	39,067	1,478,492	1,236,928
Silver, copper, lead, zinc	.....	.....	32,300,826	39,498,623
Antimony, bismuth, cadmium, mercury, platinum, tungsten	.....	.....	1,189,608	1,714,770
Totals	.....	.....	56,190,198	64,563,412
Fuel.				
Coal (2,240 lb.) ..... tons	1,477,872	1,667,827	6,280,956	7,088,265
Non-metallics.				
Barytes, diatomite, mica, and sulphur	.....	.....	1,233,362	1,002,317
Flux—limestone ..... tons	35,144	69,420	23,090	31,262
Gypsum products, gypsite	.....	.....	99,703	120,043
Iron oxides, slate and rock granules, talc ..... tons	815	850	9,504	10,831
Sodium carbonate, magnesium sulphate ..... tons	850	220	12,300	1,760
Totals	.....	.....	1,377,959	1,166,213
Clay Products and other Structural Materials.				
Clay Products.				
Brick—				
Common ..... No.	5,914,812	8,655,120	84,563	132,434
Face, paving, sewer brick ..... No.	789,222	987,161	29,223	38,328
Firebricks, blocks	.....	.....	112,079	140,727
Fireclay ..... tons	592	609	8,324	8,294
Structural tile—hollow blocks	.....	.....	29,095	47,543
Drain-tile, sewer-pipe ..... No.	1,084,408	1,119,455	88,649	130,842
Pottery—glazed or unglazed	.....	.....	11,360	11,321
Other clay products; bentonite	.....	.....	8,373	10,094
Totals	.....	.....	372,166	519,583
Other Structural Materials.				
Cement, sand, and gravel	.....	.....	1,079,096	1,413,189
Lime and limestone	58,672	123,461	190,751	294,682
Stone—building, pulp-stone ..... tons	4,550	1,559	74,159	55,347
Rubble, riprap, crushed rock ..... tons	140,514	287,042	116,262	252,039
Totals	.....	.....	1,460,268	2,015,257
Total value in Canadian funds	.....	.....	65,681,547	75,352,730

Note.—In accordance with the Dominion of Canada "War Measures Act" and Foreign Exchange Control Regulations, it is not possible to set forth Provincial production figures in as detailed a manner as was done heretofore.

Dominion production of copper is evaluated at the average price on the London market and British Columbia production in the above table is likewise so valued, in order that Dominion and Provincial compilations agree. It is to be noted that British Columbia copper is contracted and paid for in U.S. funds, and if such had been used, an appreciable amount could be added to the above Provincial value for 1940.

* Canadian funds.

TABLE II.—AVERAGE METAL PRICES USED IN COMPILING VALUE OF PROVINCIAL PRODUCTION OF GOLD, SILVER, COPPER, LEAD, AND ZINC.

Year.	Gold, Fine Ounce.	Silver, Fine Ounce.	Copper, Lb.	Lead, Lb.	Zinc, Lb.
	$	Cents.	Cents.	Cents.	Cents.
1901	20.67	56.002 N.Y.	16.11 N.Y.	2.577 N.Y.	.....
1902	.....	49.55 ,,	11.70 ,,	3.66 ,,	.....
1903	.....	50.78 ,,	13.24 ,,	3.81 ,,	.....
1904	.....	53.36 ,,	12.82 ,,	3.88 ,,	.....
1905	.....	51.33 ,,	15.59 ,,	4.24 ,,	.....
1906	.....	63.45 ,,	19.28 ,,	4.81 ,,	.....
1907	.....	62.06 ,,	20.00 ,,	4.80 ,,	.....
1908	.....	50.22 ,,	13.20 ,,	3.78 ,,	.....
1909	.....	48.93 ,,	12.98 ,,	3.85 ,,	.....
1910	.....	50.812 ,,	12.738 ,,	4.00 ,,	4.60 E. St. L.
1911	.....	50.64 ,,	12.38 ,,	3.98 ,,	4.90 ,,
1912	.....	57.79 ,,	16.341 ,,	4.024 ,,	5.90 ,,
1913	.....	56.80 ,,	15.27 ,,	3.93 ,,	4.80 ,,
1914	.....	52.10 ,,	13.60 ,,	3.50 ,,	4.40 ,,
1915	.....	47.20 ,,	17.28 ,,	4.17 ,,	11.25 ,,
1916	.....	62.38 ,,	27.202 ,,	6.172 ,,	10.88 ,,
1917	.....	77.35 ,,	27.18 ,,	7.91 ,,	7.566 ,,
1918	.....	91.93 ,,	24.63 ,,	6.67 ,,	6.94 ,,
1919	.....	105.57 ,,	18.70 ,,	5.19 ,,	6.24 ,,
1920	.....	95.80 ,,	17.45 ,,	7.16 ,,	6.52 ,,
1921	.....	59.52 ,,	12.50 ,,	4.09 ,,	3.95 ,,
1922	.....	64.14 ,,	13.38 ,,	5.16 ,,	4.86 ,,
1923	.....	61.63 ,,	14.42 ,,	6.54 ,,	5.62 ,,
1924	.....	63.442 ,,	13.02 ,,	7.287 ,,	5.39 ,,
1925	.....	69.065 ,,	14.042 ,,	7.848 Lond.	7.892 Lond.
1926	.....	62.107 ,,	13.795 ,,	6.751 ,,	7.409 ,,
1927	.....	56.37 ,,	12.92 ,,	5.256 ,,	6.194 ,,
1928	.....	58.176 ,,	14.570 ,,	4.575 ,,	5.493 ,,
1929	.....	52.993 ,,	18.107 ,,	5.050 ,,	5.385 ,,
1930	.....	38.154 ,,	12.982 ,,	3.927 ,,	3.599 ,,
1931	.....	28.700 ,,	8.116 ,,	2.710 ,,	2.554 ,,
1932	23.47	31.671 ,,	6.380 Lond.	2.113 ,,	2.405 ,,
1933	28.60	37.832 ,,	7.454 ,,	2.391 ,,	3.210 ,,
1934	34.50	47.461 ,,	7.419 ,,	2.436 ,,	3.044 ,,
1935	35.19	64.790 ,,	7.795 ,,	3.133 ,,	3.099 ,,
1936	35.03	45.127 ,,	9.477 ,,	3.913 ,,	3.315 ,,
1937	34.99	44.881 ,,	13.078 ,,	5.110 ,,	4.902 ,,
1938	35.18	43.477 ,,	9.972 ,,	3.344 ,,	3.073 ,,
1939	36.141	40.488 ,,	10.092 ,,	3.169 ,,	3.069 ,,
1940	**38.50**	**38.249** ,,	**10.086** ,,	**3.362** ,,	**3.411** ,,
Average 1936–40 (inclusive)	35.968	42.444 ,,	10.541 ,,	3.779 ,,	3.554 ,,

NOTE.—In making comparisons with average prices used prior to 1925, it should be remembered that deductions were made from the average prices as a means of adjustment between the "assay value content" of ores shipped instead of allowing percentage losses in smelting operations. The price of copper prior to 1925 was taken at "net"; silver, at 95 per cent.; lead, at 90 per cent.; and zinc, at 85 per cent. Subsequent to 1925 (inclusive) prices are true averages, and adjustments are made on the metal content of ores for loss in smelting and refining.

TABLE III.—TOTAL PRODUCTION FOR ALL YEARS UP TO AND INCLUDING 1940.

Gold, placer	$88,647,379*
Gold, lode	270,884,559*
Silver, copper, lead, zinc	907,006,943
Coal and coke	391,447,367
Structural materials	81,308,412
Miscellaneous minerals, etc.	20,045,808
Total	$1,759,340,468

* Canadian funds.

TABLE IV.—PRODUCTION FOR EACH YEAR FROM 1852 TO 1940 (INCLUSIVE).

1852 to 1895 (inclusive)	$94,547,370	1919	$33,296,313
1896	7,507,956	1920	35,543,084
1897	10,455,268	1921	28,066,641
1898	10,906,861	1922	35,162,843
1899	12,393,131	1923	41,304,320
1900	16,344,751	1924	48,704,604
1901	20,086,780	1925	61,492,242
1902	17,486,550	1926	67,188,842
1903	17,495,954	1927	60,729,358
1904	18,977,359	1928	65,372,583
1905	22,461,325	1929	68,245,443
1906	24,980,546	1930	55,391,993
1907	25,882,560	1931	34,883,181
1908	23,851,277	1932	*28,798,406
1909	24,443,025	1933	*32,602,672
1910	26,377,066	1934	*42,305,297
1911	23,499,072	1935	*48,821,239
1912	32,440,800	1936	*54,081,967
1913	30,296,398	1937	*74,475,902
1914	26,388,825	1938	*64,485,551
1915	29,447,508	1939	*65,681,547
1916	42,290,462	1940	*75,352,730
1917	37,010,392		
1918	41,782,474	Total	$1,759,340,468

* Canadian funds.

TABLE V.—QUANTITIES AND VALUE OF MINE PRODUCTS FOR 1938, 1939, AND 1940.

Description.	1938.		1939.		1940.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Gold, placer* oz.	57,759	$1,671,015	49,746	$1,478,492	39,067	$1,236,928
Gold, lode* oz.	557,522	19,613,624	587,180	21,221,272	574,366	22,113,091
Silver oz.	10,861,578	4,722,288	10,771,585	4,361,199	.....	39,498,623
Copper lb.	65,769,906	6,558,575	73,254,679	7,392,862	.....	
Lead lb.	412,979,182	13,310,024	378,743,763	12,002,390	.....	
Zinc lb.	298,497,295	9,172,822	278,409,102	8,544,375	.....	
Coal tons, 2,240 lb.	1,309,428	5,565,069	1,477,872	6,280,956	1,667,827	7,088,265
Structural materials	.....	1,975,249	.....	1,832,434	.....	2,534,840
Miscellaneous metals and minerals	.....	1,396,885	.....	2,567,567	.....	2,880,983
Totals	.....	$64,485,551	.....	$65,681,547	.....	75,352,730

* Canadian funds.

TABLE VI.—Production of Lode Gold, Silver, Copper, Lead, and Zinc.

Year.	Gold.		Silver.		Copper.		Lead.		Zinc.		Total Value.
	Oz.	Value.	Oz.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
		$		$		$		$		$	$
1887			17,690	17,331			204,800	9,216			26,547
1888			79,780	75,000			674,500	29,813			104,813
1889			53,192	47,873			165,100	6,498			54,371
1890			70,427	73,948							73,948
1891			4,500	4,000							4,000
1892			77,160	66,935			808,420	33,064			99,999
1893	1,170	23,404	227,000	195,000			2,135,023	78,996			297,400
1894	6,252	125,014	746,379	470,219	324,680	16,234	5,662,523	169,875			781,342
1895	39,270	785,400	1,496,522	977,229	952,840	47,642	16,475,464	532,255			2,342,526
1896	62,259	1,244,180	3,135,343	2,100,689	3,818,556	190,926	24,199,977	721,384			4,257,179
1897	106,141	2,122,820	5,472,971	3,272,836	5,325,180	266,258	38,841,135	1,390,517			7,052,431
1898	110,061	2,201,217	4,292,401	2,375,841	7,271,678	874,781	31,693,559	1,077,581			6,529,420
1899	138,315	2,857,573	2,939,413	1,663,708	7,722,591	1,351,453	21,862,436	878,870			6,751,604
1900	167,153	3,453,381	3,958,175	2,309,200	9,997,080	1,615,289	63,358,621	2,691,887			10,069,757
1901	210,384	4,348,605	4,396,447	2,462,008	27,603,746	4,446,963	51,582,906	2,010,260			13,267,836
1902	236,491	4,888,269	3,917,917	1,941,328	29,636,057	3,446,673	22,536,381	824,832			11,101,102
1903	232,831	4,812,616	2,996,204	1,521,472	34,359,921	4,547,535	18,089,283	689,744			11,571,367
1904	222,042	4,589,608	3,222,481	1,719,516	35,710,128	4,578,087	36,646,244	1,421,874			12,309,085
1905	238,660	4,933,102	3,439,417	1,971,818	37,692,251	5,876,222	56,580,703	2,399,022			15,180,164
1906	224,027	4,630,639	2,990,262	1,897,320	42,990,488	8,288,565	52,408,217	2,667,578			17,484,102
1907	196,179	4,055,020	2,745,448	1,703,825	40,832,720	8,166,544	47,738,703	2,291,458			16,216,847
1908	255,582	5,282,880	2,631,389	1,321,483	47,274,614	6,240,249	43,195,733	1,632,799			14,477,411
1909	238,224	4,924,090	2,532,742	1,239,270	45,597,245	5,918,522	44,396,346	1,709,259	8,500,000	400,000	14,191,141
1910	267,701	5,533,380	2,450,241	1,245,016	38,243,934	4,871,512	34,658,746	1,386,350	4,184,192	192,473	13,228,731
1911	228,617	4,725,513	1,892,364	958,293	36,927,656	4,571,644	26,872,397	1,069,521	2,634,544	129,092	11,454,063
1912	257,496	5,322,442	3,132,108	1,810,045	51,456,537	8,408,513	44,871,454	1,805,627	5,358,280	316,139	17,662,766
1913	272,254	5,627,490	3,465,856	1,968,606	46,460,305	7,094,489	55,364,677	2,175,832	6,758,768	324,421	17,190,838
1914	247,170	5,109,004	3,602,180	1,876,736	45,009,699	6,121,319	50,625,048	1,771,877	7,866,467	346,125	15,225,061
1915	260,021	5,167,934	3,366,506	1,588,991	56,918,405	9,835,500	46,503,590	1,939,200	12,982,440	1,460,524	19,992,149
1916	221,932	4,587,334	3,301,923	2,059,739	65,379,364	17,784,494	48,727,516	3,007,462	37,168,980	4,043,985	31,483,014
1917	114,523	2,367,190	2,929,216	2,265,749	59,007,565	16,038,256	37,307,465	2,951,020	41,848,513	3,166,259	26,788,474
1918	164,674	3,403,812	3,498,172	3,215,870	61,483,754	15,143,449	43,899,661	2,928,107	41,772,916	2,899,040	27,590,278
1919	152,426	3,150,645	3,403,119	3,592,673	42,459,339	7,939,896	29,475,968	1,526,855	56,737,651	3,540,429	19,750,498
1920	120,048	2,481,392	3,377,849	3,235,980	44,887,676	7,832,899	39,331,218	2,816,115	47,208,268	3,077,979	19,444,365
1921	135,663	2,804,154	2,673,389	1,591,201	39,036,993	4,879,624	41,402,288	1,693,354	49,419,372	1,952,065	12,920,398

TABLE VI.—PRODUCTION OF LODE GOLD, SILVER, COPPER, LEAD, AND ZINC—*Continued.*

Year.	Gold.		Silver.		Copper.		Lead.		Zinc.		Total Value.
	Oz.	Value.	Oz.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
		$		$		$		$		$	$
1922	197,856	4,089,684	7,101,311	4,554,781	32,359,896	4,329,754	67,447,985	3,480,316	57,146,548	2,777,322	19,231,857
1923	179,245	3,704,994	6,032,986	3,718,129	57,720,290	8,323,266	96,663,152	6,321,770	58,343,462	3,278,903	25,347,062
1924	247,716	5,120,535	8,341,768	5,292,184	64,845,393	8,442,870	170,384,481	12,415,917	79,130,970	4,266,741	35,538,247
1925	209,719	4,335,269	7,654,844	5,286,818	72,306,432	10,153,269	237,899,199	18,670,329	98,257,099	7,754,450	46,200,135
1926	201,427	4,163,859	10,748,556	6,675,606	89,339,768	12,324,421	263,023,937	17,757,535	142,876,947	10,586,610	51,508,031
1927	178,001	3,679,601	10,470,185	5,902,043	89,202,871	11,525,011	282,996,423	14,874,292	145,225,443	8,996,135	44,977,082
1928	188,087	3,888,097	10,627,167	6,182,461	97,908,316	14,265,242	305,140,792	13,961,412	181,763,147	9,984,613	48,281,825
1929	145,339	3,004,419	9,918,800	5,256,270	101,483,857	18,375,682	302,346,268	15,269,696	172,096,841	9,268,792	51,174,859
1930	160,778	3,323,576	11,289,171	4,307,270	90,421,545	11,738,525	319,199,752	12,535,931	250,287,306	9,010,093	40,915,395
1931	146,939	3,018,894	7,524,320	2,247,514	63,194,299	5,289,363	248,783,508	6,742,282	205,071,247	5,237,520	22,535,573
1932	181,564	4,261,307*	7,130,838	2,258,453	49,841,009	3,179,956	254,488,952	5,378,878	192,120,091	4,621,641	19,700,235
1933	223,529	6,392,929*	7,006,406	2,650,720	42,608,002	3,176,341	271,606,071	6,495,731	195,963,751	6,291,416	25,007,137
1934	297,130	10,250,985*	8,572,916	4,068,792	48,084,658	3,567,401	347,366,967	8,461,859	247,926,844	7,546,893	33,895,930
1935	365,244	12,852,936*	9,251,544	5,994,075	38,791,127	3,023,768	344,268,444	10,785,930	256,239,446	7,940,860	40,597,569
1936	404,472	14,168,654*	9,521,015	4,296,548	20,806,672	1,971,848	377,971,618	14,790,029	254,581,393	8,439,373	43,666,452
1937	460,781	16,122,727*	11,308,685	5,075,451	46,057,584	6,023,411	419,118,371	21,416,949	291,192,278	14,274,245	62,912,783
1938	557,522	19,613,624*	10,861,578	4,722,288	65,769,906	6,558,575	412,979,182	13,810,024	298,497,295	9,172,822	53,877,333
1939	587,180	21,221,272*	10,771,585	4,361,199	73,254,679	7,392,862	378,743,763	12,002,390	278,409,102	8,544,375	53,522,098
1940	574,366	22,113,091*	.....	.....	.....	.....	.....	.....	.....	.....	61,611,714†
Totals	10,623,561	270,884,561	252,669,858‡	137,687,350‡	2,108,376,306‡	306,055,053‡	6,178,738,968‡	263,509,372‡	3,727,569,601‡	159,841,335‡	1,177,476,294†

* Canadian funds.

† Includes $39,498,623 combined value of silver, copper, lead, and zinc.

‡ Do not include 1940 totals.

TABLE VII.—VALUE OF GOLD PRODUCTION TO DATE.

Year.	Placer.	Lode.	Total.
1858–1862	$9,871,634	.....	$9,871,634
1863–1867	16,283,592	.....	16,283,592
1868–1872	9,895,318	.....	9,895,318
1873–1877	9,019,201	.....	9,019,201
1878–1882	5,579,911	.....	5,579,911
1883–1887	3,841,515	.....	3,841,515
1888–1892	2,525,426	.....	2,525,426
1893	356,131	$23,404	379,535
1894	405,516	125,014	530,530
1895	481,683	785,400	1,267,083
1896	544,026	1,244,180	1,788,206
1897	513,520	2,122,820	2,636,340
1898	643,346	2,201,217	2,844,563
1899	1,344,900	2,857,573	4,202,473
1900	1,278,724	3,453,381	4,732,105
1901	970,100	4,348,603	5,318,703
1902	1,073,140	4,888,269	5,961,409
1903	1,060,420	4,812,616	5,873,036
1904	1,115,300	4,589,608	5,704,908
1905	969,300	4,933,102	5,902,402
1906	948,400	4,630,639	5,579,039
1907	828,000	4,055,020	4,883,020
1908	647,000	5,282,880	5,929,880
1909	477,000	4,924,090	5,401,090
1910	540,000	5,533,380	6,073,380
1911	426,000	4,725,513	5,151,513
1912	555,500	5,322,442	5,877,942
1913	510,000	5,627,490	6,137,490
1914	565,000	5,109,004	5,674,004
1915	770,000	5,167,934	5,937,934
1916	580,500	4,587,334	5,167,834
1917	496,000	2,367,190	2,863,190
1918	320,000	3,403,812	3,723,812
1919	286,500	3,150,645	3,437,145
1920	221,600	2,481,392	2,702,992
1921	233,200	2,804,154	3,037,354
1922	368,800	4,089,684	4,458,484
1923	420,000	3,704,994	4,124,994
1924	420,750	5,120,535	5,541,285
1925	280,092	4,335,269	4,615,361
1926	355,503	4,163,859	4,519,362
1927	156,247	3,679,601	3,835,848
1928	143,208	3,888,097	4,031,305
1929	118,711	3,004,419	3,123,130
1930	152,235	3,323,576	3,475,811
1931	291,992	3,018,894	3,310,886
1932	395,542	4,261,307	4,656,849*
1933	562,787	6,392,929	6,955,716*
1934	714,431	10,250,985	10,965,416*
1935	895,058	12,852,936	13,747,994*
1936	1,249,940	14,168,654	15,418,594*
1937	1,558,245	16,122,727	17,680,972*
1938	1,671,015	19,613,624	21,284,639*
1939	1,478,492	21,221,272	22,699,764*
1940	1,236,928	22,113,091	23,350,019*
Totals	$88,647,379	$270,884,559	$359,531,938*

* Canadian funds.

TABLE XIV.—Coal Production per Year to Date.*

	Tons (2,240 lb.)	Value		Tons (2,240 lb.)	Value
1836–1885	3,029,011	$9,468,557	1914	1,810,967	$6,338,385
1886	326,636	979,908	1915	1,611,129	5,638,952
1887	413,360	1,240,080	1916	2,084,093	7,294,325
1888	489,301	1,467,903	1917	2,149,975	7,524,913
1889	579,830	1,739,490	1918	2,302,245	11,511,225
1890	678,140	2,034,420	1919	2,267,541	11,337,705
1891	1,029,097	3,087,291	1920	2,595,125	12,975,625
1892	826,335	2,479,005	1921	2,483,995	12,419,975
1893	978,294	2,934,882	1922	2,511,843	12,559,215
1894	1,012,953	3,038,859	1923	2,453,223	12,266,115
1895	939,654	2,818,962	1924	1,939,526	9,697,630
1896	896,222	2,688,666	1925	2,328,522	11,642,610
1897	882,854	2,648,562	1926	2,330,036	11,650,180
1898	1,135,865	3,407,595	1927	2,453,827	12,269,135
1899	1,306,324	3,918,972	1928	2,526,702	12,633,510
1900	1,439,595	4,318,785	1929	2,251,252	11,256,260
1901	1,460,331	4,380,993	1930	1,887,130	9,435,650
1902	1,397,394	4,192,182	1931	1,707,590	7,684,155
1903	1,168,194	3,504,582	1932	1,534,975	6,523,644
1904	1,253,628	3,760,884	1933	1,264,746	5,375,171
1905	1,384,312	4,152,936	1934	1,347,090	5,725,133
1906	1,517,303	4,551,909	1935	1,187,968	5,048,864
1907	1,800,067	6,300,235	1936	1,346,471	5,722,502
1908	1,677,849	5,872,472	1937	1,444,687	6,139,920
1909	2,006,476	7,022,666	1938	1,309,428	5,565,069
1910	2,800,046	9,800,161	1939	1,477,872	6,280,956
1911	2,193,062	7,675,717	1940	1,667,827	7,088,265
1912	2,628,804	9,200,814			
1913	2,137,483	7,481,190	Totals	91,664,205	$365,773,767

* For all years to 1925 (inclusive) figures are net coal production and do not include coal made into coke; subsequent figures are entire coal production, including coal made into coke.

TABLE XV.—Coke Production from Bee-hive Ovens in British Columbia from 1895 to 1925.

	Tons (2,240 lb.)	Value		Tons (2,240 lb.)	Value
1895–97	19,396	$96,980	1913	286,045	$1,716,270
1898 (estimated)	35,000	175,000	1914	234,577	1,407,462
1899	34,251	171,255	1915	245,871	1,475,226
1900	85,149	425,745	1916	267,725	1,606,350
1901	127,081	635,405	1917	159,905	959,430
1902	128,015	640,075	1918	188,967	1,322,769
1903	165,543	827,715	1919	91,138	637,966
1904	238,428	1,192,140	1920	67,792	474,544
1905	271,785	1,358,925	1921	59,434	416,038
1906	199,227	996,135	1922	45,835	320,845
1907	222,913	1,337,478	1923	58,919	412,433
1908	247,399	1,484,394	1924	30,615	214,305
1909	258,703	1,552,218	1925	75,185	526,295
1910	218,029	1,308,174			
1911	66,005	396,030	Totals	4,393,255	$25,673,600
1912	264,333	1,585,998			

TABLE XVI.—Coke and By-products Production of British Columbia, 1939 and 1940.

Description	1939. Quantity	1939. Value	1940. Quantity	1940. Value
Coal used in making coke, long tons	152,818	$569,945	164,429	$577,706
Coke made in bee-hive ovens, long tons	44,787	$286,491	33,790	$220,211
Coke made in by-product ovens, long tons	6,426	37,015	26,004	151,931
Coke made in gas plants, long tons	51,909	325,435	54,220	303,421
Total coke made, long tons	103,122	$648,941	114,014	$675,563
Gas sold and used	.....	1,768,977	.....	1,810,083
Tar produced	.....	44,108	.....	54,379
Other by-products	.....	.....	.....	3,060
Total production value of coke industry	.....	$2,462,026	.....	$2,543,085

TABLE XVII.—Dividends paid by Mining Companies, 1897–1940.

*Lode-gold Mines.**

Company or Mine.	Locality.	Class.	Amount paid.
Arlington	Erie	Gold	$71,676
Athabasca	Nelson	Gold	25,000
Bralorne	Bridge River	Gold	6,598,850
Belmont-Surf Inlet	Princess Royal Island	Gold	1,437,500
Cariboo Gold Quartz	Wells	Gold	1,066,644
Cariboo-McKinney	Camp McKinney	Gold	565,588
Canadian Pacific Exploration	Nelson	Gold	37,500
Centre Star	Rossland	Gold	472,255
Fairview Amalgamated	Oliver	Gold	7,922
Fern	Nelson	Gold	15,000
Goodenough	Ymir	Gold	13,931
Gold Belt Mining Co., Ltd.	Sheep Creek	Gold	102,000
Hedley Mascot	Hedley	Gold	792,444
Island Mountain	Wells	Gold	577,894
I.X.L.	Rossland	Gold	134,033
Jewel-Denero	Greenwood	Gold	11,751
Kelowna Exploration (Nickel Plate)	Hedley	Gold	570,000
Kootenay Belle	Sheep Creek	Gold	303,840
Le Roi Mining Co.	Rossland	Gold	1,475,000
Le Roi No. 2	Rossland	Gold	1,574,640
Lorne	Bridge River	Gold	20,450
Mount Zeballos Gold Mines, Ltd.	Zeballos	Gold	110,000
Nickel Plate	Hedley	Gold	3,423,191
Pioneer	Bridge River	Gold	8,108,168
Poorman	Nelson	Gold	25,000
Premier	Premier	Gold	19,658,075
Privateer	Zeballos	Gold	981,632
Queen	Sheep Creek	Gold	85,000
Relief Arlington Mines, Ltd. (Second Relief)	Erie	Gold	155,000
Reno	Sheep Creek	Gold	926,040
Sheep Creek Mines, Ltd.	Sheep Creek	Gold	1,256,250
Silbak Premier	Premier	Gold	1,000,000
Spud Valley Gold Mines, Ltd.	Zeballos	Gold	84,000
Sunset No. 2	Rossland	Gold	115,007
Surf Inlet Consolidated Gold Mines, Ltd.	Surf Inlet	Gold	40,093
War Eagle	Rossland	Gold	1,245,250
Motherlode	Sheep Creek	Gold	162,500
Ymir Gold	Ymir	Gold	300,000
Ymir Yankee Girl	Ymir	Gold	133,501
Miscellaneous mines		Gold	23,530
Total, lode-gold mines			$53,706,155

* The gold-copper properties of Rossland are included in this table.

Silver-lead-zinc Mines.

Antoine	Rambler	Silver-lead-zinc	$10,000
Beaverdell-Wellington	Beaverdell	Silver-lead-zinc	97,200
Bell	Beaverdell	Silver-lead-zinc	476,297
Bosun (Rosebery-Surprise)	New Denver	Silver-lead-zinc	27,500
Capella	New Denver	Silver-lead-zinc	5,500
Consolidated Mining and Smelting Co. of Canada, Ltd.	Trail	Silver-lead-zinc	93,697,228
Couverapee	Field	Silver-lead-zinc	5,203
Duthie Mines, Ltd.	Smithers	Silver-lead-zinc	50,000
Florence Silver	Ainsworth	Silver-lead-zinc	35,393
Goodenough	Cody	Silver-lead-zinc	45,668
H.B. Mining Co.	Hall Creek	Silver-lead-zinc	8,904
Highland Lass, Ltd.	Beaverdell	Silver-lead-zinc	132,464
Highland Bell, Ltd.	Beaverdell	Silver-lead-zinc	370,084
Carried forward			$95,670,550

TABLE XVII.—DIVIDENDS PAID BY MINING COMPANIES, 1897–1940—*Continued.*

Silver-lead-zinc Mines—Continued.

Company or Mine.	Locality.	Class.	Amount paid.
Brought forward			$95,670,550
Horn Silver	Similkameen	Silver-lead-zinc	6,000
Idaho-Alamo	Sandon	Silver-lead-zinc	400,000
Iron Mountain (Emerald)	Salmo	Silver-lead-zinc	20,000
Jackson	Retallack	Silver-lead-zinc	20,000
Last Chance	Three Forks	Silver-lead-zinc	213,109
Lone Batchelor	Sandon	Silver-lead-zinc	50,000
Lucky Jim	Three Forks	Silver-lead-zinc	80,000
Mercury	Sandon	Silver-lead-zinc	6,000
Meteor	Slocan City	Silver-lead-zinc	10,257
Monitor and Ajax	Three Forks	Silver-lead-zinc	27,500
Mountain Con	Cody	Silver-lead-zinc	71,387
McAllister	Three Forks	Silver-lead-zinc	45,088
Noble Five	Cody	Silver-lead-zinc	72,859
North Star	Kimberley	Silver-lead-zinc	496,901
No. One	Sandon	Silver-lead-zinc	6,754
Ottawa	Slocan City	Silver-lead-zinc	10[illegible],928
Payne	Sandon	Silver-lead-zinc	1,438,000
Providence	Greenwood	Silver-lead-zinc	43,421
Queen Bess	Alamo	Silver-lead-zinc	25,000
Rambler-Cariboo	Rambler	Silver-lead-zinc	575,000
Reco	Cody	Silver-lead zinc	332,492
Ruth Mines, Ltd.	Sandon	Silver-lead-zinc	165,000
St. Eugene	Moyie	Silver-lead-zinc	566,000
Silversmith*	Sandon	Silver-lead-zinc	725,000
Slocan Silver	Alamo	Silver-lead-zinc	11,600
Slocan Star*	Sandon	Silver-lead-zinc	567,500
Spokane-Trinket	Ainsworth	Silver-lead-zinc	9,564
Standard Silver Lead	Silverton	Silver-lead-zinc	2,700,000
Sunset and Trade Dollar	Retallack	Silver-lead-zinc	88,000
Utica	Kaslo	Silver-lead-zinc	64,000
Wallace Mines, Ltd. (Sally)	Beaverdell	Silver-lead-zinc	135,000
Washington	Rambler Station	Silver-lead-zinc	38,000
Whitewater	Retallack	Silver-lead-zinc	592,515
Miscellaneous mines		Silver-lead-zinc	70,237
Total, silver-lead-zinc mines			$104,741,556

* These two properties are now amalgamated as Silversmith Mines, Ltd., August, 1939.

TABLE XVII.—DIVIDENDS PAID BY MINING COMPANIES, 1897–1940—*Continued.*

Copper Mines.

Company or Mine.	Locality.	Class.	Amount paid.
Britannia M. & S. Co.*	Britannia Beach	Copper	$8,225,140
Canada Copper Corporation	Greenwood	Copper	615,399
Cornell	Texada Island	Copper	8,500
Granby Cons. M.S. & P. Co.†	Copper Mountain	Copper	8,565,754
Marble Bay	Texada Island	Copper	175,000
Hall Mines	Nelson	Copper	233,280
Miscellaneous mines		Copper	261,470
Total, copper mines			$18,084,543

* The Howe Sound Company is the holding company for the *Britannia* mine in British Columbia and other mines in Mexico and the State of Washington. Dividends paid by the Howe Sound Company are therefore derived from all operations, and in the foregoing table the dividends credited to the *Britannia* mine have been paid by the Britannia Mining and Smelting Company, Limited, none being credited subsequent to 1930, until 1939. In making comparison with yearly totals the amounts credited to the Howe Sound Company have been deducted for the years shown, so the total in the annual report concerned will show the higher figure. Dividends paid by Premier Gold Mining Company, Limited, are derived from operations in British Columbia and other countries, and so cannot now be credited to British Columbia. Silbak Premier is a subsidiary of Premier Gold Mining Company, and dividends paid by that company are, of course, included in Provincial totals.

† The amount shown to the credit of the Granby Consolidated Mining, Smelting and Power Company, Limited, does not include the sum of $6,749,996 paid by the company during 1935 and 1936 as a distribution or repayment of capital, subsequent to the closing-down of its operations at Anyox and the company going into voluntary liquidation. Operations ceased at Anyox in August, 1935. The company since that date has revived its business charter and is conducting operations at Allenby, B.C.

The term "Miscellaneous" noted in each class of dividend covers all payments of $5,000 and under, together with payments made by companies or individuals requesting that the item be not disclosed.

In compiling the foregoing table of dividends paid, the Department wishes to acknowledge the kind assistance given by companies, individuals, and trade journals in giving information on the subject.

Coal.

Wellington Collieries, Ltd., Nanaimo	$16,000,000
Crow's Nest Pass Coal Co., Ltd., Fernie	12,495,310
Total	$28,495,310

Miscellaneous and Structural.

Various	$1,972,506

Aggregate of all Classes.

Lode-gold mining	$53,706,155
Silver-lead-zinc mining and smelting	104,741,556
Copper-mining	18,084,543
Coal-mining	28,495,310
Miscellaneous and structural	1,972,506
Total	$207,000,070

Dividends paid Yearly, 1919 to 1940, inclusive.

Year.	Amount paid.	Year.	Amount paid.
1919	$2,494,283	1931	$4,650,857
1920	1,870,296	1932	2,786,958
1921	736,629	1933	2,471,735
1922	3,174,756	1934	4,745,905
1923	2,983,570	1935	7,386,070
1924	2,977,276	1936	10,513,705
1925	5,853,419	1937	15,085,293
1926	8,011,137	1938	12,068,875
1927	8,816,681	1939	11,865,698
1928	9,572,536	1940	14,595,530
1929	11,263,118		
1930	10,543,500	Total	$154,467,827

TABLE XVII.—DIVIDENDS PAID BY MINING COMPANIES, 1897–1940—*Continued.*

Dividends paid during 1939 and 1940.

	1939.	1940.
Arlington (R. O. Oscarson)	$11,430	$4,778
Bralorne Mines, Ltd.	1,496,400	1,496,400
Britannia Mining and Smelting Co., Ltd.	206,924	1,465,638
Cariboo Gold Quartz Mines, Ltd.	266,660	319,994
The Consolidated Mining and Smelting Co. of Canada, Ltd.	6,540,672	7,367,455
Crow's Nest Pass Coal Co., Ltd.	186,354	186,354
Fairview Amalgamated Gold Mines	2,593	----------
Gold Belt Mining Co., Ltd.	----------	102,000
Granby Consolidated Mining, Smelting and Power Co., Ltd.	180,097	360,186
Hedley Mascot Gold Mines, Ltd.	249,054	181,130
Highland Bell, Ltd.	105,269	105,268
Island Mountain Mines, Ltd.	157,607	157,607
Kelowna Exploration (Nickel Plate)	210,000	270,000
Kootenay Belle Gold Mines, Ltd.	121,536	81,024
Mount Zeballos Gold Mines, Ltd.	----------	110,000
Pioneer Gold Mines of B.C., Ltd.	700,700	700,700
Privateer Mine, Ltd.	539,898	441,734
Relief Arlington Mines, Ltd.	----------	150,000
Reno Gold Mines, Ltd.	28,200	----------
Sheep Creek Gold Mines, Ltd.	318,750	356,250
Silbak Premier Mines, Ltd.	400,000	400,000
Spud Valley Gold Mines, Ltd.	----------	84,000
Surf Inlet Consolidated Gold Mines, Ltd.	----------	40,093
Others	143,554	214,919
Totals	$11,865,698	$14,595,530

TABLE XVIII.—CAPITAL EMPLOYED, SALARIES AND WAGES, FUEL AND ELECTRICITY, AND PROCESS SUPPLIES, 1940.

Class.	Capital employed.	Salaries and Wages.	Fuel and Electricity.	Process Supplies.
Lode-mining	$95,939,423	$17,116,905	$2,703,554	$5,158,254
Placer-mining	3,151,768	672,625	142,577	35,158
Coal-mining	20,609,785	4,015,064	241,338	900,778
Miscellaneous metals, minerals, and materials	17,581,710	903,266	231,265	830,549
Structural materials industry	2,412,047	683,470	155,987	37,423
Totals, 1940	**$139,694,733**	**$23,391,330**	**$3,474,721**	**$6,962,162**
Grand totals, 1939	$135,473,482	$22,357,035	$2,066,203	$6,714,347
Grand totals, 1938	152,012,848	22,765,711	3,396,106	6,544,500
Grand totals, 1937	145,520,641	21,349,690	3,066,311	6,845,330
Grand totals, 1936	142,663,065	17,887,619	2,724,144	4,434,501
Grand totals, 1935	143,239,953	16,753,367	2,619,639	4,552,730
Grand totals, 1935–1940	----------	124,504,752	17,347,124	36,053,570

NOTE.—The above figures, compiled from returns on the subject made by companies and individuals, illustrate the amount of capital employed in the mining industry, the amount of money distributed in salaries and wages, fuel and electricity, and process supplies (explosives, chemicals, drill-steel, lubricants, etc.).

Capital employed includes: Present cash value of the land (excluding minerals); present value of buildings, fixtures, machinery, tools, and other equipment; inventory value of materials on hand, ore in process, fuel and miscellaneous supplies on hand; inventory value of finished products on hand; operating capital (cash, bills and accounts receivable, prepaid expenses, etc.).

TABLE XIX.—TONNAGE, NUMBER OF MINES, NET AND GROSS VALUE OF LODE MINERALS, 1901–1940.

Year.	Tonnage.	No. of Shipping-mines.	No. of Mines shipping over 100 Tons.	Net Value to Shipper of Lode Minerals produced.	Gross Value of Lode Minerals produced.
1901	920,416	119	78	.....	$14,100,282
1902	998,999	124	75	.....	11,581,153
1903	1,286,176	125	74	.....	12,103,237
1904	1,461,609	142	76	.....	12,909,035
1905	1,706,679	146	79	.....	15,980,164
1906	1,963,872	154	77	.....	18,484,102
1907	1,804,114	147	72	.....	17,316,847
1908	2,083,606	108	59	.....	15,847,411
1909	2,057,713	89	52	.....	15,451,141
1910	2,216,428	83	50	.....	14,728,731
1911	1,770,755	80	45	.....	11,454,063
1912	2,688,532	86	51	.....	17,662,766
1913	2,663,809	110	58	.....	17,190,838
1914	2,175,971	98	56	.....	15,225,061
1915	2,690,110	132	59	.....	19,992,149
1916	3,188,865	169	81	.....	31,483,014
1917	2,761,579	193	87	.....	26,788,474
1918	2,892,849	175	80	.....	27,590,278
1919	2,112,975	144	74	.....	19,750,498
1920	2,178,187	121	60	.....	19,444,365
1921	1,562,645	80	35	.....	12,920,398
1922	1,573,186	98	33	.....	19,227,857
1923	2,421,839	77	28	.....	25,347,092
1924	3,397,105	86	37	.....	35,538,247
1925	3,849,269	102	40	.....	46,200,135
1926	4,775,073	138	55	$38,558,613	51,508,031
1927	5,416,021	132	52	27,750,364	44,977,082
1928	6,241,310	110	49	29,070,075	48,281,825
1929	6,977,681	106	48	34,713,887	51,174,859
1930	6,803,846	68	32	21,977,688	40,915,395
1931	5,549,103	44	22	9,513,931	22,535,573
1932	4,340,158	75	29	7,075,393	19,700,235
1933	4,030,778	109	47	13,976,368	25,007,137
1934	5,087,334	145	69	20,243,278	33,895,930
1935	4,916,149	177	72	25,407,914	40,597,569
1936	4,456,521	168	70	29,975,608	43,666,452
1937	6,145,254	185	113	44,762,860	62,912,783
1938	7,377,091	211	92	35,759,022	53,877,333
1939	7,210,676	217	99	40,711,287	53,522,098
1940	**8,026,639**	**216**	**82**	**43,550,732**	**62,848,642**

TABLE XX.—MEN EMPLOYED IN THE MINING INDUSTRY OF BRITISH COLUMBIA, 1901–1940.

Year.	Placer-mining.	Lode-mining.			In Concentrators.	In Smelters.	Coal-mining.			Structural Materials.		Miscellaneous.	Total.
		Under.	Above.	Total.			Under.	Above.	Total.	Quarries and Pits.	Plants.		
1901	.....	2,736	1,212	3,948	.....	.....	3,041	931	3,974	.....	.....	.....	7,922
1902	.....	2,219	1,126	3,345	.....	.....	3,101	910	4,011	.....	.....	.....	7,356
1903	.....	1,662	1,088	2,750	.....	.....	3,137	1,127	4,264	.....	.....	.....	7,014
1904	.....	2,143	1,163	3,306	.....	.....	3,278	1,175	4,453	.....	.....	.....	7,759
1905	.....	2,470	1,240	3,710	.....	.....	3,127	1,280	4,407	.....	.....	.....	8,117
1906	.....	2,680	1,303	3,983	.....	.....	3,415	1,390	4,805	.....	.....	.....	8,788
1907	.....	2,704	1,239	3,943	.....	.....	2,862	907	3,769	.....	.....	.....	7,712
1908	.....	2,567	1,127	3,694	.....	.....	4,432	1,641	6,073	.....	.....	.....	9,767
1909	.....	2,184	1,070	3,254	.....	.....	4,713	1,705	6,418	.....	.....	.....	9,672
1910	.....	2,472	1,237	3,709	.....	.....	5,903	1,855	7,758	.....	.....	.....	11,467
1911	.....	2,435	1,159	3,594	.....	.....	5,212	1,661	6,873	.....	.....	.....	10,467
1912	.....	2,472	1,364	3,837	.....	.....	5,275	1,855	7,130	.....	.....	.....	10,967
1913	.....	2,773	1,505	4,278	.....	.....	4,950	1,721	6,671	.....	.....	.....	10,949
1914	.....	2,741	1,433	4,174	.....	.....	4,267	1,465	5,732	.....	.....	.....	9,906
1915	.....	2,709	1,435	4,144	.....	.....	3,708	1,283	4,991	.....	.....	.....	9,135
1916	.....	3,357	2,036	5,393	.....	.....	3,694	1,366	5,060	.....	.....	.....	10,453
1917	.....	3,290	2,198	5,488	.....	.....	3,760	1,410	5,170	.....	.....	.....	10 658
1918	.....	2,626	1,764	4,390	.....	.....	3,658	1,769	5,247	.....	.....	.....	9,337
1919	.....	2,513	1,746	4,259	.....	.....	4,145	1,821	5,966	.....	.....	.....	10,225
1920	.....	2,074	1,605	3,679	.....	.....	4,191	2,158	6,349	.....	.....	.....	10,028
1921	.....	1,355	975	2,330	.....	.....	4,722	2,163	6,885	.....	.....	.....	9,215
1922	.....	1,510	1,239	2,749	.....	.....	4,712	1,932	6,644	.....	.....	.....	9,393
1923	.....	2,102	1,516	3,618	.....	.....	4,342	1,807	6,149	.....	.....	.....	9,767
1924	.....	2,353	1,680	4,033	.....	.....	3,894	1,524	5,418	.....	.....	.....	9,451
1925	.....	2,298	2,840	5,138	.....	.....	3,828	1,615	5,443	.....	.....	.....	10,581
1926	299	2,606	1,735	4,341	808	2,461	3,757	1,565	5,322	493	324	124	14,172
1927	415	2,671	1,916	4,587	854	2,842	3,646	1,579	5,225	647	138	122	14,830
1928	355	2,707	2,469	5,176	911	2,748	3,814	1,520	5,334	412	368	120	15,424
1929	341	2,926	2,052	4,978	966	2,948	3,675	1,353	5,028	492	544	268	15,565
1930	425	2,316	1,260	3,576	832	3,197	3,389	1,256	4,645	848	344	170	14,032
1931	688	1,463	834	2,297	581	3,157	2,957	1,125	4,082	460	526	380	12,171
1932	874	1,355	900	2,255	542	2,036	2,628	980	3,608	536	329	344	10,524
1933	1,134	1,786	1,335	3,121	531	2,436	2,241	853	3,094	876	260	408	11,369
1934	1,122	2,796	1,729	4,525	631	2,890	2,050	843	2,893	377	187	360	12,985
1935	1,291	2,740	1,497	4,237	907	2,771	2,145	826	2,971	536	270	754	13,737
1936	1,124	2,959	1,840	4,799	720	2,678	2,015	799	2,814	931	288	825	14,179
1937	1,371	3,603	1,818	5,421	1,168	3,027	2,286	867	3,153	724	327	938	16,129
1938	1,303	3,849	2,266	6,115	919	3,158	2,088	874	2,962	900	295	369	16,021
1939	1,252	3,905	2,050	5,955	996	3,187	2,167	809	2,976	652	311	561	15,890
1940	**1,004**	**3,923**	**2,104**	**6,027**	**1,048**	**2,944**	**2,175**	**699**	**2,874**	**827**	**334**	**647**	**15,705***

* The average number of wage-earners was obtained by adding the monthly figures for individual companies and dividing by 12 irrespective of the number of months worked, the average number of wage-earners in the industry is the sum of these individual averages.

TABLE XXI.—Metalliferous Mines shipping in 1940.

Mine or Group.	Location of Mine.	Mining Division.	Owner or Agent.	Process.	Character of Ore.
Polaris-Taku	Taku River (Tulsequah)	Atlin	Polaris-Taku Mining Co., Ltd., Tulsequah	Flotation	Gold.
Big Missouri	Stewart (Salmon Arm)	Portland Canal	Buena Vista Mining Co., Ltd., Trail	Flotation; cyanidation	Gold.
Dolly Varden	Alice Arm	Portland Canal	T. W. Falconer, Alice Arm		Silver.
Dunwell	Stewart (Glacier Creek)	Portland Canal	J. D. Rochfort and A. Bugnello, Stewart		Gold, silver, copper.
Gold Bar	Terrace	Portland Canal	Axel Erickson, Terrace		Gold, silver.
Gold Knife	Stewart	Portland Canal	Stewart Canal Gold Mines, Ltd., Stewart		Gold, silver, copper.
Red Cliffe	Stewart	Portland Canal	Harold D. Haywood, Stewart		Gold, silver, copper.
Ruth	Alice Arm	Portland Canal	T. H. Payne, Alice Arm		Silver, gold.
Silbak Premier	Stewart	Portland Canal	Silbak Premier Mines, Ltd., Premier	Flotation	Gold, silver, lead.
Tide Lake	Stewart	Portland Canal	Mrs. J. L. Campbell, Stewart		Gold, silver.
Surf Inlet	Surf Inlet	Skeena	Surf Inlet Cons. Gold Mines, Ltd., Vancouver	Table concentration; flotation	Gold, silver, copper.
Cariboo Gold	Wells	Cariboo	Cariboo Gold Quartz Mining Co., Ltd., Vancouver	Cyanidation	Gold, silver.
Island Mountain	Wells	Cariboo	Island Mountain Mines, Ltd., Wells	Cyanidation	Gold, silver.
Black Bull	Copper River	Omineca	Wm. Hagen, Copper River		Gold, silver.
Coronado	Hudson Bay Mountain	Omineca	F. Griffin and H. Orme, Smithers		Silver, gold, lead, zinc.
D. & N. Group	Telkwa	Omineca	Knute Nysven, Telkwa		Silver, copper.
Dome Mountain	Telkwa	Omineca	Babine Gold Mines, Ltd., Vancouver		Gold, silver.
Duthie	Hudson Bay Mountain	Omineca	A. W. Kelly and J. J. Herman, Smithers		*Silver, gold, lead, zinc.*
Golden Eagle	Copper River	Omineca	D. Heenan, Copper River		Silver, gold, copper.
Golden Eagle	Topley	Omineca	E. Bannert and E. Tompkins, Topley		Silver, gold, lead.
Hazelton View	Rocher Déboulé Mountain	Omineca	Jack Lee, Hazelton		Gold.
Hunter Basin	Telkwa	Omineca	Conwest Exploration Co., Ltd., Vancouver		Gold, silver, copper.
Hyland Basin	Smithers	Omineca	Hyland Basin Gold Mines, Ltd., Vancouver		Gold, silver, lead.
Iron Cap	*Kamloops*	*Kamloops*	*Douglas B. Sterrett, Kamloops*		*Gold, silver, copper.*
Copper King	Kamloops	Kamloops	McKelvie Bros., Kamloops	Concentration	Gold, silver, copper.
Windpass	Dunn Lake	Kamloops	Windpass Gold Mining Co., Ltd., Vancouver	Flotation	Gold, silver, copper.
Consolidated Nicola	Stump Lake	Nicola	Cons. Nicola Gold Fields, Ltd., Vancouver	Flotation	Gold, silver, lead, zinc.
Jumbo	Vernon	Vernon	Savage & Campbell, Vernon		Gold, silver.
Kalamalka	Lavington	Vernon	S. M. Penny, Vernon		Gold, silver.
Monashee	Monashee Mountain	Vernon	Flodstrom & Peterson, Lumby		Gold, silver.
Amandy	Jewel Lake	Greenwood	E. C. Henniger, Grand Forks		Gold, silver.
Athelstan	Grand Forks	Greenwood	W. E. McArthur, Greenwood		Gold, silver.
Berlin	Paulson	Greenwood	A. F. Crowe, Grand Forks		Gold, silver.
Brooklyn-Stemwinder	Phoenix	Greenwood	W. E. McArthur, Greenwood	Concentration	Gold, silver, copper.
Butcher Boy	Carmi	Greenwood	James Kerr, Carmi		Gold, silver.
Cariboo	Camp McKinney	Greenwood	G. S. Boug *et al.*, Greenwood		Gold, silver, lead, zinc.
Carmi	Carmi	Greenwood	J. Kerr, Carmi; Highland Bell, Ltd., Creston		Gold, silver.
City of Paris	Grand Forks	Greenwood	H. M. Brinkman, Grand Forks		Gold, silver.
Crescent	Jewel Lake	Greenwood	E. Larsen *et al.*, Greenwood		Gold, silver, lead, zinc.
D.A.	Greenwood	Greenwood	J. S. Klemans, Greenwood		Gold, silver, zinc.

TABLE XXI.—METALLIFEROUS MINES SHIPPING IN 1940—*Continued.*

Mine or Group.	Location of Mine.	Mining Division.	Owner or Agent.	Process.	Character of Ore.
Dentonia	Greenwood	Greenwood	R. Lee (deceased), Greenwood		Gold, silver.
Ethiopia	Greenwood	Greenwood	Ethiopia Syndicate, Vancouver		Gold, silver.
Goldfinch	Greenwood	Greenwood	E. Larsen *et al.*, Greenwood		Gold, silver, lead, zinc.
Gold Drop	Jewel Lake	Greenwood	D. Ventura *et al.*, Greenwood		Gold, silver.
Granby	Phoenix	Greenwood	W. E. McArthur, Greenwood	Concentration	Gold, silver, copper.
Helen	Greenwood	Greenwood	Robt. Lee, Greenwood		Gold, silver, lead, zinc.
Highland Bell	Greenwood	Greenwood	Highland Bell, Ltd., Creston		Silver, gold, lead, zinc.
Homestake	Beaverdell	Greenwood	H. Brunner and V. Tishhouser, Greenwood		Gold, silver, lead, zinc.
Humming Bird	Greenwood	Greenwood	C. A. Anderson, Grand Forks		Gold, silver, zinc.
Inland Empire	Paulson	Greenwood	W. Schwarz, Paulson		Gold, silver.
Keno	Phoenix	Greenwood	B. and P. Chernoff, Grand Forks		Silver, gold, lead.
Lakeside	Greenwood	Greenwood	N. Ogloff *et al.*, Greenwood		Silver, gold.
Maybe	Crick (Trapper) Creek	Greenwood	S. Bergland and A. J. Desmazes, Westbridge		Gold, silver.
Mogul	Greenwood	Greenwood	G. M. Millett, Rossland; C. Sherdahl and E. Hendry, Greenwood		Gold, silver.
Molly Gibson	Paulson	Greenwood	F. Singer, Rossland		Gold, silver.
Number Seven	Boundary Falls	Greenwood	W. E. McArthur *et al.*, Greenwood		Gold, silver, lead, zinc.
Observatory	Carmi	Greenwood	J. P. Gachain, Carmi		Silver.
Providence	Greenwood	Greenwood	W. E. McArthur, Greenwood		Gold, silver, lead, zinc.
Rhoderick Dhu	Grand Forks	Greenwood	M. G. Williamson *et al.*, Greenwood		Gold, silver.
Sally	Beaverdell	Greenwood	Sally Mines, Ltd., Penticton; J. L. Nordman, Beaverdell		Silver, gold, lead, zinc.
Skylark	*Greenwood*	*Greenwood*	*W. Madden, Greenwood*		*Silver, gold, lead,* zinc.
Superior	Grand Forks	Greenwood	M. Evans, Grand Forks		Gold, silver.
Tiger	Beaverdell	Greenwood	J. L. Nordman, Beaverdell		Silver, lead, zinc.
Union	Granby River	Greenwood	W. E. McArthur, Greenwood		Gold, silver.
Wellington	Beaverdell	Greenwood	A. J. Morrison, Greenwood		Silver, gold, lead, zinc.
Wiarton	Camp McKinney	Greenwood	Highland Bell, Ltd., Creston		Gold, silver, lead, zinc.
Yankee Boy	Grand Forks	Greenwood	W. Schwarz, Grand Forks		Gold, silver.
Black Diamond	Oliver	Osoyoos	O. Carlson and R. C. McKay, Oliver		Gold, silver.
Gold Standard	Oro Fino Mountain	Osoyoos	W. Schwarz and A. Whitehead, Penticton		Gold, *silver.*
Grandoro	Oliver	Osoyoos	J. P. Wukelick, Penticton		Gold, silver.
Grandview	Oliver	Osoyoos	W. R. Trombley, Greenwood		Gold, silver, copper.
Hedley Mascot	Hedley	Osoyoos	Hedley Mascot Mines, Ltd., Vancouver	Flotation	Gold, silver, copper.
King	Oro Fino Mountain	Osoyoos	J. P. Wukelick, Penticton		Gold, silver.
Koh-i-Noor	Oliver	Osoyoos	L. E. Jorgensen, Oliver		Gold, silver.
Morning Star	Osoyoos	Osoyoos	O. Carlson and R. McKay, Oliver		Gold, silver.
Lucky Strike	Oliver	Osoyoos	S. Howard, Oliver		Gold, silver.
Nickel Plate	Hedley	Osoyoos	Kelowna Exploration Co., Ltd., Hedley	Cyanidation; flotation	Gold, silver, copper.
Osoyoos	Osoyoos	Osoyoos	Osoyoos Mines of Canada, Ltd., Calgary, Alta.	Table concentration; cyanidation	Gold, silver, copper.

Queen Mary	Oliver	Osoyoos	A. Whitehead, Penticton		Gold, silver.
Silver King	Oliver	Osoyoos	J. Pearson *et al.*, Oliver		Gold, silver.
Silver Ring	Oliver	Osoyoos	D. A. Trombley, Oliver		Gold, silver.
Summit	Penticton	Osoyoos	A. Whitehead, Penticton; M. Kabatoff, Grand Forks		Gold, silver.
Copper Mountain	Allenby	Similkameen	Granby Cons. M. S. and Power Co., Vancouver	Flotation	Copper, gold, silver.
Grasshopper	Tulameen	Similkameen	Grasshopper Mine, Ltd., Vancouver		Gold, silver.
Silver Moon	Princeton	Similkameen	A. Whitehead, Penticton		Gold.
Amazon	Woodbury Creek	Ainsworth	J. Flagel, Nelson		Silver, lead, zinc.
Caledonia	Blaylock	Ainsworth	G. E. McCready, Kaslo		Silver, lead, zinc.
Cork-Province	Zwicky	Ainsworth	Cork Province Mines, Ltd., Kaslo		Silver, lead, zinc.
Highland	Ainsworth	Ainsworth	T. Hawes, Ainsworth		Silver, lead, zinc.
Highland Surprise	Retallack	Ainsworth	Highland Surprise Gold Mines, Ltd., Vancouver		Gold, silver, lead, zinc.
Silver Coin	Woodbury Creek	Ainsworth	D. Hall, Kaslo		Silver, lead, zinc.
Silver Cup	Ainsworth	Ainsworth	J. Flagel, Ymir		Silver, gold, lead, zinc.
Whitewater	Whitewater	Ainsworth	Whitewater Mines, Ltd., Kaslo; J. A. Vallance, Nelson		Silver, gold, lead, zinc.
Anderson Group	Perry Creek	Fort Steele	E. A. Anderson and J. J. Rollheiser, Kimberley		Gold, silver.
Sullivan	Kimberley	Fort Steele	Cons. M. & S. Co. of Canada, Ltd., Trail	Flotation	Silver, lead, zinc.
Monarch and Kicking Horse	Field	Golden	Base Metals Mining Corp., Ltd., Toronto	Table concentration; flotation	Silver, lead, zinc.
Meridian	Camborne	Lardeau	Cory Menhenick, Camborne		Gold, silver.
True Fissure	Ferguson	Lardeau	Vernon Soules, Beaton		Silver, gold, zinc, lead.
Winslow	Trout Lake	Lardeau	Winslow Syndicate, Penticton		Gold, silver.
Alpine	Nelson	Nelson	Alpine Gold, Ltd., Nelson	Concentration	Gold, silver, lead, zinc.
Arlington	Erie Creek	Nelson	R. O. Oscarson, leaser, Erie		Gold, silver, lead, zinc.
Athabasca	Nelson	Nelson	Noble Five Mines, Ltd., Nelson		Gold, silver, lead, zinc.
Bayonne	Tye	Nelson	Bayonne Consolidated Mines, Ltd., Vancouver	Cyanidation	Gold, silver, lead, zinc.
Bear	Hall Creek	Nelson	Bear Development Co., Nelson		Gold, silver.
Bemo	Cottonwood Lake	Nelson	Northern Development Syndicate, Nelson		Gold, silver.
Birdseye	Nelson	Nelson	H. J. Wilson and H. Park, Nelson		Gold, silver.
Black Cock	Ymir	Nelson	R. H. Weaver, Ymir		Gold, silver, lead, zinc.
Bunker Hill	Waneta	Nelson	C. E. Crossley *et al.*		Gold, silver.
California	Nelson	Nelson	Y. F. Tate, Alameda, Calif.; and leasers, Nelson		Gold, silver, lead, zinc.
Canadian Belle	Nelson	Nelson	Canadian Belle Mining Co., Spokane, Wash.		Gold, silver.
Catherine	Cottonwood Lake	Nelson	Mike Egan *et al.*, Nelson		Gold, silver, lead, zinc.
Centre Star	Ymir	Nelson	O. Anderson, Ymir		Gold, silver, lead, zinc.
Clubine Comstock	Boulder Creek	Nelson	Clubine Comstock Gold Mines, Ltd., Nelson		Gold, silver.
Commodore	Ymir	Nelson	Ymir Commodore Mines Co., Ymir		Gold, silver.
Durango	Ymir	Nelson	R. J. McKay, Ymir; H. D. Campbell, Vancouver		Gold, silver, zinc, lead.
Euphrates	Hall Creek	Nelson	Euphrates Mining Co., per S. Terzian, Nelson		Gold, silver.
Fern	Hall Creek	Nelson	J. Logan *et al.*, Nelson; P. Lieb *et al.*, Ymir		Gold, silver.
Goodenough	Ymir	Nelson	Ymir Consolidated Gold Mines, Ltd., Vancouver	Amalgamation; flotation	Gold, silver, zinc, lead.
Gold Belt	Sheep Creek	Nelson	Gold Belt Mining Co., Ltd., Vancouver	Cyanidation	Gold, silver.
Gold King	Hall Creek	Nelson	N. H. Fisher, Nelson		Gold, silver.

TABLE XXI.—METALLIFEROUS MINES SHIPPING IN 1940—*Continued.*

Mine or Group.	Location of Mine.	Mining Division.	Owner or Agent.	Process.	Character of Ore.
Golden Age	Hall Siding	Nelson	S. Terzian, Nelson		Gold, silver.
Golden Eagle	Sandy Creek	Nelson	B. A. Pickering, Nelson		Gold, silver, lead, zinc.
Granite-Poorman	Taghum	Nelson	Livingstone Mining Co., Ltd., Blewett	Amalgamation; cyanidation	Gold, silver.
Harriet	Erie	Nelson	S. A. Curwen, Ymir		Gold, silver.
Jessie Victoria	Nelson	Nelson	J. A. Ferguson, Nelson		Gold, silver.
Kootenay Belle	Sheep Creek	Nelson	Kootenay Belle Gold Mines, Ltd., Vancouver	Cyanidation	Gold, silver.
Lone Silver	Salmo	Nelson	O. Larsen *et al.*, Salmo		Silver, gold, lead, zinc.
Lucky Strike	Salmo	Nelson	E. B. Pederson, Ymir		Gold, silver, lead, zinc.
Nugget-Motherlode	Salmo	Nelson	A. Endersby, Sr. and Jr., Sheep Creek		Gold, silver.
Ore Hill	Sheep Creek	Nelson	G. Birtsch, Sheep Creek		Gold, silver.
Reliance	Beavervale Creek	Nelson	W. Johnson, Ross Spur		Gold, silver.
Reno	Sheep Creek	Nelson	Reno Gold Mines, Ltd., Vancouver	Cyanidation	Gold, silver.
Royal Canadian	Blewett	Nelson	G. H. Grimwood, Nelson		Gold, silver, lead, zinc.
Second Relief	Erie	Nelson	Relief-Arlington Mines, Ltd., Erie	Amalgamation; flotation; cyanidation	Gold, silver.
Sheep Creek	Sheep Creek	Nelson	Sheep Creek Mines, Ltd., Vancouver	Cyanidation	Gold, silver.
Spokane	Tye	Nelson	K. K. and R. M. Laib, Bayonne		Gold, silver, lead, zinc.
Venango	Blewett	Nelson	Venango Gold Mines, Ltd., Nelson		Gold, silver.
Venus-Juno	Nelson	Nelson	Mrs. Thelma W. Heddle, Nelson		Gold, silver.
Wilcox	Ymir	Nelson	C. L. Shrieves *et al.*, Ymir		Gold, silver, lead, zinc.
Ymir	Ymir	Nelson	Ymir Consolidated Gold Mines, Ltd., Vancouver; and lessees, Ymir	Amalgamation; flotation	Gold, silver.
Yankee Girl	Ymir	Nelson	Ymir-Yankee Girl Gold Mines, Ltd., Ymir	Cyanidation; flotation	Gold, silver, lead, zinc.
Bell	Springer Creek	Slocan	E. B. Pedersen, Salmo		Silver, gold.
Bosun	New Denver	Slocan	C. J. Campbell, Vancouver		Silver, lead, zinc.
Capella	New Denver	Slocan	C. Stedile, New Denver		Silver, lead.
Chapleau	Lemon Creek	Slocan	W. K. Cross, Slocan City		Gold, silver.
Cuba	Sandon	Slocan	J. H. Tattrie, Sandon		Silver, lead, zinc.
Exchange	Springer Creek	Slocan	Howard M. Parker, Trail		Silver, gold.
Freddie Lee	Sandon	Slocan	S. Sibilleau, Sandon		Silver, lead, zinc.
Hampton	Springer Creek	Slocan	H. M. & Co. E. Parker, Trail		Silver, lead, zinc.
Hewitt	Silverton	Slocan	Leasers from Galena Farm Consolidated Mines, Ltd., Vancouver		Silver, gold, zinc, lead.
Jo Jo	Three Forks	Slocan	C. Stedile, New Denver		Silver, lead, zinc.
Lucky Jim	Zincton	Slocan	Zincton Mines, Ltd., Sheep Creek		Silver, zinc.
Metallic	Silverton	Slocan	E. E. Marshall *et al.*, Silverton		Silver, lead, zinc.
Meteor	Slocan City	Slocan	G. Larson and C. Lundstrom, Slocan City		Silver, gold.
Molly Hughes	New Denver	Slocan	Molly Hughes, Inc., Spokane, Wash.		Silver, gold, zinc, lead.
McAllister	Three Forks	Slocan	Geo. Allen, Nelson		Silver, lead.
Newport	Three Forks	Slocan	E. J. Vandergrift, Three Forks		Silver, lead, zinc.

Noble Five	Sandon	Slocan	Noble Five Mines, Ltd., Nelson		Silver, zinc, lead.
Oro Fino	Slocan City	Slocan	A. Phare, Willow Point		Silver, gold, zinc, lead.
Ottawa	Springer Creek	Slocan	Wm. Hicks and Associates, Slocan		Silver, gold.
Rambler-Cariboo	Retallack	Slocan	W. R. George, New Denver; S. N. Ross, Nelson		Silver, zinc, lead.
Republic	Springer Creek	Slocan	C. W. Tipping, Slocan City		Silver, gold.
Ruth-Hope	Sandon	Slocan	Leased from Ruth-Hope Mining Co., Ltd., Vancouver		Silver, lead, zinc.
Senator	12 Mile Creek	Slocan	E. Bergstrom, Nelson		Silver, gold.
Silver Ridge	Sandon	Slocan	J. H. Cory, New Denver		Silver, lead, zinc.
Standard	Silverton	Slocan	Western Exploration Co., Ltd., Silverton	Table concentration; flotation	Silver, zinc, lead.
Victor	Sandon	Slocan	Leased by E. Doney & Son, Sandon		Silver, lead, zinc.
Albion	Paulson	Trail Creek	Joe Kloman, Paulson		Gold, silver.
Cariboo	Rossland	Trail Creek	Alex Konkin, Rossland		Gold, silver.
I.X.L.	Rossland	Trail Creek	I.X.L. Leasing Syndicate, Rossland		Gold, silver.
Jumbo	Rossland	Trail Creek	M. Michaely, Rossland		Gold, silver.
Midnight	Rossland	Trail Creek	B. A. Lins, Rossland		Gold, silver.
Phoenix	Rossland	Trail Creek	W. C. Holm, Rossland		Gold, silver.
Rossland Properties	Rossland	Trail Creek	Leased from Consolidated Mining & Smelting Co. of Canada, Ltd., Trail		Gold, silver, copper.
Velvet	Rossland	Trail Creek	Velvet Leasing Syndicate, Rossland	Concentration	Gold, silver, copper.
Silver Key	Canal Flats	Windermere	Bryant, McLeod & Guthrie, Canal Flats		Silver.
B.D.Q.	Alberni	Alberni	H. Brownson, Port Alberni		Gold, silver, copper.
Hesquiat	Boat Basin	Alberni	Hesquiat Mining Co., Ltd., Port Alberni		Gold, silver, copper.
Thistle	Alberni	Alberni	Leased from United Prospectors, Ltd., Victoria		Gold, silver, copper.
W.W.W.	Franklin River	Alberni	K. J. Robinson, Vancouver		Gold, silver, lead.
Big Boy	Herbert Arm	Clayoquot	J. Martin, Ahousat; Herbert Arm Gold Mines, Ltd., Vancouver		Gold, silver, copper.
C.D. (Rey Oro)	Zeballos	Clayoquot	C.D. Mining Co., Ltd., Vancouver	Concentration	Gold, silver.
Central Zeballos	Zeballos	Clayoquot	C/o Reno Gold Mines, Ltd., Vancouver	Amalgamation; flotation	Gold, silver.
Gold Flake	Warn Bay	Clayoquot	B. H. Symns and L. Kuoczek, Tofino		Gold, silver.
Golden Gate	Zeballos	Clayoquot	Alex. MacDonald, Zeballos; Seth Witton, Zeballos		Gold, silver.
King Midas	Zeballos	Clayoquot	A. E. Little, Zeballos		Gold, silver, copper.
Maple Leaf	Warn Bay	Clayoquot	F. Letain, O. Parkhurst, and A. Knott, Tofino		Gold.
Mount Zeballos	Zeballos	Clayoquot	Mount Zeballos Gold Mines, Ltd., Vancouver	Amalgamation; flotation	Gold, silver.
Port Eliza	Zeballos	Clayoquot	Port Eliza Mine, Zeballos		Gold, silver.
Privateer	Zeballos	Clayoquot	Privateer Mine, Ltd., Vancouver	Amalgamation; cyanidation	Gold, silver.
Spud Valley	Zeballos	Clayoquot	Spud Valley Gold Mines, Ltd., Vancouver	Amalgamation; flotation	Gold, silver.
White Star	Zeballos	Clayoquot	White Star Mine, Ltd., Vancouver		Gold, silver, lead.
Yankee Boy	Tofino	Clayoquot	T. A. Smith, Tofino		Gold, silver.
Grange Cons.	Kelly Creek	Clinton	Grange Cons. Mines, Ltd., Vancouver; and R. Downey, Chu Chua		Gold, silver, copper.
Vidette	Savona	Clinton	Vidette Gold Mines, Ltd.; and V. A. Mowat, Savona		Gold, silver, copper.
Bralorne	Bridge River	Lillooet	Bralorne Mines, Ltd., Vancouver	Amalgamation; flotation	Gold, silver.
Jagee	Shalalth	Lillooet	Jagee Mining Co., Ltd., Vancouver		Gold, silver.
Minto	Bridge River	Lillooet	Evans & Davidson, Minto		Gold, silver.

TABLE XXI.—METALLIFEROUS MINES SHIPPING IN 1940—*Continued.*

Mine or Group.	Location of Mine.	Mining Division.	Owner or Agent.	Process.	Character of Ore.
Pioneer	Bridge River	Lillooet	Pioneer Gold Mines of B.C., Ltd.	Cyanidation	Gold, silver.
Taylor, R. R.	Bridge River	Lillooet	R. R. Taylor, Vancouver		Gold, silver, copper.
Alex	Thurlow	Nanaimo	Alex, Ltd., Vancouver		Gold, silver, copper.
Crown Gold	Nanaimo Lakes	Nanaimo	Crown Gold Mining Syndicate, Victoria		Gold.
Geiler Group	Quadra Island	Nanaimo	Canadian Exploration, Ltd., Vancouver		Gold.
Knutson and Matier	Lasqueti Island	Nanaimo	Knutson & Matier, Lasqueti Island		Copper, gold, silver.
McLeod	Blubber Bay	Nanaimo	Lorne McLeod, Blubber Bay		Copper, gold, silver.
Nodale	Shoal Bay	Nanaimo	Martin Aarnes, Shoal Bay		Gold, silver, copper.
Piedmont (Douglas Pine)	Shoal Bay	Nanaimo	Piedmont Mining Co., Ltd., Vancouver		Copper, gold, silver.
Thurlow	Thurlow	Nanaimo	R. W. Burton, Shoal Bay		Gold, silver, copper.
Aufeas	Hope	New Westminster	John Rollingson, Hope		Gold, silver, copper.
Dawson	Hope	New Westminster	F. Kuhnke, c/o Dawson Cons. Mines, Ltd., Vancouver		Gold, silver, copper.
Star	Hope	New Westminster	L. A. Morin, Vancouver		Gold, silver, copper.
Teko	Hope	New Westminster	Teko Gold Mines, Ltd., Vancouver		Gold, silver, copper.
Britannia	Britannia Beach	Vancouver	Britannia Mining & Smelting Co., Ltd., Britannia Beach	Flotation	Copper, gold, silver.
Silta	Seymour Inlet	Vancouver	R. C. McCorkell, Vancouver		Gold, silver.
Pender	Pender Harbour	Victoria	Pender Mining & Development Co., Pender Harbour		Copper, silver.

SYNOPSIS OF MINING LAWS OF BRITISH COLUMBIA.

Mineral Act and Placer-mining Act.

The mining laws of British Columbia are very liberal in their nature and compare favourably with those of any other part of the world. The terms under which both lode and placer claims and placer leaseholds are held are such that a prospector is greatly encouraged in his work, and the titles, especially for mineral claims and placer-mining leaseholds, are perfect. The fees required to be paid are as small as possible, consistent with a proper administration of the mining industry, and are generally lower than those commonly imposed elsewhere. Provision is also made for the formation of mining partnerships practically without expense, and a party of miners is enabled to take advantage of these sections of the Acts so that such miners may work their claims jointly.

Placer-mining leases are granted for a period of twenty years and are approximately 80 acres in size. On a lode claim of 51 acres the expenditure of $500 in work, which may be spread over five years, is required to obtain a Crown grant, and surface rights are obtainable at a small figure, in no case exceeding $5 per acre.

The following synopsis of the mining laws will be found sufficient to enable the miner or intending investor to obtain a general knowledge of their scope and requirements; for particulars, however, the reader is referred to the Acts relating to mining, which may be obtained from any Mining Recorder, or from the Department of Mines or the King's Printer, Victoria, B.C.

Free Miners' Certificates.

Any person over the age of 18, and any joint-stock company, may obtain a free miner's certificate on payment of the required fee.

The fee to an individual for a free miner's certificate is $5 for one year. To a joint-stock company having a capital of $100,000, or less, the fee for a year is $50; if capitalized beyond this, the fee is $100.

The free miners' certificates run from date of issue and expire on the 31st day of May next after its date, or some subsequent 31st day of May (that is to say, a certificate may be taken out a year or more in advance if desired). Certificates may be obtained for any part of a year, terminating on May 31st, for a proportionately less fee.

The possession of this certificate entitles the holder to enter upon all lands of the Crown, and upon any other lands on which the right to so enter is not specially reserved, for the purpose of prospecting for minerals, locating claims, and mining.

A free miner can hold, by location, during any period of twelve months, eight mineral claims within a radius of 10 miles, and may acquire others by purchase. Under the "Placer-mining Act," a free miner may locate, in any period of twelve consecutive months, one placer claim or leasehold in his own name and one placer claim or leasehold for each of three free miners for whom he acts as agent, on any separate creek, riverbed, bar or dry diggings. Other placer claims or leaseholds may be acquired by purchase.

In the event of a free miner allowing his certificate to lapse, his mining property (if not Crown-granted) reverts to the Crown (subject to the conditions set out in the next succeeding paragraph), but where other free miners are interested as partners or co-owners the interest of the defaulter becomes vested in the continuing co-owners or partners *pro rata*, according to their interests.

Six months' extension of time within which to revive title in mining property which has been forfeited through the lapse of a free miner's certificate is allowed. This privilege is given only if the holder of the property obtains a special free miner's certificate within six months after the 31st of May on which his ordinary certificate lapsed. The fee for this special certificate in the case of a person is $15 and in that of a company $300.

It is not necessary for a shareholder, as such, in an incorporated mining company to be the holder of a free miner's certificate.

Mineral Claims.

Mineral claims are located and held under the provisions of the "Mineral Act."

A mineral claim is a piece of land not exceeding in area fifty-one and sixty-five one-hundredths acres. The angles must be right angles unless the boundaries, or one of them, are the same as those of a previously recorded claim.

No special privileges are allowed for the discovery of new mineral claims or districts.

A mineral claim is located by erecting two "legal posts," which are stakes having a height of not less than 4 feet above ground and squared 4 inches at least on each face for not less than a foot from the top. A tree-stump so cut and squared also constitutes a legal post. A cairn of stones not less than 4 feet in height and not less than 1 foot in diameter 4 feet above the ground may also be used as a legal post. Upon each of these posts must be written the name of the claim, the name of the locator, and the date of location. On No. 1 post, in addition, the following must be written: "Initial post. Direction of Post No. 2 [*giving approximate compass-bearing*] ——— feet of this claim lie on the right and ——— feet on the left of the line from No. 1 to No. 2 posts." Numbered metal identification tags must be attached to both posts at the time of staking.

The location-line between Nos. 1 and 2 posts must be distinctly marked—in a timbered locality by blazing trees and cutting underbrush, and in bare country by monuments of earth or rock not less than 2 feet in diameter at the base, and at least 2 feet high—so that the line can be distinctly seen.

Mineral claims must be recorded in the Mining Recorder's office for the mining division in which they are situate within fifteen days from the date of location, one day extra being allowed for each 10 miles of distance from the recording office after the first 10 miles. If a claim is not recorded in time it is deemed abandoned and open for relocation, but if the original locator wishes to relocate he can only do so by permission of the Gold Commissioner of the district and upon the payment of a fee of $10. This applies also to a claim abandoned for any reason whatever.

Mineral claims are, until the Crown grant is issued, held practically on a yearly lease, a condition of which is that during such year assessment-work be performed on the same to the value of at least $100, or a payment of such sum be made to the Mining Recorder. Such assessments must be recorded before the expiration of the year, or the claim is deemed abandoned. If, however, the required assessment-work has been performed within the year, but not recorded within that time, a free miner may, within thirty days thereafter, record such assessment-work upon payment of an additional fee of $10. The actual cost of the survey of a mineral claim, to an amount not exceeding $100, may also be recorded as assessment-work. If, during any year, work is done to a greater extent than the required $100, any further sum of $100—but not less—may be recorded and counted as further assessments; such excess work must be recorded during the year in which it is performed. All work done on a mineral claim between the time of its location and recording may be counted as work done during the first period of one year from the recording. As soon as assessment-work to the extent of $500 is recorded and a survey made of the claim, the owner of a mineral claim is entitled to a Crown grant on payment of a fee of $25, and giving the necessary notices required by the Act. Liberal provisions are also made in the Act for obtaining mill-sites and other facilities in the way of workings and drains for the better working of claims.

Placer Claims.

Placer-mining is governed by the "Placer-mining Act," and by the interpretation clause its scope is defined as "the mining of any natural stratum or bed of earth, gravel, or cement mined for gold or other precious minerals or stones." Placer claims are of four classes, as follows:—

"'Creek diggings': any mine in the bed of any stream or ravine:

"'Bar diggings': any mine between high- and low-water marks on a river, lake, or other large body of water:

"'Dry diggings': any mine over which water never extends:

"'Precious-stone diggings': any deposit of precious stones, whether in veins, beds, or gravel deposits."

The following provisions as to extent of the various classes of claims are made by the Act:—

"In 'creek diggings' a claim shall be two hundred and fifty feet long, measured in the direction of the general course of the stream, and shall extend in width one thousand feet, measured from the general course of the stream five hundred feet on either side of the centre thereof:

"In 'bar diggings' a claim shall be:—

"(*a.*) A piece of land not exceeding two hundred and fifty feet square on any bar which is covered at high water; or

"(*b.*) A strip of land two hundred and fifty feet long at high-water mark, and in width extending from high-water mark to extreme low-water mark.

"In 'dry diggings' a claim shall be two hundred and fifty feet square."

The following provision is made for new discoveries of placer-mining ground:—

"If any free miner, or party of free miners, discovers a new locality for the prosecution of placer-mining and such discovery be established to the satisfaction of the Gold Commissioner, placer claims of the following sizes shall be allowed to such discoverers, namely:—

"To one discoverer, one claim..... 600 feet in length;

"To a party of two discoverers, two claims amounting together to ..... 1,000 feet in length;

"And to each member of a party beyond two in number, a claim of the ordinary size only.

"The width of such claims shall be the same as ordinary placer claims of the same class: Provided that where a discovery claim has been established in any locality no further discovery shall be allowed within five miles therefrom, measured along the watercourses."

Every placer claim shall be as nearly as possible rectangular in form, and marked by four legal posts at the corners thereof, firmly fixed in the ground. On each of such posts shall be written the name of the locator, the number and date of issue of his free miner's certificate, the date of the location, and the name given to the claim. In timbered localities boundary-lines of a placer claim shall be blazed so that the posts can be distinctly seen, underbrush cut, and the locator shall also erect legal posts not more than 125 feet apart on all boundary-lines. In localities where there is no timber or underbrush, monuments of earth and rock, not less than 2 feet high and 2 feet in diameter at base, may be erected in lieu of the last-mentioned legal posts, but not in the case of the four legal posts marking the corners of the claim.

A placer claim must be recorded in the office of the Mining Recorder for the mining division within which the same is situate, within fifteen days after the location thereof, if located within 10 miles of the office of the Mining Recorder by the most direct means of travel. One additional day shall be allowed for every 10 miles additional or fraction thereof. The number of days shall be counted inclusive of the days upon which such location was made, but exclusive of the day of application for record. The application for such record shall be under oath and in the form set out in the Schedule to the Act. A claim which shall not have been recorded within the prescribed period shall be deemed to have been abandoned.

To hold a placer claim for more than one year it must be rerecorded before the expiration of the record or rerecord.

A placer claim must be worked by the owner, or some one on his behalf, continuously, as far as practicable, during working-hours. If work is discontinued for a period of seven days, except during the close season, lay-over, leave of absence, sickness, or for some other reason to the satisfaction of the Gold Commissioner, the claim is deemed abandoned.

Lay-overs are declared by the Gold Commissioner upon proof being given to him that the supply of water is insufficient to work the claim. Under similar circumstances he has also the power to declare a close season, by notice in writing and published in the

Gazette, for all or any claims in his district. Tunnel and drain licences are also granted by him on the person applying giving security for any damage that may arise. Grants of right-of-way for the construction of tunnels or drains across other claims are also granted on payment of a fee of $25, the owner of the claims crossed having the right for tolls, etc., on the tunnel or drain which may be constructed. These tolls, however, are, so far as the amount goes, under the discretion of the Gold Commissioner.

Co-owners and Partnerships.

In both the "Mineral" and "Placer-mining" Acts provision is made for the formation of mining partnerships, both of a general and limited liability character. These are extensively taken advantage of and have proved very satisfactory in their working. Should a co-owner fail or refuse to contribute his proportion of the expenditure required as assessment-work on a claim he may be "advertised out," and his interest in the claim shall become vested in his co-owners who have made the required expenditure, *pro rata* according to their former interests.

It should not be forgotten that if any co-owner permits his free miner's certificate to lapse, the title of his associates is not prejudiced, but his interest reverts to the remaining co-owners; provided that said co-owner has not taken advantage of the six months' period of grace allowed for the taking-out of a special free miner's certificate, thus reviving the title to his interest.

Placer-mining Leases.

Leases of unoccupied Crown lands approximately 80 acres in extent may be granted by the Gold Commissioner of the district after location has been made by staking along a "location-line" not more than one-half a mile (2,640 feet) in length. In this line one bend, or change of direction, is permitted. Where a straight line is followed two posts only are necessary—namely, an "initial post" and a "final post." Where there is a change of direction a legal post must be placed to mark the point of the said change. The leasehold is allowed a width not in excess of one-quarter mile (1,320 feet), and the locator, both on his "initial post" and in his notice of intention to apply, which is posted at the office of the Mining Recorder, is required to state how many feet are included in the location to the right and how many feet to the left of the location-line.

That section of the Act dealing with the staking of placer-mining leases follows:—

"105. (1.) For the purpose of locating a placer leasehold, a line to be known as the 'location-line' shall be marked on the ground by placing a legal post at each end, one post to be known as the 'Initial Post' and the other as the 'Final Post.' The direction of the location-line may change at not more than one point throughout its length, and an intermediate legal post shall be placed at the point at which the direction changes. The total length of the location-line, following its change of direction (if any), shall not exceed two thousand six hundred and forty feet.

"(2.) Upon the initial post and the final post shall be written the words 'Initial Post' and 'Final Post' respectively, together with the name of the locator and the date of the location. On the initial post shall also be written the approximate compass-bearing of the final post, and a statement of the number of feet of the leasehold lying on the right and on the left of the location-line, as viewed from the initial post, not exceeding in the aggregate a width of thirteen hundred and twenty feet, thus: 'Direction of Final Post, . feet of this claim lie on the right and feet on the left of the location-line.' In addition to the foregoing, where there is a change of direction in the location-line as marked on the ground, the number '1' shall be written on the initial post; the number '2' shall be written on the intermediate post; and the number '3' shall be written on the final post. There also shall be affixed to the initial post a notice to the following effect, namely: 'Application will be made under the "Placer-mining Act" for a lease of the ground within this location.'

"(3.) The location-line shall at the time of location be marked between the legal posts throughout its length so that it can be distinctly seen; in a timbered locality, by blazing trees and cutting underbrush, and in a locality where there is neither timber nor underbrush, by placing legal posts or monuments of earth or stones not less than

two feet high and not less than two feet in diameter at the base, so that the location-line can be distinctly seen.

"(4.) Where, from the nature or shape of the surface of the ground, it is impracticable to mark the location-line of a leasehold as provided by this section, the leasehold may be located by placing legal posts as witness-posts, as near as possible to the location-line, and writing on each witness-post the distance and compass-bearing of some designated point on the location-line from the witness-post; and the distances and compass-bearing so written on the witness-posts shall be set out in the application for the lease and in any lease granted thereon.

"(5.) The locator shall, within thirty days after the date of the location, post a notice in Form I in the office of the Mining Recorder, which notice shall set out:—

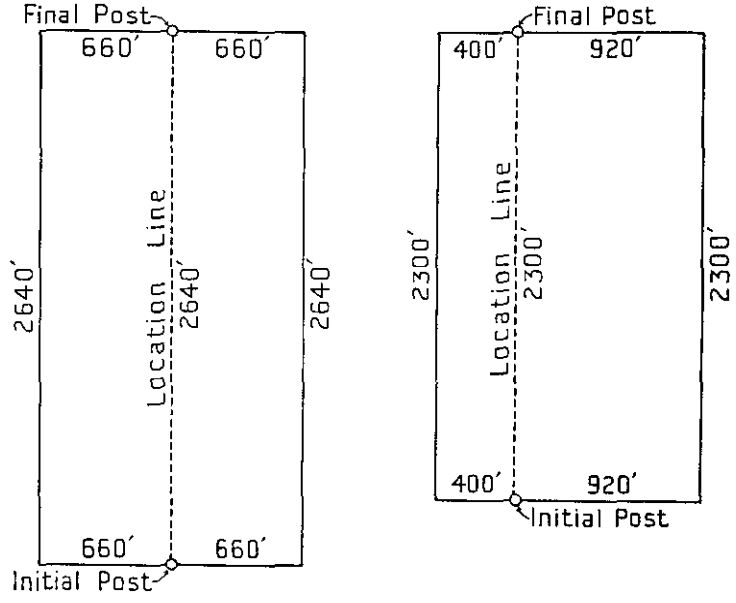
"(*a.*) The name of the intending applicant or each applicant if more than one, and the numbers of their free miners' certificates:

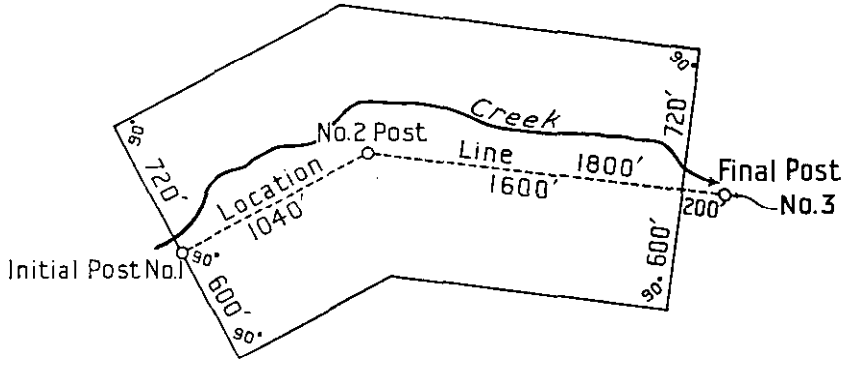
"(*b.*) The date of the location:

"(*c.*) The number of feet lying to the right and left of the location-line, and the approximate area or size of the ground.

EXAMPLES OF VARIOUS METHODS OF LAYING OUT PLACER LEASEHOLDS.

Showing Areas secured with Location-lines of Various Lengths.





The words written on the initial post and final post shall be set out in full in the notice; and as accurate a description as possible of the ground to be acquired shall be given, having special reference to any prior locations it may join, and the general locality of the ground to be acquired."

Another provision is that there must be affixed to the "initial post" and to the "final post" a numbered metal identification tag furnished by the Mining Recorder with each free miner's certificate issued. These tags must be attached to the posts or placed in a container within a cairn, at the time of location.

The annual rental on a placer-mining lease is $30, and the amount to be expended annually on development-work is $250.

Authority also has been given for the granting of special placer-mining leases in locations other than has been defined.

For more detailed information the reader is referred to the complete "Placer-mining Act," which may be obtained from the King's Printer, Victoria, B.C.

Table of Fees, Mineral Act and Placer-mining Act.

Individual free miner's certificate, annual fee	$5.00
Company free miner's certificate (capital $100,000 or less), annual fee	50.00
Company free miner's certificate (capital over $100,000), annual fee	100.00
Recording mineral or placer claim	2.50
Recording certificate of work, mineral claim	2.50
Rerecord of placer claim	2.50
Recording lay-over	2.50
Recording abandonment, mineral claim	10.00
Recording abandonment, placer claim	2.50
Recording any affidavit	2.50
Records in "Records of Conveyances"	2.50
Filing documents, "Mineral Act"	.25
Filing documents, "Placer-mining Act"	1.00
Recording certificate of work, placer-mining lease	2.50
For Crown grant of mineral rights under "Mineral Act"	25.00
For Crown grant of surface rights of mineral claim under "Mineral Act"	10.00
For every lease under "Placer-mining Act"	5.00

Provisional Free Miners' Certificates (Placer) Act.

This Act provides for the issuance of "provisional free miners' certificates" for the locating, recording, representing, and working of placer claims of a size, and according to the terms, and in the manner set out in Parts II. and III. of the "Placer-mining Act." Any person over 18 years of age who has resided in the Province continuously for a period of not less than six months prior to date of his application may, on application accompanied by a statutory declaration or other satisfactory evidence as to his age and period of residence in the Province, obtain from any Gold Commissioner or Mining Recorder a provisional free miner's certificate. No fees are payable in respect of such certificate, and it abolishes the fees payable in respect of the recording or rerecording of placer claims, but no record or rerecord of a claim shall be granted for a longer period than one year without the payment of fees. It should be pointed out that the provisional free miner's certificate does not carry the privileges of an ordinary free miner's certificate as to the staking and working of placer-mining leases or mineral claims.

The Act also gives the Lieutenant-Governor in Council, as a means of unemployment relief, power to make provision for the establishment, equipment, maintenance, and operation of one or more placer training camps at suitable locations, at which unemployed persons who hold provisional free miners' certificates and are British subjects may acquire knowledge and training in the art of placer-mining and may be afforded gainful work in the recovery of minerals by placer-mining. Reserves for the location of such camps shall not exceed one mile in length by one-half mile in width, and the right is given to enter into agreements with private holders under the Act for the development of their ground by means of unemployment relief camps.

Department of Mines Act, 1937.

The " Department of Mines Act " empowers the Minister of Mines to organize the Department or to reorganize it from time to time to meet changing conditions in the mining industry. It provides for examination and certification of assayers; for the conducting of short courses of lectures in practical geology and mineralogy; and for the purchase of ore from the Provincial sampling plants. The said Act also provides for the expenditure of public moneys for the construction, reconstruction, or repair of trails, roads, and bridges to facilitate the exploration of the mineral resources of any mining district, or in the operation and development of any mining property.

Iron and Steel Bounties Act, 1929.

The Lieutenant-Governor in Council may enter into an agreement with any person whereby the Crown will pay to that person, out of the Consolidated Revenue Fund, bounties on pig-iron and steel shapes when manufactured within the Province, as follows:—

(*a.*) In respect of pig-iron manufactured from ore, on the proportion produced from ore mined in the Province, a bounty not to exceed three dollars per ton of two thousand pounds:

(*b.*) In respect of pig-iron manufactured from ore, on the proportion produced from ore mined outside the Province, a bounty not to exceed one dollar and fifty cents per ton of two thousand pounds:

(*c.*) In respect of steel shapes of commercial utility manufactured in the Province, a bounty not to exceed one dollar per ton of two thousand pounds.

Bounty, as on pig-iron under this Act, may be paid upon the molten iron from ore which in the electric furnace, Bessemer or other furnace, enters into the manufacture of steel by the process employed in such furnace; the weight of such iron to be ascertained from the weight of the steel so manufactured.

Bounty on steel shapes under this Act shall be paid only upon such steel shapes as are manufactured in a rolling-mill having a rated productive capacity per annum of at least twenty thousand tons of two thousand pounds per ton.

Metalliferous Mines Regulation Act.

This Act is designed to provide for the safe working of mines by practical regulations which govern the main phases of mining, such as hoisting installations, ropes, shaft and cage equipment, mine examination, transportation systems, electrical installations, use of explosives, approaching abandoned workings, and the connection of adjacent mines.

Shaft-hoists are required to be equipped with overwind devices and approved braking systems, and all hoistmen in charge must have an annual medical examination and certificate testifying their fitness to perform this work. Hoisting-ropes where men are hoisted must have a static factor of safety of at least 10 for depths of 1,000 feet, with an allowable decrease of one for each 500 feet additional depth with a minimum factor of safety of 6. The working-life of a hoisting-rope when men are hoisted or lowered is limited to two years.

Cages must be provided with safety-catches, properly designed covers, and safety-gates where men are hoisted. Safety-catches must be tested at stated intervals.

The manager of the mine or some qualified person appointed by him must make a daily examination of all places in the mine where persons are at work and report the conditions found in regard to safety in a book kept at the mine for that purpose.

All persons handling or using explosives must hold a certificate of competency for blasting. This certificate is issued by the district Inspector of Mines to miners who show by an oral examination that they are qualified to use explosives safely. This certificate may be cancelled for cause.

Where the workings of any mine are approaching any abandoned workings, whether belonging to that mine or to an adjacent mine, the manager of the present workings shall report the circumstance to the Inspector of Mines if the abandoned workings

cannot be examined before the live workings are closer than 300 feet to the abandoned workings, and no work shall be done within this distance until a definite method of approach has been submitted to and approved by the Inspector.

Where it is considered necessary, the Minister of Mines may order a connection to be made and maintained between adjacent mines, and determine the conditions under which such a connection must be maintained.

All electrical installations must comply with the requirements of the "Electrical Energy Inspection Act" of British Columbia.

In addition to the Act and General Rules applicable to all mines, each mine which employs fifty or more men must have a code of Special Rules covering the details of operation at that mine. These Special Rules are drafted by the mining company and its employees and, when approved by the Minister of Mines, have the full force of law.

The Inspectors of Mines in the different districts have discretionary authority on a number of points that may arise in the course of mining operations.

Coal-mines Regulation Act.

This Act, like the "Metalliferous Mines Regulation Act," is designed to provide for the safe working of mines by practical regulations. It is, however, broader in scope than the "Metalliferous Mines Regulation Act" in that it provides for the examination and licensing of coal-mine officials and miners.

Explosives.

Under the provisions of Dominion Order in Council No. 2903, issued July 4th, 1940, no person or company may own or purchase explosives, except under a special permit prescribed and issued under this order. Each purchase of explosives requires a separate permit, except in the case of mining and quarrying operations, in which cases the Provincial Inspector of Mines has authority to issue the explosives purchase permit for one calendar year.

Only the owner of an explosives factory or a licensed magazine may sell explosives, but an exemption is made in the case of any mining company to the extent that such a company may be permitted, on applying for the necessary authority, to resell small quantities of explosives to properly qualified prospectors in their district.

SUMMARY OF ACTS SPECIALLY RELATING TO MINING.

(The complete Acts may be obtained from the King's Printer, Victoria, B.C.)

Mining Licences under the Coal and Petroleum Act.

Any person desiring to prospect for coal, petroleum, or natural gas upon any unsurveyed unreserved lands in which these resources are held by the Crown may acquire a licence to do so over a rectangular block of land not exceeding 640 acres, of which the boundaries shall run due north and south and east and west, and no side shall exceed 80 chains (1 mile) in length. Before entering into possession of the said lands he shall place at the corner of such block a legal stake, or initial post, and shall inscribe thereon his name and the angle represented by such post, thus: "A. B.'s N.E. corner," or as the case may be, and shall post in a conspicuous place upon the said land, and also in the Government office of the land recording district, notice of his intention to apply, as well as publishing the same in the B.C. Gazette and local newspaper once each week for four consecutive weeks. If the area applied for is surveyed no staking is required, but the same procedure with regard to advertising notice of intention to apply is necessary.

The application for said licence shall be in writing, in duplicate, and shall contain the best written description possible, with a diagram of the land sought to be acquired, and shall be accompanied with a fee of $100. The application shall be made to the Commissioner of Lands for the district, within sixty days from date of first publication in B.C. Gazette, and by him forwarded to the Minister of Lands, who will grant such licence—provided no reasons arise to the contrary—for a period not to exceed one year, and at the expiration of the first year an extension of such licence may be granted for a second or third year at a fee of $100.

Where coal is discovered during the existence of licence or within thirty days after expiration, the land held under licence, having been surveyed and licence conditions fulfilled, may be leased for five years at rental of 15 cents an acre, subject to renewals for five successive periods of three years each, renewal fee being $100 for each lease, in addition to annual rental.

Lessees, on showing continuous work has been done and reasonable expenditure made for development, may, after carrying out the provisions of the lease, purchase at $20 per acre where surface is available, or $15 per acre for under-surface rights where surface is not available. Lands under the sea may be purchased at $15 per acre. Provided also that, in addition to the rental or purchase price, there shall be paid to the Government as a royalty 2½ cents a barrel (35 imperial gallons) of crude petroleum raised or gotten from such land. (*See* chapter 175, R.S.B.C. 1936.)

Taxation Act.

A preliminary note is essential to the understanding of this Act. As the law has stood, a Crown-granted mineral claim on which taxes were in arrears for a number of years was offered for sale by the Government at a *tax* sale, with arrears of taxes plus interest and charges and Crown-grant fees as an upset price. If no sale was made the property remained in the hands of the Assessor until desired by some one, when it could only be purchased by tender. It was not open to location under the "Mineral Act" and a prospector had no protection, and to relieve the situation an amending Act was passed.

Under the amended Act such reverted Crown-granted mineral claim may be obtained by any person under a lease for one year upon payment of $25, and a renewal of such lease may be granted upon payment of further $25 for a further period of one year, but no longer. During the period of such lease the lessee has the right to enter, prospect, and mine on such mineral claim, save for coal, petroleum, and natural gas, and during such time the lessee has the option to purchase such Crown-granted mineral claim upon payment of all taxes, costs, and interest which remained due and unpaid on such claim on the date of its forfeiture to the Crown, together with an amount equal to all taxes and interest which, except for its forfeiture to the Crown, would have been

payable in respect thereof from the date of the lease to the date of application for a Crown grant. If, however, the lessee establishes to the satisfaction of the Gold Commissioner that he has expended upon the claim in mining-development work a sum of not less than $200 a year during the continuance of the lease, then the payment of the sum in respect of taxes and penalties from the date of the lease to the date of application for a Crown grant shall not be required. Provision also is made for the grouping of adjoining claims, not exceeding eight in number, and the performing on one of such claims mining-development work for all of the claims.

A person may obtain a lease, or interest in a lease, of eight such claims in the same mining division.

Such leases are not transferable and are subject to the rights any person may already hold to any portion of the surface of such Crown-granted mineral claim.

Taxation of Mines.

Crown-granted mineral claims are subject to a tax of 25 cents per acre. The tax becomes due on April 1st in each year, and if unpaid on the following June 30th is deemed to be delinquent.

All mines, other than coal, are subject to an output tax (payable quarterly) of 2 per cent. on gross value of mineral, less cost of transportation from mine to reduction-works and the cost of treating same at reduction-works or on the mining premises.

Any such mine, not realizing on ore shipments a market value of $5,000 in any one year, is entitled to a refund of the output tax paid.

Coal is subject to a tax of 10 cents per ton of 2,240 lb., except coal shipped to coke-ovens within the Province. Tax payable monthly.

Coke is subject to a tax of 10 cents per ton of 2,240 lb., except in respect of coke produced from coal upon which this tax has already been paid. Tax payable monthly.

Coal land from which coal is being mined (Class A) is taxed at 1 per cent. upon the assessed value, in addition to any other tax.

Unworked coal land, known as "Coal Land, Class B," is subject to a tax of 2 per cent. upon the assessed value.

For further particulars *see* the "Taxation Act," also the "Public Schools Act," which are obtainable from the King's Printer, Victoria, B.C.

ASSAY OFFICE.

BY

J. B. ADAMS.

During the year 1940 there were made by the staff in the Department of Mines Assay Office 4,761 assays or quantitative determinations and 83 analyses; of these the majority were for the Department or for the other departments, for which no fees were received.

The fees collected by the office were as follows:—

Fees for analyses	$20.00
Fees for assaying	71.50
Fees for assayers' examinations	195.00
	$286.50

Determinations and examinations made for other Government departments, for which no fees were collected:—

Attorney-General's Department	$325.00
Agricultural Department	325.00
Board of Health	195.00
Treasury	1,336.00
Forest Branch	5.00
Liquor Board	10.00
Public Works Department	105.00
	$2,301.00

One thousand three hundred and thirty-six lots of gold were received from the Gold Commissioners, who are purchasing amounts up to 2 oz. to aid the prospector in disposing of his gold.

FREE DETERMINATIONS.

In addition to the above quantitative work, 157 qualitative determinations, or tests, were made in connection with the identification and classification of rocks or minerals sent to the Assay Office for a report; for these no fees were charged, as it is the established custom of the Department to examine and test qualitatively, without charge, samples of minerals sent in from any part of the Province, and to give a report on same. This has been done for the purpose of encouraging the search for new or rare minerals and ores, and to assist prospectors and others in the discovery of new mining districts, by enabling them to have determined, free of cost, the nature and probable value of any rock they may find. In making these free determinations, the Department asks that the locality from which the sample was obtained be given by the sender.

EXAMINATIONS FOR ASSAYERS.

The writer has the honour, as Secretary, to submit the Annual Report for the year 1940 of the Board of Examiners for Certificates of Competency and Licence to practise Assaying in British Columbia, as established under the "Department of Mines Act."

One candidate applied for examination on May 6th and passed the examination. Two candidates applied for examination on December 6th and both passed the examination. One candidate applied for exemption under the Act and was granted a certificate.

DEPARTMENT OF MINES SAMPLING PLANT, PRINCE RUPERT, B.C.

BY

JOSEPH T. MANDY AND T. NORTON YOUNGS.

The function, objective, and operation of the sampling plant at Prince Rupert are described in the Annual Report of the Minister of Mines for the years 1938 and 1939.

Increasing use of the plant by prospectors, lessees, small operators, and by some of the larger mining companies developing properties in the Northern district has again been evident during 1940.

A total of 184 shipments was received from 52 different properties, distributed from Vancouver Island in the south to the Portland Canal area in the north.

During the year $15,637.17 was paid by the plant to shippers.

A number of fairly large shipments of good grade ore from the Stewart area has provided funds and encouragement for further work in that section.

Information and results from test shipments from the *Duthie* mine, Smithers, in 1939 and 1940, have been an important factor in assisting this property into comparatively steady production of car-load shipments direct to the smelter, with about ten men employed at the mine and the establishment of a community, with school, of about twenty-five people.

Tonnage and test shipments to the plant by the Conwest Exploration Company during its development of the *Hunter Basin* group near Telkwa have supplied this company with information in its exploratory development-work and furthered direct shipments to the smelter.

It is of interest to note that since the inception of this service in August, 1937, the sampling plant has handled a total of 543 shipments, for which $33,972.58 has been paid to shippers. During the same period, twenty-six shipments have been made by the plant to the smelters, for which $33,856.28 has been received.

The following is a synopsis of the operating details of the plant for the year 1940 from January 1st to December 31st:—

Class of Shipments.	No. of Shipments.	No. of different Properties.	Weight of Shipments.
			Tons.
Tonnage lots	40	16	144.4676
Bulk test lots	117	32	26.8489
Assay lots	27	16	0.0288
Totals	184	52	171.3453

SHIPMENTS FROM SAMPLING PLANT TO SMELTERS.

Number of shipments to smelters	12
Dry tons paid for by smelters	196.5187*
Paid out by plant on Ore Purchasing Account	$15,637.17
Received from smelters	$15,800.21

* Difference between this figure and total weight of shipments received during the year (171.3453 dry tons) is accounted for by carry-over at end of 1939 and end of 1940.

The details of the tonnage, bulk test lots and assay lots, with relative assay and analysis results, follow.

SAMPLING PLANT.

Tonnage Lots.

Lot No.	Property.	Shipper.	Locality.	Dry Tons.	Au	Ag	Cu	Pb	Zn	As	Sb	Fe	S	SiO_2	Bi	Co
					Oz. per Ton.	Oz. per Ton.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
321	D & N group	Nysven, K.	Telkwa	0.6195	0.07	146.10	3.40	*Nil*	1.00	*Nil*	2.00	9.00	3.20	46.30	.....	.....
322	D & N group	Nysven, K.	Telkwa	0.3170	0.08	164.10	3.70	*Nil*	0.60	*Nil*	2.20	9.00	3.20	48.50	.....	.....
329	Dolly Varden	Falconer, T. W.	Alice Arm	1.3595	Trace	504.97	*Nil*	0.10	0.60	*Nil*	*Nil*	7.80	6.50	78.10	.....	.....
342	Dome Mountain	Wilson, R. W.	Smithers	0.8055	1.60	2.50	0.20	2.30	8.50	Trace	*Nil*	10.00	11.80	55.90	.....	.....
327	Dunwell	Rochfort, J. D. O.; Bugnello, A.	Stewart	8.0070	5.00	29.00	0.20	*Nil*	*Nil*	*Nil*	*Nil*	26.80	27.20	40.20	.....	.....
332	Dunwell	Rochfort, J. D. O.; Bugnello, A.	Stewart	4.2230	4.08	20.00	0.40	*Nil*	*Nil*	*Nil*	*Nil*	26.80	25.80	44.70	.....	.....
335	Dunwell	Rochfort, J. D. O.; Bugnello, A.	Stewart	3.0780	4.13	16.60	0.40	*Nil*	*Nil*	*Nil*	*Nil*	20.60	20.50	54.50	.....	.....
343	Dunwell	Rochfort, J. D. O.; Bugnello, A.	Stewart	2.2975	1.64	34.12	0.25	7.70	5.10	0.64	*Nil*	19.80	21.80	35.90	.....	.....
344	Dunwell	Rochfort, J. D. O.; Bugnello, A.	Stewart	2.7035	5.09	20.20	0.05	.....	.....	.....	.....	29.60	30.50	36.70	.....	.....
353	Dunwell	Rochfort, J. D. O.; Bugnello, A.	Stewart	1.8540	0.86	15.58	0.19	2.70	4.30	0.48	.....	17.60	18.10	46.50	.....	.....
379	Dunwell	Rochfort, J. D. O.; Bugnello, A.	Stewart	9.9305	2.32	22.90	3.50	0.70	15.30	0.02	*Nil*	18.10	25.60	30.70	.....	.....
412	Dunwell	Rochfort, J. D. O.; Bugnello, A.	Stewart	8.6740	1.98	18.80	2.50	0.40	18.30		.....	16.80	23.70	32.40	.....	.....
378	Glacier Gulch	Campbell, S. F.; Banta, W.; Loveless, G.	Smithers	0.1755	16.44	7.70	.....	.....	.....	..	.....	4.00	1.70	44.90	15.10	.....
360	Gold Bar	Erickson, A.	Terrace	2.0260	1.21	2.60	0.20	Trace	*Nil*	*Nil*	*Nil*	6.00	2.80	85.30	.....	.....
386	Gold Bar	Erickson, A.	Terrace	3.9080	0.80	2.20	0.15	.....		.....	.....	4.00	1.50	86.30	.....	.....
415	Gold Bar	Erickson, A.	Terrace	2.0725	2.30	2.20	0.20	.....	.....	.....	.	5.80	2.30	84.90		. . .
447	Gold Bar	Erickson, A.	Terrace	0.8003	1.32	2.90	0.20	.....	.....	..	.....	6.20	3.60	82.10	.....	.....
463	Gold Bar	Erickson, A.	Terrace	1.6315	0.90	1.70	0.20	.	.....	.....	.....	4.90	2.90	82.20	.....	
337	Gold Boulder	Haahti, J.	Stewart	1.7540	1.02	0.30	0.15	*Nil*	*Nil*	*Nil*	*Nil*	34.60	22.40	38.10	.. ....	.....
338	Gold Boulder	Haahti, J.	Stewart	7.8070	1.73	1.60	0.50	*Nil*	0.80	*Nil*	*Nil*	26.60	17.50	49.30	.....	.... .
339	Gold Knife	Haahti, J.	Stewart	7.5975	1.14	0.50	0.25	*Nil*	1.80	*Nil*	*Nil*	29.20	18.90	42.70	. . .	.....
316	Golden Eagle	Heenan, D.	Topley	1.0225	0.50	252.40	2.20	19.40	10.00	*Nil*	1.60	8.40	15.10	30.20	.....	.....
354	Golden Eagle	Heenan, D.	Topley	0.8255	0.55	522.00	2.50	18.90	9.40	.....	....	9.90	15.80	26.20	.....	.....
380	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	2.3732	0.36	318.10	1.40	13.80	10.40	0.14	1.10	8.00	13.40	43.20	.....	.....
439	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	1.9035	0.16	190.00	1.00	11.90	6.90	.....	.....	7.40	9.30	47.80	.....	.....
470	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	1.5560	0.12	150.50	0.80	17.20	14.40	. ....	.....	7.50	14.40	28.50	.....	.....
471	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	1.2960	0.09	139.50	0.80	15.90	11.60	.....	.....	6.60	11.60	37.70	.....	.....
494	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	1.0755	0.09	81.10	0.40	11.70	18.60	..	..	8.90	14.40	39.50	.....	.....

SAMPLING PLANT—*Continued.*

Tonnage Lots—Continued.

Lot No.	Property.	Shipper.	Locality.	Dry Tons.	Au	Ag	Cu	Pb	Zn	As	Sb	Fe	S	SiO_2	Bi	Co
					Oz. per Ton.	Oz. per Ton.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
331	Hunter Basin (Conwest Exploration Co.)	Tomlinson, F.	Telkwa	3.1565	1.06	14.60	13.50	*Nil*	Trace	Trace	*Nil*	18.80	9.20	31.30		
404	Hunter Basin (Conwest Exploration Co.)	Tomlinson, F.	Telkwa	3.9799	0.94	21.50	17.00	*Nil*	*Nil*	0.15	*Nil*	21.20	9.80	29.40		
419	Highland Basin (Highland Basin Gold Mine Co.)	Agnew, H.	Smithers	2.4620	1.13	177.60	1.90	22.20	13.50	0.15	1.10	2.60	10.20	39.70		
438	Highland Basin (Highland Basin Gold Mine Co.)	Agnew, H.	Smithers	1.9490	0.93	205.10	2.00	23.10	12.80	Trace	1.10	3.60	10.10	37.70		
479	Hazelton View	Lee, J. T.	Hazelton	7.6635	2.18	0.20	*Nil*	*Nil*	*Nil*	6.60	*Nil*	3.70	0.60	51.20		2.60
416	Mountain Boy	Haahti, J.	Stewart	3.0505	0.10	275.00	2.20	4.90	5.80	Trace	0.40	5.00	2.60	47.80		
456	Red Cliffe	Haywood, H. D.	Stewart	9.8365	3.39	1.60	0.80	4.20	3.20			19.40	18.00	37.90		
467	Red Cliffe	Haywood, H. D.	Stewart	12.0075	2.34	1.60	0.70	5.10	4.80	0.02	*Nil*	18.80	18.90	34.70		
468	Red Cliffe	Haywood, H. D.	Stewart	11.7820	2.30	1.70	0.80	5.70	5.80	0.02	*Nil*	18.60	18.10	34.40		
320	Ruth claim	Payne, T. H.	Alice Arm	4.4085	0.14	127.00	*Nil*	1.50	1.60	0.80	0.30	8.40	7.30	70.90		
345	Ruth claim	Payne, T. H.	Alice Arm	2.0985	0.15	113.20	0.10	1.70	2.80	0.80	0.40	9.60	6.90	69.70		
478	Yankee Boy	Smith, T. A.	Tofino	0.3847	12.43	5.74	0.50			0.48		3.00	0.40	78.90		

Test Lots.

395-T	Anderson	Anderson, P.	Smithers	0.0214	Trace	2.80	6.90	*Nil*	0.10	*Nil*	*Nil*	21.00	17.20	45.00		
330-T	Black Bull	Hagen, W.	Kleanza Mountain	0.0007	0.96	2.00	0.90									
355-T	Black Bull	Hagen, W.	Kleanza Mountain	0.2140	0.78	2.60	Trace	*Nil*	*Nil*	*Nil*	*Nil*	22.80	22.20	52.20		
358-T	Black Bull	Hagen, W.	Kleanza Mountain	0.0965	1.31	3.20	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	26.00	25.80	45.70		
359-T	Black Bull	Hagen, W.	Kleanza Mountain	0.0955	0.385	1.20	Trace	*Nil*	*Nil*	*Nil*	*Nil*	12.10	5.80	76.90		
366-T	Black Bull	Hagen, W.	Kleanza Mountain	0.2382	4.72	9.10	Trace					31.70	34.50	32.60		
367-T	Black Bull	Hagen, W.	Kleanza Mountain	0.0495	0.48	1.10	Trace					6.90	3.20	81.90		
368-T	Black Bull	Hagen, W.	Kleanza Mountain	0.0512	0.03	6.40	0.50	13.10	4.50	*Nil*	*Nil*	4.80	6.20	67.50		
421-T	Black Bull	Hagen, W.	Kleanza Mountain	0.0562	0.06	0.10	0.20									
464-T	Black Bull	Hagen, W.	Kleanza Mountain	0.0527	7.92	17.00	Trace					12.80	10.40	71.60		
465-T	Black Bull	Hagen, W.	Kleanza Mountain	0.0468	0.07	0.30	*Nil*					12.80	9.20	75.10		
466-T	Black Bull	Hagen, W.	Kleanza Mountain	0.3115	3.70	7.50	*Nil*					30.60	27.40	42.40		
485-T	Black Bull	Hagen, W.	Kleanza Mountain	0.8980	2.84	0.40	Trace					24.60	22.80	49.60		
486-T	Black Bull	Hagen, W.	Kleanza Mountain	0.1780	3.80	7.00	Trace					27.40	27.60	45.30		
449-T	Bucket M.C.	Bartholomew, L.	Topley	0.0200	0.02	4.80	1.10	14.00	8.40			6.20	8.80	53.10		
449-T	Bucket M.C.	Bartholomew, L.	Topley	0.0050	0.01	2.20	0.40	7.00	3.20			6.20	4.20	54.20		

472-T	Caledonia group	MacDonald, H.	Dorreen	0.0244	Trace	21.00	0.30	14.70	11.70	0.48	0.15	33.80	27.20	4.80		
432-T	Canadian Girl	Stephens, M. M.	Pitt Island	0.0557	0.46	0.30	Trace					14.60	14.10	60.00		
433-T	Canadian Girl	Stephens, M. M.	Pitt Island	0.1597	1.32	1.00	Trace					13.00	11.90	66.50		
315-T	Columario	Bissonnette, J.	Usk	0.0165	0.96	1.00										
313-T	Coronado	Orm, H.	Smithers	0.0525	0.39	36.00	0.25	16.50	13.60	8.25	0.20	12.60	15.50	21.00		
314-T	Coronado	Orm, H.	Smithers	0.0438	0.10	9.70	0.10	7.90	8.80	7.30	*Nil*	10.60	11.20	37.10		
487-T	Coronado	Orm, H.	Smithers	0.0647	0.22	42.00	0.40	19.80	14.80	4.70	0.20	9.60	14.70	28.60		
356-T	Coronado	Griffin, F.	Smithers	0.0690	0.21	50.60	1.00	34.50	17.10	2.00	0.30	9.00	18.60	11.40		
357-T	Coronado	Griffin, F.	Smithers	0.0082	0.92	5.50	0.10	Trace	11.60	18.00	Trace	28.80	18.90	19.30		
376-T	Coronado	Griffin, F.	Smithers	0.0393	1.13	7.70	1.20	*Nil*	13.00	20.50	Trace	24.20	18.80	18.80		
377-T	Coronado	Griffin, F.	Smithers	0.0612	0.26	32.80	1.00	22.20	22.70	2.70	0.20	9.60	19.90	17.10		
333-T	Dome Mountain	Wilson, R. W.	Smithers	1.0905	3.45	3.90	Trace	1.40	4.00	*Nil*	Trace	13.00	14.20	59.00		
334-T	Dome Mountain	Wilson, R. W.	Smithers	0.5670	2.40	3.20	Trace	1.40	4.00	Trace	*Nil*	11.00	13.80	54.40		
434-T	Dunwell	Samis & Co.	Stewart	0.5505	4.10	10.80	0.50	*Nil*	1.40			19.60	19.90	51.10		
373-T	Duthie	Herman, J. J.	Smithers	0.5215	0.30	260.10	0.70	32.50	13.00	3.00	0.80	11.20	18.50	12.10		
374-T	Duthie	Herman, J. J.	Smithers	0.2721	0.26	100.70	0.40	18.80	12.30	4.10	0.40	16.10	17.30	19.70		
411-T	Duthie	Herman, J. J.	Smithers	0.0493	0.36	69.40	0.20	16.30	13.10	3.80	0.20	9.30	14.40	27.40		
391-T	Duthie	McEwen, J. L.	Smithers	0.4871	0.16	200.00	Trace	51.10	15.60			4.70	18.70	2.90		
392-T	Duthie	McEwen, J. L.	Smithers	0.6737	0.26	252.00	0.20	39.60	16.50			7.80	18.40	5.90		
393-T	Duthie	McEwen, J. L.	Smithers	0.2285	0.28	254.00	0.70	26.60	16.70			8.80	18.20	16.30		
394-T	Duthie	McEwen, J. L.	Smithers	0.2871	0.22	57.40	0.80	51.00	9.20			6.50	15.30	7.90		
442-T	Duthie	McEwen, J. L.	Smithers	0.0605	0.10	119.30	0.40	55.70	4.70	0.75		5.00	9.40	10.50		
443 T	Duthie	McEwen, J. L.	Smithers	0.0540	0.28	80.00	0.50	28.10	19.60	2.50		10.80	20.00	9.90		
444-T	Duthie	McEwen, J. L.	Smithers	0.0693	0.32	93.00	0.30	39.50	9.90	3.00		8.80	16.50	15.00		
445-T	Duthie	McEwen, J. L.	Smithers	0.0585	0.27	138.40	0.40	26.00	15.40	4.10		9.80	16.50	19.40		
446-T	Duthie	McEwen, J. L.	Smithers	0.0609	0.22	174.50	0.40	37.60	16.90	1.50		8.40	18.30	7.50		
488-T	Duthie	McEwen, J. L.	Smithers	0.0492	0.24	34.00	0.30	24.30	19.90	1.50	0.10	15.20	20.90	10.90		
489-T	Duthie	McEwen, J. L.	Smithers	0.0577	0.26	151.00	0.60	16.80	18.30	1.80	0.30	9.60	15.60	27.40		
490-T	Duthie	McEwen, J. L.	Smithers	0.0547	0.20	161.00	0.50	25.20	17.00	1.30	0.30	8.40	15.30	20.10		
491-T	Duthie	McEwen, J. L.	Smithers	0.0597	0.26	159.00	0.30	33.10	14.00	0.70	0.20	9.60	15.80	16.10		
369-T	Eklund	Eklund, K.	Anyox	0.0350	0.20	0.40										
328-T	Gardner Canal	Dumas, H.	Gardner Canal	0.0073	0.10	Trace										
383-T	Glacier Gulch	Banta, W.; Loveless, G.; Campbell, S. F.	Smithers	0.0272	28.32	7.80									15.10	
323-T	Gold Drop	J. Morin	Stewart	0.0283	5.28	14.70										
361-T	Golden Eagle	Tompkins, E.	Topley	0.3125	0.19	244.80	1.10	22.60	17.30	Trace	0.80	4.10	15.40	30.80		
362-T	Golden Eagle	Tompkins, E.	Topley	0.2442	0.30	311.70	1.50	10.60	10.20	0.20	1.20	8.30	15.30	45.50		
363-T	Golden Eagle	Tompkins, E.	Topley	0.0557	0.81	235.80	0.60	3.00	1.60	0.10	*Nil*	11.00	10.80	57.60		
381-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.0582	0.09	229.30	1.30	21.40	18.60			5.60	16.80	29.60		
382-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.0018	0.02	79.10	4.20	5.70	7.50							
384-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.5065	0.35	204.60	0.90	7.70	6.10	0.10	0.50	8.10	9.90	56.00		
385-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.2670	0.44	195.50	0.60	5.20	4.70	0.10	0.40	8.60	9.30	61.00		
387-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.3030	0.22	106.00	0.30	2.30	2.60	0.08	0.35	7.60	7.40	68.90		
388-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.1787	0.09	206.70	1.00	16.70	2.80	0.10	0.35	6.60	8.10	52.10		

SAMPLING PLANT—*Continued.*

Test Lots—Continued.

Lot No.	Property.	Shipper.	Locality.	Dry Tons.	Au	Ag	Cu	Pb	Zn	As	Sb	Fe	S	SiO_2	Bi	Co
					Oz. per Ton.	Oz. per Ton.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
389-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.5811	0.39	183.60	0.60	7.40	4.20	0.07	0.60	7.00	8.60	60.40		
396-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.5477	0.22	121.70	0.40	7.80	4.30			6.50	7.80	64.70		
397-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.1944	0.28	230.00	0.40	4.80	8.30			8.80	11.70	42.50		
398-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.2030	0.22	256.30	1.20	13.40	11.60			7.50	13.60	38.00		
399-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.1099	0.24	153.70	0.30	3.80	3.50			7.10	7.50	67.30		
400-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.0313	0.08	40.50	0.20	0.90	1.20			4.50	2.40	71.60		
401-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.0199	0.04	41.20	Trace	0.50	1.10			4.10	1.80	65.50		
402 T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.4189	0.28	138.60	0.50	5.90	2.30			6.90	6.60	67.40		
403-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.8870	0.16	230.00	1.20	13.50	3.90			7.80	9.20	51.00		
406-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.6025	0.16	98.00	0.35	5.00	1 90	Trace	0.20	6.00	5.70	70.00		
407-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.0740	0.24	332.00	0.18	30.50	15.40	1.60	1.00	7.30	16.90	15.70		
408-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.0572	0.15	71.50	0.20	7.30	12.80	2.70	0.30	7.10	12.90	39.00		
409-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.0348	0.25	98.00	0.40	14.90	15.30	2.30	0.40	8.70	15.70	28.90		
410-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.0577	0.27	134.00	0.25	51.80	3.40	2.70	0.40	6.50	11.40	9.00		
420-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.4340	0.28	126.90	0.60	5.00	2 20			5.90	5.90	68.80		
428-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.2550	0.25	329.00	1.70	13.80	3.80			7.60	10.20	53.70		
429-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.0409	0.21	256.00	1.30	14.30	7.60			7.60	11.30	42.70		
430-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.8875	0.17	274.00	1.60	14.70	9.00			8.80	13.10	38.60		
431-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	1.5330	0.22	195.00	0.90	10.30	6.20			6.60	8.90	58.20		
435-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	2.3160	0.17	239.00	1.40	14.00	8 40			7.80	10.50	44.60		
436-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.1837	0.23	192.00	0.40	4.40	5.00			8.60	8.10	49.60		
452-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.2262	0.10	125.00	0.60	10.50	9.20			8.20	13.70	30.00		
453-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.6043	0.15	160.00	0.80	11.70	15.30	0.10	0.40	8.20	10.50	41.60		
454-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.1075	0.16	133.00	0.50	5.50	3.40	Trace	0.30	6.80	6.00	54.20		
455-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	1.1005	0.30	206.00	1.00	9.80	4 20	0.15	0.60	9.40	10.60	51.80		
461-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.1802	0.08	66.00	0.40	5.60	10.90			6.70	9.50	43.80		
462-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.9820	0.13	108.00	0.70	9.30	13.30			7.60	12.70	38.50		
480-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	1.5560	0.12	150.50	0.80	17.20	14.40			7.50	14.40	28.50		
481-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.0550	0.10	80.00	0.40	3.60	16.00			5.00	10.30	54.00		
482-T	Golden Eagle	Bannert, E.; Tompkins, E.	Topley	0.2930	0.13	136.00	0.40	32.00	5 50			4.00	8.80	40.80		
483-T	Golden Eagle	Heenan, D.	Topley	0.0522	0.16	124.50	0.61	11.30	8.40			8.20	12.00	50.10		
484-T	Golden Eagle	Heenan, D.	Topley	0.0403	0.17	156.50	0.87	13.10	10.00			7.80	12.80	44.10		
437-T	Golden Eagle	Heenan, Mrs. D.	Topley	0.1836	0.16	195.40	0.80	8.00	12.50			6.80	12.90	41.20		
375-T	Harvey property	Herman, J. J.	Smithers	0 0155	0.04	80.20	7.30	0.30	0.90	Trace	0.30	5.60	3.80	59.30		
427-T	Lorraine property	Messner, B. F.	Smithers	0.0214	0.12	130.00	1.10	31.50	14.30	Trace	0.50	14.60	19.10	7.50		
492-T	Mamie property	McEwen, J. L.	Smithers	0.0338	1.00	4.40	0.60	*Nil*	10.80	18.60	*Nil*	20.40	17.10	22.40		
417-T	Newman claim	Campbell, E. F.	Babine Lake	0.2592	0.10	35.00	0.70	31.90	19.20	1.40	0.10	8.60	18.70	4.60		

423-T	Napco group	Rochfort, J. D. O.	Stewart	0.0026	147.30	50.00										
473-T	Orieal group	Wold, C.	Topley	0.0353	0.07	151.00	0.70	14.30	0.90	Trace	0.60	11.20	2.10	38.30		
451-T	Red Bird	Kylling, L.	Topley	0.0368	0.01	30.00	16.40					4.80	4.80	44.60		
469-T	Red Cliffe	Haywood, H. D.	Stewart	0.0886	2.35	1.60	0.85	5.90	5.90	0.02	*Nil*	19.70	20.30	32.60		
413-T	Red Top	McLean, F.	Cedarvale	0.0095	0.24	2.10	Trace	Trace	*Nil*	12.40	0.40	21.40	14.40	47.10		
414-T	Red Top	McLean, F.	Cedarvale	0.0035	0.22	1.80				11.50	0.40	21.40	13.10	51.30		
418-T	Solomon mine	Garland, J.	Kalum Lake	0.1462	Trace	Trace										
440-T	Takla Landing	Shaede, E. R.	Takla Lake	0.0101	17.50											
316-T	Three Star group	Kylling, L.	Topley	0.0102	0.12	1.90	*Nil*	1.30	2.10	0.10	*Nil*	10.80	7.40	63.90		
317-T	Three Star group	Kylling, L.	Topley	0.0323	0.27	3.70	0.30	3.80	2.60	0.15	Trace	11.20	8.50	59.00		
318-T	Three Star group	Kylling, L.	Topley	0.0413	0.44	3.90	0.40	*Nil*	0.80	0.20	*Nil*	17.60	9.20	46.40		
319-T	Three Star group	Kylling, L.	Topley	0.0462	0.56	22.60	4.20	0.40	12.10	0.30	0.10	16.60	22.80	39.10		
418-T	Tide Lake Gold	Campbell, Mrs. J. L.	Stewart	0.3710	71.10	106.11	0.09	2.70	16.00	0.40		3.20	10.20	41.50		
351-T	Tillicum claim	Goodspeed, J. A.	Port Hardy	0.2115	3.03	6.00	0.30	6.00	6.00	Trace	*Nil*	23.20	20.30	35.80		
371-T	Tillicum claim	Goodspeed, J. A.	Port Hardy	0.0070	0.30	2.00	0.10	2.30	4.20	*Nil*	*Nil*	10.60	10.70	63.90		
372-T	Tillicum claim	Goodspeed, J. A.	Port Hardy	0.1000	1.33	4.00	0.30	5.70	6.40	*Nil*	*Nil*	23.70	21.50	34.80		
364-T	Toulon claim	Orm, H.	Usk	0.0318	0.15	3.80	2.90	*Nil*	Trace	*Nil*	0.50	6.00	1.60	82.40		
365-T	Toulon claim	Orm, H.	Usk	0.0462	0.24	2.30	3.50	*Nil*	Trace	*Nil*	*Nil*	7.20	2.40	80.20		
422-T	Victor group	Cooper, S. G.; Duncan, W. W.	Usk	0.1230	2.73	1.60	2.30					23.90	22.00	48.10		
347-T	Zymoetz group	Turner, T.	Copper River	0.0540	0.22	1.80	0.10	*Nil*	*Nil*	*Nil*	*Nil*	15.80	13.10	58.00		
348-T	Zymoetz group	Turner, T.	Copper River	0.0542	0.21	3.00	0.50	5.40	8.90	*Nil*	*Nil*	10.00	11.80	52.00		

Assay Lots.

324-X	Bhutze Rapids	Davies, S.	Prince Rupert	0.0030	0.08	2.40										
325-X	Bhutze Rapids	Davies, S.	Prince Rupert	0.0025	0.04	5.50										
326-X	Bhutze Rapids	Davies, S.	Prince Rupert	0.0010	0.02	0.20										
424-X	Chickamin group	Harrison, C. V.	White Sail Lake	0.0025	0.03	0.10	0.80									
336-X	Dawson	Dawson, J.	Porcher Island	0.0018	Trace	Trace										
349-X	Dorreen	Jones, J.	Dorreen	0.0010	0.22	0.20										
493-X	Hazelton View	Lee, J. T.	Hazelton	0.0010	5.10	9.30				5.90						2.50
370-X	Houston	Kelly, C.	Houston	0.0010	0.04	5.60	10.20	*Nil*	0.90	*Nil*	*Nil*	38.10	11.70	9.50		
405-X	Highland Basin	Agnew, H. W.	Smithers	0.0005	1.22	152.00	1.80	24.90	13.90	Trace	1.10	5.00	10.70	38.40		
425-X	Lorne Creek	Jones, J.	Lorne Creek	0.0005	0.04	0.10										
426-X	Lorne Creek	Jones, J.	Lorne Creek	0.0022	0.02	0.10										
474-X	Oral M (Stewart Canal Gold Mines, Ltd.)	Haahti, J.	Stewart	0.0010	0.13	0.47	1.00					6.20	2.80	69.30		
475-X	Oral M (Stewart Canal Gold Mines, Ltd.)	Haahti, J.	Stewart	0.0010	0.06	0.35	0.25					4.60	1.20	74.80		
476-X	Oral M (Stewart Canal Gold Mines, Ltd.)	Haahti, J.	Stewart	0.0010	0.98	3.20	6.90					25.20	19.30	33.00		
477-X	Oral M (Stewart Canal Gold Mines, Ltd.)	Haahti, J.	Stewart	0.0010	0.30	2.30	6.50					16.00	11.60	46.30		

SAMPLING PLANT—*Continued.*

Assay Lots—Continued.

Lot No.	Property.	Shipper.	Locality.	Dry Tons.	Au	Ag	Cu	Pb	Zn	As	Sb	Fe	S	SiO_2	Bi	Co
					Oz. per Ton.	Oz. per Ton.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
312-X	Orieal group	Wold, C.	Topley	0.0015	0.02	46.60	0.20									
333-X	Orieal group	Wold, C.	Topley	0.0008	Trace	35.80		10.00	18.60							
340-X	Rocky Bay claim	Cunningham, J. W.	Sinclair Mills	0.0005	0.01	Trace	9.80									
341-X	Rocky Bay claim	Cunningham, J. W.	Sinclair Mills	0.0015	Trace	Trace	2.70									
457-X	Ritchie	Ritchie, A. D.	Anyox	*			Trace									
458-X	Ritchie	Ritchie, A. D.	Anyox	*			Trace									
459-X	Ritchie	Ritchie, A. D.	Anyox	*			Trace									
460-X	Ritchie	Ritchie, A. D.	Anyox	*			Trace									
350-X	Thompson	Thompson, N. G.	Prince George	0.0010	13.05											
352-X	Tillicum claim	Goodspeed, J. A.	Port Hardy	0.0010	0.14	1.30										
441-X	Victor group	Duncan, W. W.	Usk	0.0010	3.50	7.00	0.25									
390-X	Wold	Wold, C.	Topley	0.0005	Trace	4.40		Trace	5.20							

* Water sample.

GOLD COMMISSIONERS AND MINING RECORDERS.

The following list shows the Gold Commissioners and Mining Recorders of the Province:—

Mining Division.	Location of Office.	Gold Commissioner.	Mining Recorder.	Sub-recorder.
Atlin	Atlin	H. F. Glassey	H. F. Glassey	J. G. B. Egdell.
Sub-office	Telegraph Creek			R. W. Meldram.
Sub-office	Squaw Creek			Mrs. F. Muncaster.
Sub-office	Tulsequah			W. J. Nelson.
Stikine	Telegraph Creek	R. W. Meldram	R. W. Meldram	
Sub-office	Boundary via Telegraph Creek			J. V. Rees.
Sub-office	Burns Lake			John Brown.
Sub-office	McDame Creek			W. R. Henry.
Sub-office	Fort St. John			F. W. Beatton.
Sub-office	Dease Lake Townsite			R. J. Campbell.
Skeena	Prince Rupert	N. A. Watt	N. A. Watt	A. J. Lancaster.
Sub-office	Kitimat			Chas. E. Moore.
Sub-office	Copper River			L. G. Skinner.
Sub-office	Terrace			B. E. Munkley.
Sub-office	Stewart (Portland Canal)			A. Fisher.
Sub-office	Rosswood			Oscar Olander.
Sub-office	Kimsquit			Percy Gadsden.
Sub-office	Ocean Falls			Geo. H. Hill.
Sub-office	Bella Coola			C. A. Brynildsen.
Sub-office	Queen Charlotte			C. N. Ramsay.
Portland Canal	Stewart	N. A. Watt (at Prince Rupert)	A. Fisher	
Sub-office	Anyox			
Sub-office	Alice Arm			Mrs. L. Cummings.
Omineca	Smithers	H. B. Campbell	H. B. Campbell	
Sub-office	Fort Grahame			J. Copeland.
Sub-office	Bella Coola			C. A. Brynildsen.
Sub-office	Finlay Forks			A. MacKinnon.
Sub-office	Fort St. James			Norman Henry.
Sub-office	Manson Creek			W. B. Steele.
Sub-office	Telkwa			T. J. Thorp.
Sub-office	Prince George			Geo. Milburn.
Sub-office	Kimsquit			Percy Gadsden.
Sub-office	Fort St. John			F. W. Beatton.
Sub-office	Whitewater (Finlay River) via Fort Grahame			James Ware.
Sub-office	Cedarvale			John Thompson.
Sub-office	Terrace			B. E. Munkley.
Sub-office	Fort Fraser			J. D. Moore.
Sub-office	Vanderhoof			Geo. Ogsdon.
Sub-office	Pacific			J. C. McCubbin.
Sub-office	Hazelton			L. I. Olson.
Sub-office	Burns Lake			John Brown.
Sub-office	Usk			Jas. L. Bethurem.
Sub-office	Takla Landing			Mrs. Wilhemina Aiken.
Sub-office	Copper River			L. G. Skinner.
Peace River	Fort St. John	H. B. Campbell (at Smithers)	F. W. Beatton	
Sub-office	Fort Nelson			H. J. Engleson.
Sub-office	Prince George			G. Milburn.
Sub-office	Finlay Forks			A. MacKinnon.
Sub-office	Hudson Hope			
Sub-office	Pouce Coupe			M. S. Morrell.
Cariboo	Barkerville	H. A. Bryant	H. A. Bryant	
Sub-office	Quesnel			E. C. Lunn.
Sub-office	Prince George			Geo. Milburn.
Sub-office	McBride			M. B. McBrayne.
Sub-office	Fort McLeod			J. E. McIntyre.

GOLD COMMISSIONERS AND MINING RECORDERS—*Continued.*

Mining Division.	Location of Office.	Gold Commissioner.	Mining Recorder.	Sub-recorder.
Quesnel	Williams Lake	L. C. Maclure	L. C. Maclure	
Sub-office	Quesnel			E. C. Lunn.
Sub-office	Likely			A. Morrison.
Sub-office	Barkerville			H. A. Bryant.
Sub-office	Horsefly			A. B. Campbell.
Sub-office	Keithley Creek			Wm. Lowden.
Sub-office	Hanceville			E. R. Hance.
Clinton	Clinton	R. J. A. Dorrell	R. J. A. Dorrell	
Sub-office	Williams Lake			L. C. Maclure.
Sub-office	Haylmore via Gold Bridge			W. Haylmore.
Sub-office	Hanceville			E. R. Hance.
Kamloops	Kamloops	P. H. McCurrach	P. H. McCurrach	
Sub-office	Chu Chua			George M. Fennell.
Sub-office	Vavenby			H. Finley.
Sub-office	Salmon Arm			A. P. Suckling.
Ashcroft	Ashcroft	P. H. McCurrach (at Kamloops)	W. F. Knowlton	
Sub office	Lytton			H. Elgie.
Nicola	Merritt	P. H. McCurrach (at Kamloops)	R. G. Couper	
Similkameen	Princeton	Chas. Nichols	Chas. Nichols	
Sub-office	Hedley			John M. Deane.
Vernon	Vernon	R. M. McGusty	R. M. McGusty	F. H. C. Wilson.
Sub-office	Kelowna			C. W. Dickson.
Greenwood	Greenwood	L. A. Dodd	L. A. Dodd	
Sub-office	Kettle Valley			G. B. Gane.
Sub-office	Beaverdell			T. W. Clarke.
Sub-office	Oliver			W. H. Laird.
Sub-office	Grand Forks			E. Harrison.
Osoyoos	Penticton	W. R. Dewdney	W. R. Dewdney	
Sub-office	Keremeos			L. S. Coleman.
Sub-office	Hedley			John M. Deane.
Sub-office	Oliver			W. H. Laird.
Golden	Golden	A. W. Anderson	A. W. Anderson	C. J. Dainard.
Windermere	Windermere	A. W. Anderson (at Golden)	A. M. Chisholm	
Fort Steele	Cranbrook	W. G. Taylor	W. G. Taylor	A. A. Robertson.
Sub-office	Fernie			D. H. Bruce.
Ainsworth	Kaslo	Claude MacDonald	W. M. H. Dunn	
Sub-office	Trout Lake			
Sub-office	Poplar			A. Robb.
Slocan	New Denver	Claude MacDonald (at Kaslo)	Frank Broughton	
Sub-office	Slocan			W. E. Graham.
Nelson	Nelson	J. Cartmel	J. Cartmel	J. A. Stewart.
Sub-office	Creston			R. H. Hassard.
Sub-office	Ymir			S. Curwen.
Sub-office	Salmo			M. C. Donaldson.
Arrow Lake	Nakusp	J. Cartmel (at Nelson)	N. A. Herridge	
Revelstoke	Revelstoke	Wynfield Maxwell	W. Maxwell	
Lardeau	Beaton	Wynfield Maxwell (at Revelstoke)	C. A. McElroy	
Sub-office	Trout Lake			
Trail Creek	Rossland	E. L. Hedley	E. L. Hedley	
Nanaimo	Nanaimo	C. L. Monroe	C. L. Monroe	W. H. Cochrane.
Sub-office	Ladysmith			
Sub-office	Alert Bay			Jos. Howe.
Sub-office	Vananda			Henry Carter.
Sub-office	Shoal Bay, Thurlow P.O.			C. C. Thompson.
Sub-office	Granite Bay			H. J. Bull.
Sub-office	Cumberland			A. G. Freeze.
Sub-office	Zeballos			Geo. Nicholson.
Sub-office	Alberni			W. H. Boothroyd.
Alberni	Alberni	W. H. Boothroyd	W. H. Boothroyd	Russell Sneddon.

GOLD COMMISSIONERS AND MINING RECORDERS—*Continued.*

Mining Division.	Location of Office.	Gold Commissioner.	Mining Recorder.	Sub-recorder.
Clayoquot	Tofino	W. H. Boothroyd (at Alberni)	C. W. Sharp	
Sub-office	Zeballos			Geo. Nicholson.
Sub-office	Alberni			W. H. Boothroyd.
Sub-office	Nanaimo			C. L. Monroe.
Quatsino	Quatsino	W. H. Boothroyd (at Alberni)	Ed. Evenson	
Victoria	Victoria	R. J. Steenson	P. J. Mulcahy	
New Westminster	New Westminster	A. P. Grant	A. B. Gray	
Sub-office	Chilliwack			C. N. Tingle.
Sub-office	Lytton			H. Elgie.
Sub-office	Hope			Mrs. B. Valair.
Vancouver	Vancouver	A. S. Tyrer	A. E. Wilson	
Sub-office	Alert Bay			Jos. Howe.
Sub-office	Powell River			J. P. Scarlett.
Sub-office	Shoal Bay, Thurlow P.O.			C. C. Thompson.
Lillooet	Lillooet	L. J. Price	L. J. Price	G. H. Beley.
Sub-office	Haylmore via Gold Bridge			W. Haylmore.
Sub-office	Taseko River			

GOLD COMMISSIONER'S AND MINING RECORDER'S OFFICE STATISTICS, 1940.

Mining Divisions.	Free Miners' Certificates.			Lode-mining.					Placer-mining.				Revenue.		Total.
	Individual.	Company.	Special.	Mineral Claims recorded.	Certificates of Work.	Bills of Sale, etc.	Certificates of Improvement.	Leases of Reverted Crown-granted Mineral Claims.	Placer Claims recorded.	Placer Leases granted.	Certificates of Work, Placer Leases.	Bills of Sale, etc.	Free Miners' Certificates.	General.	Mining Division and Provincial.
Atlin	355	5	1	71	84	29	.....	4	46	65	213	166	$1,954.00	$12,637.25	$14,591.25
Portland Canal	95	2	.....	41	322	1	.....	.....	.....	.....	.....	.....	880.25	1,367.50	2,247.75
Skeena	99	.....	.....	29	55	7	.....	24	3	.....	.....	.....	420.00	1,085.75	1,505.75
Stikine	145	1	1	25	65	4	.....	.....	7	41	41	56	772.25	3,323.00	4,095.25
Cariboo	306	13	6	103	584	48	47	7	33	104	281	99	2,710.00	22,518.75	25,228.75
Omineca	400	9	2	307	386	61	4	7	18	15	121	13	2,578.75	10,162.57	12,741.32
Peace River	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	35.00	35.00
Quesnel	410	.....	1	95	205	26	16	.....	43	22	184	34	1,259.25	8,857.00	10,116.25
Kamloops	228	1	1	167	148	26	4	12	17	15	4	14	1,053.25	2,089.00	3,142.25
Nicola	26	1	.....	34	50	3	.....	.....	.....	.....	.....	.....	222.50	237.25	459.75
Vernon	149	1	4	34	76	2	.....	.....	13	13	30	17	785.75	1,968.00	2,753.75
Greenwood	191	2	1	106	236	6	1	8	6	2	16	3	1,063.00	2,149.25	3,212.25
Osoyoos	106	2	3	78	84	2	.....	.....	2	.....	.....	.....	664.00	433.50	1,097.50
Similkameen	225	3	5	99	267	23	13	.....	7	10	36	10	1,363.50	3,432.50	4,796.00
Ainsworth	99	3	2	81	160	8	.....	15	2	.....	.....	.....	789.75	1,182.50	1,972.25
Arrow Lake	12	.....	.....	.....	4	.....	.....	.....	1	.....	.....	.....	51.50	15.25	66.75
Fort Steele	163	4	2	220	117	34	.....	.....	4	17	57	32	1,019.75	4,132.25	5,143.00
Golden	30	1	.....	6	24	4	.....	.....	.....	.....	2	.....	282.50	150.50	433.00
Lardeau	41	.....	.....	58	52	3	.....	.....	.....	.....	.....	.....	178.00	282.75	460.75
Nelson	316	11	2	133	413	25	6	6	36	12	14	.....	2,276.75	3,283.75	5,560.50
Revelstoke	68	.....	1	70	62	2	8	8	1	2	11	10	276.00	1,009.50	1,285.50
Slocan	55	2	.....	31	97	6	.....	.....	.....	.....	.....	.....	409.75	374.75	784.50
Trail Creek	110	3	3	31	18	1	.....	9	.....	.....	1	.....	808.00	492.50	1,300.50
Windermere	27	1	.....	3	57	3	4	.....	.....	.....	.....	.....	175.75	213.50	389.25
Alberni	102	2	.....	132	102	21	40	4	.....	.....	2	.....	540.00	2,626.00	3,166.00
Ashcroft	79	.....	1	70	78	6	.....	.....	11	9	16	5	544.50	1,939.00	2,483.50
Clayoquot	220	10	3	365	873	231	40	4	3	4	9	4	2,005.50	4,401.71	6,407.21
Clinton	40	1	.....	20	75	6	.....	.....	12	1	14	2	287.25	984.25	1,271.50
Lillooet	240	14	10	242	613	41	32	.....	8	4	12	3	2,428.00	4,259.85	6,687.85
Nanaimo	90	1	.....	96	89	38	.....	5	.....	5	.....	1	422.00	825.50	1,247.50
New Westminster	199	4	1	188	260	17	40	2	10	2	14	4	1,267.50	4,032.25	5,299.75
Quatsino	40	.....	.....	56	21	8	.....	.....	.....	.....	.....	.....	192.50	245.50	438.00
Vancouver	1,013	81	20	72	151	21	.....	7	.....	.....	1	.....	11,133.75	739.25	11,873.00
Victoria	250	10	6	98	46	7	.....	1	5	9	23	7	1,872.50	1,852.50	3,725.00
Totals	5,929	188	76	3,161	5,864	720	255	123	288	353	1,102	480	$42,687.75	$103,339.38	$146,018.13

PROGRESS NOTES.

The Progress Notes on the mining industry are compiled from information supplied by the Inspectors of Mines and the Bureau of Economics and Statistics, through the courtesy of the property-owners and also from information obtained by the officers of the Mineralogical Staff in the course of their field-work. The Registrar of Companies and Superintendent of Brokers have also supplied information through their respective offices.

LODE-GOLD DEPOSITS.

TAKU RIVER AREA.

TULSEQUAH.

Polaris-Taku Mining Co., Ltd. Company office, 807 Lonsdale Building, Duluth, Minnesota, U.S.A.; mine office, Tulsequah, B.C.; E. C. Congdon, President; Harvie A. Garver, Secretary; Walter B. Congdon, Treasurer; F. H. McPherson, Manager; W. F. Gowans, Mine Superintendent. Capital: 10,000 preferred shares, $100 par; 20,000 common shares, $1 par; issued—10,000 preferred, 12,200 common.

The property is located on the Tulsequah River, about 6 miles from its junction with the Taku River. The mine is reached by boat and aeroplane in summer and by aeroplane only in winter. Development during the year consisted of 521 feet of shaft sinking, 8,463 feet of crosscutting, 4,650 feet of raising and drifting, 18,533 feet of diamond-drilling, and 714 feet of churn-drilling. Production of 80,364 tons of ore yielded 23,000 oz. of gold.

A three-compartment shaft was sunk from the *Polaris* level. Levels were driven at 150 feet, 300 feet, and 450 feet. Active development is proceeding on each of these levels. An additional Diesel-driven generator, 500 horse-power, was installed in the power-house. A set of rolls was installed in the mill. A crew of 154 men was employed.

[Reference: Annual Report, 1936, Part B.]

UNUK RIVER AREA.

MacKay Gold Mines, Ltd.—Nothing was done on this property during the year.

PORTLAND CANAL AREA.

SALMON RIVER.

Silbak Premier Mines, Ltd. Company office, Royal Bank Building, Vancouver, B.C.; mine office, Premier, B.C.; H. A. Guess, President; J. C. Emison, Treasurer; G. A. Brockington, Secretary; Bert F. Smith, Manager; J. G. Pearcey, Mine Superintendent. Capital: 3,000,000 shares, $1 par; issued, 2,500,000. The property of this company is located in the Salmon River valley, about 14 miles from Stewart. During the past year development consisted of 1,674 feet of crosscutting, 13,445 feet of drifting, 148 feet of winzing, 4,326 feet of raising, and 49,044 feet of diamond-drilling. Most of the development was concentrated on No. 5 level. The mine worked 313 days and produced 171,504 tons of ore, from which were recovered 37,000 oz. of gold and 612,000 oz. of silver. An average crew of 330 men was employed.

Buena Vista Mining Co., Ltd. Company office, Trail, B.C.; mine office, Stewart, B.C.; M. M. O'Brien, President; E. G. Randall, Secretary-Treasurer; D. S. Campbell, Manager; E. James, Mine Superintendent. This company owns and operates the *Big Missouri* mine, located in the Salmon River valley, 18 miles from Stewart. Development during the year consisted of 434 feet of crosscutting, 954 feet of drifting, and 2,823 feet of raising. Most of the development was toward the

north section of the mine, where new stopes have been opened. There was a suspension of mill operations and curtailment of mining owing to power shortage in the spring. An average crew of 111 men was employed.

Salmon Gold Mines, Ltd.—Company office, 800 Hall Building, Vancouver, B.C.; E. C. Morris, President; A. B. McDonald, Secretary. Capital: 3,000,000 shares, 50 cents par; issued, 1,200,000. Nothing was done at this property during the year. The Consolidated Mining and Smelting Company have dropped their option.

Tide Lake Gold Group.—This group, owned by Mrs. J. L. Campbell, of Hyder, Alaska, is located on the west side of Tide Lake. During the year high-grade ore was mined and a small shipment made to the sampling plant. Work was continued on the property by two lessees.

[Reference: Annual Reports, 1927, 1930, 1939.]

Portland Group.—During the season this property was optioned by Silbak Premier Mines, Ltd., and some exploratory stripping, open-cutting, and 150 feet of drifting in an adit was done. The option was relinquished.

[Reference: Annual Report, 1934, Part B.]

Bear River.

Stewart Canal Gold Mines, Ltd. Company office, 603 Central Building, Victoria, B.C. Capital: 3,000,000 shares, 50 cents par. J. Haathi, Manager. The property is located opposite the town of Stewart, across the Bear River. This year a small Gibson mill was installed on the bank of the river and a tram built between the showing and the mill. Power was furnished by a Pelton wheel located at the mill. Operations were suspended at the end of the year owing to lack of water for power.

Red Cliff Group.—H. D. Haywood has an option on this property. From surface open-cut work, 34 tons of ore was shipped which yielded 82 oz. of gold and 36 oz. of silver.

Dunwell Mines, Ltd. (Ben Ali Claim). In the early part of the year, J. D. O. Rochfort and A. Bugnello, lessees, continued mining of shipping-grade ore from the *Ben Ali* claim. Several shipments were made to the sampling plant by these lessees. Later in the year, Samis & Company, Vancouver, entered into an agreement with the Dunwell company for acquisition of the property. The Rochfort-Bugnello lease was cancelled and two representatives of the Samis company took over the extraction of shipping-grade ore. From this operation only one shipment of 0.5505 ton had been made when work ceased in the autumn.

Marmot River.

Gold Drop Group. This group, about 2 miles from the mouth of Marmot River, is owned by Joseph Morrin and Albert Casey, of Hyder, Alaska, and Stewart, B.C. Work was continued by the owners with a view to extracting shipping-grade ore. One shipment of 0.0283 ton was made to the sampling plant.

[Reference: Annual Report, 1939, Crusader Mines, Ltd.]

ALICE ARM AREA.

Nass River.

At the head of Willoughby Creek, a tributary of the White River draining into the Nass River south of Meziadin Lake, prospecting of a mineralized zone carrying low-grade gold values in places was done by Owen McFadden for H. C. Bennet and partners, of Stewart.

The area is about 14 miles by road and 55 miles by trail from Stewart.

Anyox.

Gold Leaf Claim. The owner of the claim, James Flynn, of Anyox, carried out crosscutting for the purpose of intersecting the beach vein. A fault striking north 48 degrees west and dipping 67 degrees south-west intersects the vein at the portal. The crosscut has advanced 75 feet to the face. At the face a

lamprophyre dyke 16 inches in width is intersected and is adjoined on each side by veins 4 to 10 inches in width. Assays of samples of these did not return any gold values.

[Reference: Annual Report, 1938, Part B.]

NORTHERN COAST.

PRINCESS ROYAL ISLAND.

Surf Inlet Consolidated Gold Mines, Ltd.

Company office, 507 Stock Exchange Building, Vancouver, B.C.; mine office, Surf Inlet, B.C.; Robert L. Reed, President; Lindsey Hooper, Treasurer; J. C. Ralston, Secretary; Angus McLeod, Manager. Capital: 3,000,000 shares, 50 cents par; issued, 2,672,855. The property of this company is comprised of the *Pugsley* and *Surf* mines, located at the head of Surf Inlet. Both mines were operated during the year and development-work totalled 262 feet of crosscutting, 3,906 feet of drifting, 1,151 feet of raising, and 13,006 feet of diamond-drilling. The mine worked 365 days. From 39,437 tons of ore mined and milled there were produced 14,903 oz. of gold and 5,224 oz. of silver. An average crew of ninety-five men was employed.

KHUTZE INLET.

Hunter Group.

The property is located on the north branch of the Khutze River, about 13 miles from the beach. Nine men were engaged in sinking an inclined shaft. The shaft was sunk 150 feet and 50-foot drifts were driven from each side of it.

PORCHER ISLAND.

The Porcher Island Mines, Limited, did not operate during the year.

TERRACE-HAZELTON AREA.

TERRACE-KITSUMGALLUM LAKE SECTION.

Oakwood Claim.

This claim, owned by J. Hamer, Terrace, B.C., is located half a mile north of the town of Terrace at about altitude 500 feet. The showings consist of small, isolated, and discontinuous areas of pyritized and hybridized hornblende-schist inclusions, with some quartz stringers and lenses, in granodiorite of the Coast Range batholith. Some stripping and open-cutting was done on these, but nothing of importance was uncovered.

Gold Bar Claim.

This claim, owned by Axel Erickson, of Terrace, B.C., is located on the west side of Kitsumgallum Lake, about 3 miles from its southerly end. The ground covered by this claim was formerly occupied by the Kalum Lake Mines, Limited, and was restaked by the present owner in 1938.

The continuation of the vein has been stripped for a distance of 60 feet in a southwesterly direction from the lake-shore. Some open-cutting was also done in this section. From this work, 10.4383 tons of selected ore, in five separate lots, was shipped to the sampling plant.

The property was examined, sampled, and mapped with the objective of determining the possibility of selectively mining shipping ore. A map and assay results covering this examination may be obtained for a small charge upon application to the Department of Mines, Victoria, B.C.

[Reference: Annual Reports of the Minister of Mines, 1924, 1925, 1926, 1927, 1928, and 1930. See also *Portland:* 1922, 1923, 1924, 1925, and 1927.]

ZYMOETZ RIVER.

Omineca Gold Quartz Mining Co., Ltd.

Company office, 785 Dunsmuir Street, Vancouver, B.C.; Fred M. Wells, President; C. Hansen, Superintendent. The property of this company is located on the north bank of the Zymoetz River, 14 miles from Copper City. The adit being driven to intersect the veins at depth was continued during the summer. This is now in about 1,400 feet. A crew of eleven men was employed.

Zymoetz Group. This group of eight mineral claims is owned by T. Turner, of Terrace, B.C., and is situated at the base of the southerly slope of Kleanza ("O.K.") Mountain, between elevation 250 and 600 feet. The claims lie along and adjacent to the north side of the Zymoetz River, about 2 miles east of its confluence with the Skeena River. It is reached by a branch motor-road, suitable for light motor-cars, which leaves the Terrace–Usk Highway on the north end of the Zymoetz River Bridge.

Some further work was done in the lower adit in which the vein was intersected at 60 feet from the portal. At this locality, the mineral deposit consists of an irregularly reticulated quartz replacement from 1 to 3 feet in width, well mineralized with pyrite and sphalerite with some galena and chalcopyrite in altered hornblende-schist.

In order to ascertain the possible localization of gold values and the possible occurrence of shipping-grade ore, the following samples were taken:—

A sample from the lower adit of the deposit exposed in the face for a width of from 1 to 3 feet assayed: Gold, 0.28 oz. per ton; silver, 0.6 oz. per ton; copper, 0.1 per cent.; lead, *nil;* zinc, 4.3 per cent.; silica, 60.9 per cent.

A sample of selected sphalerite and galena mineralization from a small dump at the portal of the lower adit assayed: Gold, trace; silver, 5.2 oz. per ton; lead, 16.6 per cent.; zinc, 24 per cent.

A sample of selected pyrite and chalcopyrite mineralization from the small dump at the portal of the lower adit assayed: Gold, 0.26 oz. per ton; silver, 0.5 oz. per ton; copper, 0.45 per cent.; silica, 47.4 per cent.

[Reference: Annual Report, 1938, Part B.]

Black Bull Group. This group of eight claims is owned by Wm. Hagen, of Terrace, B.C., and is situated on the west side of Kleanza Mountain. It is reached by trail extending for about 1½ miles south-easterly from the Copper River Bridge to the cabin at about altitude 3,500 feet.

During the year, work was continued on the *Gem No. 1* mineral claim. This consisted of some stripping and open-cutting. The adit was also extended in a northerly direction through the lamprophyre dyke and the vein picked up on the north side of this dyke. The vein was then drifted on to the face of the adit, which at the time of the examination was 106 feet from the portal. The workings were mapped and sampled for the purpose of determining the possibility of sorting and cobbing a shipping-grade ore. Maps covering the details of the workings on the *Gem No. 1* and the *Bluebird No. 3* mineral claims and also one covering the trail leading to this property may be obtained for a small charge upon application to the Department of Mines, Victoria, B.C.

During the year the owner shipped to the sampling plant thirteen small lots of ore, totalling 2.2888 tons.

USK.

Nicholson Creek Mining Corporation. Company office, 300 Insurance Building, Seattle, Washington; British Columbia office, 602 Hastings Street, Vancouver, B.C.; R. K. Young, President; W. A. Schwalbe, Secretary-Treasurer. Capital: 5,000,000 shares, 1 cent par. T. J. Shenton, Superintendent. The corporation owns a group of claims on the south side of Nicholson Creek, 5 miles northward from Usk Station on the Canadian National Railways. Additional development-work during the year consisted of 195 feet of drifting, 95 feet of raising, and 63 feet of crosscutting. A crew of five men was employed.

Victor Group. This group of claims covering ground formerly held by the Columario Consolidated Gold Mines, Ltd., was staked in 1937 by W. W. Duncan, of Usk, and S. C. Cooper, of Terrace. The claims are between 200 and 4,200 feet elevation on the westerly slope of Kleanza Mountain and are reached by motor-road from Usk for 3.3 miles; thence go-devil trail for 1.7 miles to the *Columario* camp at 1,700 feet elevation; thence a good pack-horse trail for 2 miles to the main showings at 4,000 feet elevation. Work was continued on this property with the view to extracting shipping-grade ore. During the year, one test shipment totalling 0.1230 ton and one assay lot were shipped to the sampling plant at Prince Rupert.

Grotto Group. This group of twelve claims is owned by J. Bell, A. M. Bethurem, G. Alger, and R. L. Brash, of Usk. It is located in the valley of Hardscrabble Creek, about 2 miles south-westerly from Pitman, on the Canadian National Railway.

During the year exploration on the upper and lower showings was continued by the Canadian Explorations, Ltd., Royal Bank Building, Vancouver, B.C., with one man employed. A cut was also taken out on No. 1 vein in front of and 6½ feet below the floor of No. 1 adit.

In order to ascertain the possibility of shipping-grade ore being uncovered by the new working, the following samples were taken and assayed as follows:—

Poes mineral claim, No. 2 cut. A sample across No. 7 vein, 12 inches wide, well mineralized with galena, sphalerite, and chalcopyrite in a quartz gangue, assayed: Gold, 0.01 oz. per ton; silver, 5.5 oz. per ton; copper, 1.5 per cent.; lead, 15.4 per cent.; zinc, 8.4 per cent.

Poes mineral claim, No. 7 vein, No. 4 cut. A sample across a width of 15 inches, well mineralized with sphalerite, galena, and chalcopyrite, assayed: Gold, 0.02 oz. per ton; silver, 6.1 oz. per ton; copper, 4.5 per cent.; lead, 6.8 per cent.; zinc, 8.6 per cent.

No. 1 vein. A sample in face of cut, 6½ feet below the portal of No. 1 adit portal across a width of 3 feet, well mineralized with pyrite in a quartz gangue, assayed: Gold, 0.06 oz. per ton; silver, 0.9 oz. per ton; copper, 0.05 per cent.

The workings on the *Poes* mineral claim were mapped; a copy is procurable for a small charge on application to the Department of Mines, Victoria, B.C.

[Reference: Annual Report, 1937, Part C.]

HAZELTON TO HOUSTON AREA.

SMITHERS.

Smithers Mines, Ltd. This organization is operating the old *Duthie* mine under lease. The property is located 9 miles by road from Smithers. Development during the year consisted of 100 feet of drifting. From a stope off a sub-level above the 500 level and from surface open-cuts, 242 tons of ore was mined. This tonnage yielded 52 oz. of gold, 42,592 oz. of silver, as well as lead and zinc. A crew of eight men was employed.

La Marr Gold Mines, Ltd.—B. F. Messner, owner. The property of this company is at the head of Driftwood Creek. Six hundred feet of trenching and 100 feet of tunnelling constituted development for the year.

Hyland Basin Group. This property is owned by the estate of Messrs. Cain & King and is situated at the head of Cronin Creek in the Babine Mountains. Small shipments of selected ore have been made from time to time during former years, and considerable exploration had been carried out in numerous open-cuts and two adits.

During 1940, the property was optioned by H. W. Agnew and associates, of Vancouver, with the objective of extracting shipping-grade ore. Three men were employed in this work. During the season, two lots comprising 2.462 and 1.949 dry tons of carefully sorted and cobbed ore were shipped to the sampling plant.

[Reference: Annual Reports, 1926 and 1935.]

TELKWA.

Babine Gold Mines, Ltd. (Free Gold Group). Head office, c/o W. R. Wilson & Sons, 744 Hastings Street, Vancouver, B.C. This is a private company. Authorized capital: 50,000 shares, $1 par value, all issued. The company holds an option on sixteen claims, including the *Free Gold* group, owned by Alex Chisholm, of Smithers, and situated on Dome Mountain, about 26 miles easterly by motor-road and winter-road from the town of Telkwa, on the Canadian National Railway.

The property is reached from Telkwa (altitude 1,677 feet) by motor-road, a distance of 9 miles, from whence a sleigh-road extends for about 17 miles to the camp at 4,160 feet altitude.

Nicola-Princeton District.

Colliery.	Quantity of Explosives used in Pounds.	Tonnage for Mine.	Total No. of Shots fired.	Tons of Coal per Pound of Explosive used.	Average Pounds of Explosive per Shot fired.
Coalmont Colliery	6,000	22,449	9,000	3.74	0.66
Middlesboro Colliery	6,150	24,618	9,075	4.00	0.67
Granby Cons. M.S. & P. Co., Ltd.	20,350	81,780	34,500	4.01	0.58
Princeton Tulameen Coal Co.	4,000	23,595	8,000	5.89	0.50
Hat Creek Colliery	200	344	250	1.72	0.80
Totals for district	36,700	152,786	60,825	4.17	0.60

Northern District.

Bulkley Valley Colliery	1,500	5,488	2,700	3.66	0.55
Aveling Colliery	200	336	193	1.68	1.03
Totals for district	1,700	5,824	2,893	3.42	0.58

East Kootenay District.

Coal Creek Colliery	2	123,963	4	61,981.50	0.50
Michel Colliery	54,172	652,555	67,493	12.04	0.80
Totals for district	54,174	776,518	67,497	14.14	0.80

Peace River District.

Gething Colliery	200	40	400	0.2	0.50
Totals for Province	369,049	1,667,827	511,505	4.52	0.72

Quantities of Different Explosives used.

	Lb.
Monobel of different grades	319,741
Permissible rock-powder	49,308
Total	369,049

The following is a list of explosives permitted for use in coal mines by the Honourable the Minister of Mines, under the provisions of section 101, General Rule 11, clause (*i*), "Coal-mines Regulation Act":—

Polar Monobel No. 4.
Polar Monobel No. 6.
Polar Monobel No. 7.
Polar Monobel No. 14.
Polar CXL-ite No. 2.

MACHINE-MINED COAL.

During the year 1940, mining-machines produced approximately 890,000 tons or 53.4 per cent. of the total.

The following table gives the district, number of machines, how driven, and type of machine used:—

District.	Number driven by		Type of Machine used.	
	Electricity.	Compressed Air.	Chain Undercutting.	Puncher Type.
Vancouver Island	....	28	20	8
Nicola-Princeton	....	25	....	25
East Kootenay	....	31	3	28
Totals	....	84	23	61

Cow Mountain.

Cariboo Rainbow Mines, Incorporated.—This company did some development-work on the old *Cariboo Central* ground, which lies between Stout's Gulch and Lowhee Creek. It is reported that a system of small but closely-spaced quartz veins were revealed by this work.

Proserpine Mountain.

Privateer Mine, Ltd. Under this name the Privateer Mine, Limited, did considerable exploratory work on the holdings of the Proserpine Gold Mines, Limited. The old *Warspite* tunnel was extended to pass under the bottom of the *Warspite* shaft. Drifting and crosscutting combined amounted to 328 feet. About 36,000 feet of stripping was done on the surface; 11,750 feet by hand and the remainder by bulldozer. Five trenches were made, going north-westerly about parallel to the formation for the full length of the property, and two were made across these at right angles. Thirty men were employed under the direction of B. G. Campbell.

[Reference: Annual Report, 1934, Part C.]

Cunningham Creek.

Cariboo Hudson Gold Mines, Ltd.—This property was not active, but under contract, about 19,000 lineal feet of stripping and trenching was done on the *Hudson* and *Shasta* claims.

Cariboo Rainbow Mines, Incorporated.—This company has taken an option on the *Cariboo Thompson* ground and did about 600 feet of deep trenching. This was all to the north-west of the underground workings. The same company also did some surface-stripping on their ground which adjoins the *Cariboo Hudson* to the south-east.

Simlock Creek.

Alladin Group.—Dean Cochrane, of Barkerville, is the owner of this group and did a small amount of surface-stripping.

P.D. Group.—P. McDonnel, of Wells, is the owner of this group and employed two men to do some surface-stripping.

Yanks Peak.

Amparo Mining Co., Ltd. Company office, Royal Bank Building, Vancouver, B.C.; Howard W. White, President; J. B. Knaebel, Managing Director; W. S. Jordon, Secretary-Treasurer. Capital: 10,000 shares, $1 par; issued, 1,000 shares. This company did not work on the *Midas* group, on Yanks Peak, and towards the latter part of the year the machinery and equipment were removed from the property.

[Reference: Annual Report, 1934, Part C.]

Snowshoe Gold Mines, Ltd. Company office, 785 Dunsmuir Street, Vancouver, B.C.; Fred M. Wells, President and Manager; E. T. Gook, Secretary-Treasurer. Capital: 3,000,000 shares, 50 cents par; issued, 1,656,475. On the *Jane* group at the head of Little Snowshoe Creek, a sub-level was driven 365 feet. After this development, operations ceased for the year.

[Reference: Annual Report, 1929.]

CHILCOTIN AREA.

Perkins Peak.

Mountain Boss Group.—It is reported that J. Killas, owner of this group, employed several men to do additional drifting and to mine high-grade ore from some of the old workings.

[Reference: Annual Report, 1938, Part F.]

Denain Creek.

Claims of J. Mossi.—These claims are located on Denain Creek, tributary of Taseko River. A 25-foot tunnel was driven and, in addition, some open-cut work was done.

BRIDGE RIVER AREA.

CADWALLADER CREEK.

Pioneer Gold Mines of B.C., Ltd.

Company office, 470 Granville Street, Vancouver, B.C.; mine office, Pioneer Mines P.O., B.C.; Victor Spencer, President; A. E. Bull, Secretary-Treasurer; H. T. James, Managing Director; E. F. Emmons, General Superintendent. Capital: 2,500,000 shares, $1 par; issued, 1,751,750. This company owns the *Pioneer* mine on Cadwallader Creek, a tributary of Bridge River, 52 miles by road from Bridge River Station on the P.G.E. Railway. The mine is serviced by three shafts: No. 2 shaft extends from the surface to the 2,600 level, No. 3 from the surface to the 1,400 level, and No. 4 from the 2,400 level to the 2,900 level.

Operations were resumed on March 8th after a five-month period of inactivity which resulted from the strike called on October 7th, 1939. It was not possible to bring the mine crew up to normal strength until July, because of necessary repair-work. Readily available reserves, however, made it possible to put the mill on a normal production basis almost at once after the strike ended, and a total of 77,585 tons was treated during the ten months of operation. Development-work was largely confined to the 2,700 and 2,800 levels, where drifts are being advanced westerly on the main vein. Work is also being rushed on a system of raises from the lower levels in order to improve ventilation on these levels. Total development-work amounted to 1,423 feet of drifting and 1,439 feet of raising.

Production amounted to 88,942 tons mined and 77,585 tons milled, yielding 43,000 oz. of gold and 7,300 oz. of silver. A crew averaging 190 men was employed.

Holland Gold Mines, Ltd.

Company office, 1403 Dominion Bank Building, Vancouver, B.C.; mine office, Pioneer, B.C.; Dr. G. H. Worthington, President; F. W. Holland, Manager. Capital: 1,000,000 shares, 50 cents par; issued, 422,457. The property of this company is located above the *Pioneer* mine, on the lower slopes of Mount Fergusson. At the beginning of the year a diamond-drill hole was collared at the face of the exploratory adit, then 1,050 feet from the portal. This hole was drilled flat for 427 feet, bearing north 31 degrees east, and was terminated in badly-crushed ground. The drift was advanced 230 feet along the line of this hole when operations were suspended on June 1st. Since then no further work has been done.

Bralorne Mines, Ltd.

Company office, 555 Burrard Street, Vancouver, B.C.; mine office, Bralorne, B.C.; Austin C. Taylor, President; R. H. Grace, Secretary-Treasurer; D. N. Matheson, Manager; E. J. Chenowith, General Superintendent; G. H. Wilson, Mine Superintendent; C. M. Manning, Assistant Mine Superintendent. Capital: 1,250,000 shares, no par value; issued, 1,247,000.

Development-work done totalled 17,623 feet of drifting and crosscutting, 1,031 feet of raising, 958 feet of shaft sinking, 1,242 feet of shaft transfer raises, and 25,058 feet of diamond-drilling. This development-work and underground work generally was largely confined to the *Crown* and *Empire* sections of the mine. Considerable development-work was done on the 2,000 level of the *Crown* mine, where the drive was timed to connect with a similar drive from the *Empire* side before the new *Empire* hoist was ready for operation. Concurrently with the main 2,000 level advance, drifts were advanced along the "51," "73," and "75" veins at this horizon. The shaft pocket was also cut at the 1,800 level horizon. On the *Empire* side the shaft was completed to the 2,000 level, this pocket cut, and the connecting drive to the *Crown* started by the end of the year. Some work was also done in the *King* and *Blackbird* mines, but the former was closed before the end of the year. The *Coronation* mine has not been active for five years.

A new camp was established below the 300-level portal of the *Empire* mine. A new and much larger entrance has been made to the *Empire* shaft slightly below the old 300 portal; and a new station, 26 feet high, has been cut. The majority of the mine supplies will henceforth be taken into the mine through this portal, thus eliminating the long underground haul to the *Crown* and *Empire* shafts on the 800 level. The increased depth of the *Empire* shaft made it necessary to install a much larger hoist.

The hoist installed is an Ingersoll-Rand, drum size, 60 by 72 inches, powered by a 350-horse-power slip-ring induction motor. It is completely equipped with safety devices and is housed in a new, well-protected, and spacious hoist-room. Aluminium two-deck man skips have also been installed. Preparations have been made for the installation of two large surface fans to exhaust from the *Crown* and *Empire* mines. The only other additions to the surface plant are a dry, bunk-house, and mess-house at the *Bradian* camp.

To simplify the problem of supervision the mine has been divided into four sections and a foreman appointed to take charge of each section. The average number of men employed was approximately 400.

B.R.X. (1935) Consolidated Mines, Ltd. During the summer of 1940 a geological survey was made both on the surface and underground. About 10,000 cubic feet of stripping was done on the *Gloria* and *Top* and *Mexico* vein systems. Underground, No. 2 shaft was dewatered to the 250-foot level and an examination of the vein made at this point. The old *California* workings, although badly caved in places, were opened for inspection. Considerable retimbering was done on the main drift. The hoist and hoisting equipment were removed from No. 2 shaft to the north end of the workings.

Golden Ledge Syndicate.—Company office, 503 Rogers Building, Vancouver, B.C.; J. S. Harrison, President. Capital: 5,000 shares, $50 par. This company maintained a watchman at its property but did no mining. At the end of the year, however, preparations were being made to sink a shaft from the bottom level.

Bonanza Basin.

Robson Group. This group is owned by the J. G. Mining Company, of which J. G. Robson and J. A. Anderson are the principals. It is reached by 25 miles of automobile-road from Minto to the junction of Relay Creek with Tyaughton Creek; thence by 10 miles of horse-trail to its location on Bonanza Creek, another tributary of Tyaughton Creek. It is located at an elevation of about 6,000 feet.

The Bralorne Mines, Limited, held an examining option for six weeks during 1940. In this time they repaired an old adit 70 feet long and extended it 130 feet; faced a second adit, which was later advanced 40 feet by Anderson; did considerable open-cut work and completed 700 feet of diamond-drilling. They also completed the trail to the property, prospected the surface thoroughly, surveyed the original claims, and staked others.

Tommy Creek.

Bristol Mines, Ltd. Company office, 425 Howe Street, Vancouver, B.C.; W. Spence, Secretary; A. E. Stromberg, Managing Director. Capital: 50,000 shares, *no par value. The property is on Tommy Creek, about 4 miles south* of the highway, at a point 12 miles east of Minto. Underground work during the year consisted of 100 feet of drifting, 45 feet of crosscutting, and 20 feet of winzing. It was decided that the results of this work merited the installation of equipment, so work was commenced on a road over which the equipment could be hauled. A bridge was built across Bridge River, and the initial rock-work completed on the north side of Tommy Creek along the proposed route.

Tyaughton Creek.

Lucky Strike Gold Mines, Ltd.—A small amount of underground work was done at this property before operations were suspended and the equipment removed.

Eldorado Basin.

Eldorado Property. This property is located in Eldorado Basin, at the headwaters of Eldorado Creek, northern tributary to Gun Creek. Gun Creek is a tributary of Bridge River. Eldorado Basin is at an elevation of 6,000 feet. The owner, Grant White, has optioned the property to the Britannia Mining and *Smelting Company, Limited. During the summer months the Britannia Company con-*

ducted exploration work with a crew of twelve men under the supervision of E. C. Roper. In addition to extensive surface cuts, over 300 feet of tunnelling and considerable diamond-drilling were completed.

Lower Bridge River.

Minto Gold Mines, Ltd. (N.P.L.). Company office, 102–6 Pacific Building, 744 Hastings Street West, Vancouver, B.C.; J. Miller, Secretary. Capital: 3,000,000 shares, no par value. Messrs. N. Evans and W. Davidson obtained a lease on this company's mine. In the months of April, May, and June they carried out mining and milling operations with a crew of men ranging up to fifty in number. The ore treated was from pillars and from broken material in a few of the upper stopes. Some of this broken material had caved from the hanging-wall side of the stopes. It is reported that about 4,000 tons of ore was treated. The shaft was also dewatered to the 600 level, and it was the intention to drive to the vein on the 500 level, but the project was abandoned before this plan could be carried out.

Congress Mines, Ltd. Messrs. P. Schultz, of Pioneer, and E. Laurentzen, of Minto, obtained an option on part of the holdings of this company lying to the north of the old underground workings. They employed a small crew of men and did considerable open-cut work on several showings which were discovered during the life of the option. They now have made other arrangements with the company.

Lillooet Area.

Grange Consolidated Mines, Ltd.—Company office, 1351 Broadway West, Vancouver, B.C.; mine office, Kelly Lake, B.C. The only work done at the property of this company consisted of underground maintenance-work.

Watson Bar Creek.

Claims of W. Trimble. These claims are located at the head of the North Fork of Watson Bar Creek, and lie about 10 miles west of the Big Bar ferry crossing on the Fraser River, about 40 miles north of Lillooet. Trimble has been searching for the source of high-grade float since 1914 and has done considerable tunnelling and other prospect work on the claims, carrying on as usual during the past year.

Ashcroft-Kamloops Area.

Vidette Gold Mines, Ltd. Company office, 404 Pacific Building, Vancouver, B.C.; mine office, Savona, B.C.; C. E. Smythe, President; G. F. H. Long, Secretary-Treasurer; R. Avison, Mine Manager. Capital: 2,000,000 shares, no par value; issued, 1,104,568. The company operates the *Vidette* mine, 33 miles by road north of the highway. The mine road leaves the highway at a point 5 miles west of Savona. The drive, started last year to cross under Vidette Lake to the *Dexheimer* zone, was completed under the supervision of R. Avison, and a small amount of drifting and raising was done on the zone. As further funds were not available and arrangements could not be made for further financing, this work had to be discontinued. The mine was finally abandoned and the plant and equipment put up for sale.

[Reference: Annual Report, 1936, Part F.]

Hamilton Creek Gold Mines, Ltd.—It is understood that A. Galloway, of Kamloops, one of the principals of this company, had a small amount of surface trenching done on the company's property near Vidette Lake.

Curtis Mine. This was formerly known as the *Telluric* mine and is located about 15 miles east of Vidette Lake. D. B. Sterrett, of Kamloops, reported his intention to employ about three men to explore for and to mine high-grade ore from this property.

Iron Cap Mine. Douglas B. Sterrett, Superintendent. This property is located close to the Kamloops–Ashcroft Highway, 5 miles west of Kamloops. An inclined shaft has been sunk for 75 feet on a vein which contains gold-copper mineralization. A gas-engine provides power for hoisting. Operations ceased in August.

SIMILKAMEEN RIVER AREA.

HEDLEY.

Kelowna Exploration Co., Ltd. Company office, Room 2402, 19 Rector Street, New York, N.Y.; mine office, Hedley, B.C.; W. Adams Kissam, Chairman; Sewell T. Tyng, President; John W. Mercer, Treasurer; O. P. Ebeling, Secretary; W. C. Douglass, Mine Manager. This is a private company, operating the *Nickel Plate* mine at Hedley. The underground haulage, storage, and loading facilities at the top of the main haulage winze were considerably improved during the year. Development consisted of 4,602 feet of crosscutting and drifting, 60 feet of winzing, and 380 feet of raising. A total of 82,660 tons of ore was milled, yielding 5,591 tons of concentrates. A crew of 179 men was employed at the mine.

Hedley Mascot Gold Mines, Ltd. Company office, 1132 Marine Building, Vancouver, B.C.; mine office, Hedley, B.C.; Wendell B. Farris, President; V. J. Creeden, Secretary; W. S. Charlton, Treasurer; C. W. S. Tremaine, General Superintendent. Capital: 3,000,000 shares, $1 par; issued, 2,264,130. The property of this company is located 1 mile north of Hedley. A raise has been driven to connect the 4,300 level with the 4,800 level. From the raise exploratory development-work has been done at intermediate levels. Ore from the 4,300 level is raised by surface aerial tram from the portal of this level to one portal of the 4,800 level. On the 4,800 level the ore is transported to the main portal. At this main portal is located the top terminal of the main surface aerial tramway to the mill.

During the past year a cyanide plant has been installed to operate in conjunction with the flotation-mill. Several buildings have been constructed for use as offices, shops, and storage-room.

Development during the year consisted of 423 feet of crosscutting, 1,330 feet of drifting, 1,788 feet of raising, and 17,070 feet of diamond-drilling. A total of 6,115 tons of concentrates yielded 22,819 oz. of gold and 2,829 oz. of silver. An average crew of 133 men was employed.

Canty Gold Mines (Hedley), Ltd. Company office, 1132 Marine Building, Vancouver, B.C.; mine office, Hedley, B.C.; Wendell B. Farris, President; V. J. Creeden, Secretary; W. S. Charlton, Treasurer; R. H. Stewart, Managing Director; Charles Bishop, Mine Superintendent. Capital: 3,000,000 shares, $1 par; issued, 2,172,788. The property of this company is about 2 miles east of the *Nickel Plate* mine. During the past season the mine was dewatered. Work of exploratory nature was confined largely to the No. 1 drift level.

Ore from the *Canty* was treated in the *Mascot* mill. To permit haulage by truck it was necessary to improve the road from the *Canty* to a point above the *Mascot* mine. From this point the ore was transferred by a short aerial tram to the top terminal of the *Mascot* tramway.

TULAMEEN.

Grasshopper Mine. Lloyd Kissick, Superintendent. This company operates the property known generally as the "Rabbitt Group," located 8 miles from the town of Tulameen, on the west bank of the Tulameen River. The property is accessible by good road from Tulameen. The property was located by the Rabbitt Bros. in 1938. Several truck-loads of selected ore were mined from the surface and shipped during that year. The property was optioned and mining machinery was installed. During 1939 and 1940 two adits were driven on the vein for distances of 110 and 336 feet respectively. A stope was carried from the upper, No. 1, level to the surface. A raise was driven from No. 2 level. Operations were suspended in November, 1940.

Development consisted of 110 feet of crosscutting, 1,150 feet of drifting, and 350 feet of raising. A total of 1,361 tons of ore was mined, yielding 924 oz. of gold and 514 oz. of silver.

An average crew of eight men was employed.

STUMP LAKE AREA.

Consolidated Nicola Goldfields, Ltd.

Company office, 506 Dunsmuir Street, Vancouver, B.C.; mine office, Box 759, Kamloops, B.C.; Mathew Sutton, President; C. J. White, Secretary-Treasurer; R. A. Petter, Mine Superintendent. Capital: 6,500,000 shares, $1 par. This company operates the *Nicola* mine, located 2 miles west of the Kamloops–Nicola Highway, about 30 miles north from Merritt.

During the past year exploratory development was confined largely to the *Enterprise* and *King William* veins on the 550, 675, 800, and 900 levels. A new crushing plant was installed in the mill. Changes were made in the power plant and to the flotation equipment. With these additions and changes completed, the mill was put into operation in May and has been in production intermittently since that date.

Development included 230 feet of crosscutting, 345 feet of drifting, and 40 feet of winzing.

A total of 4,759 tons of ore produced 476 tons of concentrates, which yielded 437 oz. of gold, 20,750 oz. of silver, as well as lead and zinc.

[Reference: Annual Report, 1936, Part D.]

CAMP McKINNEY AREA.

Cariboo Amelia.

This property was operated under lease by George Boag, of Greenwood, B.C., and associates. Hand-steel was used during the early part of the year but later a small gasoline-powered compressor was installed. Operations were confined to recovering pillars and the remnants of old stopes near the surface.

[Reference: Bulletin No. 6, 1940.]

Wiarton.

This property adjoins the *Cariboo Amelia*. It is under option to the Highland Bell, Limited, who are carrying on development-work. A power plant consisting of a 60-horse-power McCormick Diesel engine belt-connected to a 265-cubic-foot Gardner-Denver single-stage compressor was installed for this work, while the shaft was served by a small Holman air-hoist. Development-work included 60 feet of sinking, 100 feet of drifting, and 120 feet of crosscutting. A crew of five men was employed.

[Reference: Bulletin No. 6, 1940.]

KETTLE RIVER AREA.

Maybe.

This claim, on the North Fork of the Kettle River, about 24 miles north of Westbridge, is owned by L. Clery and S. Berglund, of Westbridge and Rossland respectively. Early in the year it was optioned by the Canadian Exploration, Limited, who employed a crew of three men to do a small amount of development-work with hand-steel. At the same time S. Berglund, on a lease from the optionees, mined and shipped to Trail 143 tons of ore which yielded 83 oz. of gold and 157 oz. of silver. A small gasoline-driven portable compressor was used for this work. Development-work consisted of 80 feet of drifting.

[Reference: Annual Report, 1938, Part D.]

Mogul.

This property is situated on Horseshoe Mountain, about 24 miles from Westbridge. Leasers using hand-steel shipped 10 tons of ore to Trail which yielded 10 oz. of gold and 3 oz. of silver. Development-work consisted of 30 feet of drifting.

[Reference: Annual Report, 1938, Part D.]

BEAVERDELL AREA.

Butcher Boy.

This property is situated at Carmi, B.C. It is under option to John D. and James Kerr and H. S. Nordman, of Beaverdell. A small gasoline-driven hoist is the only mechanical equipment at the mine. Three men were employed underground.

Carmi. This property adjoins the *Butcher Boy*. The underground workings of the two properties are connected. During the year it was optioned by the Highland Bell, Limited, who, in addition to dewatering the mine for sampling and examination, mined and shipped ore from the upper level. A total of eight men, four underground, were engaged in this operation. The Highland Bell option was dropped during the summer and the property operated under lease by J. Kerr and three associates, using hand-steel to mine. A total of 603 tons was shipped from this property, yielding 222 oz. of gold and 910 oz. of silver.

Rosemont.—This property, situated 9 miles from Beaverdell, is under option to the Highland Bell, Limited. Development-work included 30 feet of drifting and 100 feet of crosscutting.

GREENWOOD-GRAND FORKS AREA.

Jewel Lake.

Dentonia Mines, Ltd. Company office, 850 Hastings Street West, Vancouver, B.C.; G. T. Vaux, Vice-President. Capital: 2,500,000 shares, no par value; issued, 1,645,000. The company owns the *Dentonia* mine near Jewel Lake. The property is operated under lease by John Halstrom, Eric Schoberg, and Robert Lee, of Greenwood. A crew of five men, four of whom worked underground, was employed throughout the year.

[Reference: Bulletin No. 13, 1941.]

Amandy.—This property, situated on Roderick Dhu Mountain above Jewel Lake, is owned by E. C. Henniger, of Grand Forks, and operated under lease by Martin Holm and associates, of Grand Forks.

Ethiopia.—This property adjoins the *Dentonia*. It was operated under lease for a short time by P. Russell, Joe Price, and J. Walker, of Greenwood.

Lakeside.—This property is situated about half a mile north of the *Dentonia*. It is owned by Mrs. Duhamel, of Greenwood, and is optioned under lease by Nick Ogloff and four partners, of Grand Forks, B.C.

Franklin Camp.

Homestake. This property is situated in the Franklin Camp, about 48 miles north of Grand Forks. It is owned by W. E. McArthur and associates, of Greenwood, and is operated under lease and bond by Herman Brunner and partner. This year 2½ miles of road was constructed to connect the property with the main road from Grand Forks to the *Union* mine.

Union. This property, situated 46 miles from Grand Forks, in the Franklin Camp, is owned by the J. F. McCarthy estate, of Wallace, Idaho, and is operated under lease and bond by W. E. McArthur, of Greenwood, B.C. Development-work done during the year included 30 feet of drifting, 75 feet of raising and surface trenching. A crew of six was employed throughout the year. A total of 4,144 tons of ore shipped to Trail yielded 1,082 oz. of gold and 38,031 oz. of silver.

Boundary Falls.

No. 7. This property is owned by the Consolidated Mining and Smelting Company of Canada, Limited, and is operated under lease by W. E. McArthur, of Greenwood. A crew of three men was employed and a portable compressor used for underground work. Development-work included 130 feet of drifting and 200 feet of raising. A total of 723 tons of ore shipped to Trail yielded 185 oz. of gold and 8,855 oz. of silver.

PAULSON AREA.

Albion No. 2.—This property, situated about 8 miles from Paulson, is owned and operated by Joe Kloman. Four men were mining with hand-steel.

Berlin and Inland Empire.—This property, adjoining the *Albion No. 2*, is being operated under lease by S. Sinnerud and four partners, of Paulson, B.C.

LARDEAU AREA.

TROUT LAKE.

Winslow Consolidated, Ltd. (N.P.L.). Company office, 302 Stock Exchange Building, Vancouver, B.C.; A. C. Speirs, Manager. This property is situated on Winslow Creek, about 7 miles by tractor-road from Trout Lake, and is held under option by the Winslow Consolidated, Limited. W. J. Scorgie is in charge of operations at the mine. Milling operations, suspended during the winter of 1939, were resumed in July and continued until about the middle of October. A crew of fourteen men was employed.

Okanagan.—This property adjoins the *Winslow* and is included in that group of claims. It was leased to William Butler and partner of Beaton.

Triune. This property is situated at the head of Triune Creek, about half a mile north-east of the *Okanagan*. It was optioned from the Triune Mining Company, 301 Standard Bank Building, Vancouver, B.C., by A. H. Upton, D. H. Lougheed, and associates. The 5 miles of old road from Ten Mile on Ferguson Creek up Triune Creek to the property were cleaned out and repaired. A new bridge was built across Ferguson Creek. A crew of six men was employed.

Copper Queen.—This property is situated about 1½ miles west of the *Winslow*. A small amount of surface work was done by the owner, A. D. Oakey, of Beaton.

GERRARD AREA.

Silver Crest.—This property, formerly known as *Mobbs* mine, is situated on Poplar Creek. During the season it was under option to a Revelstoke syndicate. Two men, using hand-steel, did a small amount of development-work.

SLOCAN AREA.

RETALLACK.

Highland Surprise Gold Mines, Ltd. Company office, 535 Georgia Street, Vancouver, B.C.; A. J. Noble, Secretary. Capital: 3,000,000 shares, 50 cents par. The company's property is situated on Lyle Creek, 3½ miles from Retallack. A crew of thirty-five men was employed under the direction of V. J. Southey. John Vallance was in charge of milling. An extensive programme was undertaken during the summer months. Surface construction included the building of 1,700 feet of 2-bucket jig-back aerial tram to connect the No. 4 level with the truck-road. A new power-house was constructed near the upper tram terminal. Additional mechanical equipment installed included a two-stage Diesel-driven Sullivan compressor of 400 cubic feet capacity. Underground development for the year consisted of 974 feet of drifting and crosscutting, 185 feet of raising, 9 feet of sinking, and 1,000 feet of diamond-drilling. The *Whitewater* mill and hydro-electric power plant were leased by the Highland Surprise Company and the mill was operated, mostly on a one-shift basis, from August 26th to November 4th. During the operation, about 2,800 tons of ore was mined and milled.

[Reference: Bulletin No. 7, 1940.]

LEMON CREEK.

Chapleau. This property, situated on Chapleau Creek and owned by the Milton Gold Mining Company, of Penticton, was operated under lease and bond by W. K. Cross and associates. C. A. Ritchie was in charge of mining. A crew of seven men was employed during the summer months.

Crusader.—This property, situated on Crusader Creek, was operated under option during the early part of the year by C. A. Ritchie.

Howard Fraction. This property, situated at the head of Gold Creek, is owned and operated by F. T. Harbour, of Slocan City. During the summer, work was confined chiefly to reopening a low-level adit 1,600 feet long which had been caved for many years. A crew of three men was employed.

[Reference: Annual Report, 1938, Part E.]

AINSWORTH.

Scranton Consolidated Mining Co. Company office, 404 Title and Trust Building, Portland, Oregon; British Columbia office, Ainsworth, B.C.; Ben W. Scott, President; S. O. Griffith, Secretary. Capital: 650,000 shares, no par value. The *Scranton* property, situated at the head of Woodbury Creek, about 11 miles by pack-trail from the Nelson–Kaslo Highway, is owned by the above company. R. B. Mahan is in charge of operations. A crew of eight men was employed throughout the year. Development-work consisted of 800 feet of drifting, 260 feet of crosscutting, and extensive surface-trenching.

SILVERTON AND SLOCAN CITY.

Senator (formerly Batchelor).—This property, situated on Memphis Creek, about 5 miles from Slocan City, is owned by E. Graham and associates, of Slocan City, and operated under lease by Ed Bergstrom and R. H. Kline. Three men were engaged in hand-steel operation which yielded 3.5 tons of ore.

Exchange.—This property, situated on Dayton Creek, was operated under lease by F. T. Harbour. Six tons of ore was shipped.

Bell No. 2.—This property is situated on the *Republic* road, 5 miles from Slocan City. It was operated by E. B. Peterson and partner, of Ymir, B.C., who mined 5 tons of ore with hand-steel.

NELSON AREA.

Euphrates. This property, situated near Hall Siding, about 10 miles south of Nelson, is now operated by the Gold Silver Tungsten Mining and Milling Company of Seattle, Washington. Operations at the mine are under the direction of Sarkis Terzian, Nelson, B.C. A 100-ton flotation-mill, originally at the *Ottawa* mine near Slocan City, has been acquired by the above company and installed at the *Euphrates* mine. In addition to this, the tram-line from the mine to the railroad was rebuilt to connect with the head of the mill. At the upper terminal a 200-ton ore-bin was constructed. A crew of from nine to twenty-two men was engaged in this work during the latter half of the year. Practically no work has been done underground.

[Reference: Annual Report, 1937, Part E.]

TOAD MOUNTAIN.

Athabasca.—This property, situated on Morning Mountain, is owned by the Noble Five Mines, Limited, and operated under lease by L. Gormley and associates. A small compressor plant has been installed. Some of the ore has a high cadmium content.

California. This property, owned by Mrs. Mary Wilson, of Nelson, was operated under option by F. F. Tait, of Alameda, California. A small Diesel-driven compressor was installed and a small amount of development-work done. A crew of three to four men was employed. Eight tons of ore was mined, yielding 10 oz. gold and 14 oz. silver.

Gold Leaf.—This property is situated about 5 miles south of Nelson. A small amount of development-work was done with hand-steel by the owner, Herbert Wood, of Nelson.

Venus-Juno. These properties, on Morning Mountain, just north of Toad Mountain, are owned by the R. Heddle estate and operated under lease by several small groups and individuals; namely, L. Gormley, Bruno Sterna, John Sandal, and Ed Myers. Hand-steel was used. A total of 183 tons of ore shipped to Trail yielded 191 oz. of gold and 450 oz. of silver.

Victoria-Jessie.—This property, situated on Toad Mountain, was operated by Ed Mathews and R. Sherradan. Hand-steel was used for mining.

HALL CREEK.

Bear.—This property, situated on Hall Creek adjoining the *Fern* mine, was operated by two leasers, J. Bergquist and Arthur Carlson. Thirty-two tons of ore mined by hand-steel yielded 51 oz. of gold and 12 oz. of silver.

[Reference: Annual Report, 1937, Part E.]

Fern. This is an old property with extensive underground workings. It is owned by C. E. and L. R. Hawley, of Spokane, Washington. Operation during the year was by two separate groups of leasers. Hand-steel was used. A total of 108 tons of ore shipped to Trail yielded 66 oz. of gold and 53 oz. of silver.

Canadian Belle Mining Co. The *Canadian Belle* property is owned and operated by the Canadian Belle Mining Company, 328 Peyton Building, Spokane, Washington. Mining was carried on throughout the summer, hand-steel being used for underground work. Development included 12 feet of drifting, 9 feet of crosscutting, and 400 feet of surface-trenching. In addition, about 1 mile of truck-road and 800 feet of trail were built to make parts of the property more easily accessible. A total of 14 tons of ore mined yielded 17 oz. of gold.

[Reference: Annual Report, 1937, Part E.]

Livingstone Mining Co., Incorporated. Company office, 521 Central Building, Seattle, Washington; H. R. Smith, President and Manager; R. W. Hutchison, Secretary. This company owns and operates the *Granite-Poorman* mine on Eagle Creek, near Blewett, B.C. Fourteen men were employed throughout the year. In addition, several groups of leasers worked on various parts of the property. Company development included 575 feet of drifting, 120 feet of raising, and considerable surface-trenching. This latter disclosed a new vein to the east of the *Poorman* vein and on the east bank of Eagle Creek. This vein was stripped for some 500 feet and found to be parallel in dip and strike to the other veins on the property. Some of the ore from the company operations was treated in the customs mill at Granite Siding and the concentrates shipped to Trail. The remainder of the ore mined by the company, and all that mined by the leasers, was shipped direct to the Trail smelter. A total of 780 tons of ore yielded 482 oz. of gold and 553 oz. of silver.

Venango Gold Mines, Ltd. Company office, Nelson, B.C.; D. H. Norcross, President and Mine Manager; J. A. Cullinane, Secretary-Treasurer. The company owns and operates the *Venango* mine, on the west side of Eagle Creek, adjoining the *Granite-Poorman*. A total crew of six men, all of whom worked underground, was employed throughout the year. Development-work included 850 feet of drifting, 115 feet of crosscutting, 100 feet of raising, and 1,750 feet of diamond-drilling. Ore totalling 127 tons was mined and shipped to Trail. This yielded 48 oz. of gold and 61 oz. of silver. This ore contains some tungsten but no recovery of this has been made to date.

Forty-nine Creek.

May and Jenny.—This property, situated on Forty-nine Creek, was operated for a short time under lease by C. H. Erickson and A. Olsen, of Nelson, B.C. A small amount of work was directed toward reopening the old tunnels.

Sitkum Creek.

Alpine Gold, Ltd. (N.P.L.). Company office, 415 Baker Street, Nelson, B.C.; James B. Curtis, President; Barbara O'Neil, Secretary. Capital: 500,000 shares, 50 cents par. The *Alpine* property, situated at the head of Sitkum Creek, about 9 miles from the Nelson–Kaslo Highway, is owned and operated by the Alpine Gold, Limited (N.P.L.). The work was conducted under the management of L. D. Clark. The crew varied from twelve to thirty-five men. Development consisted of 600 feet of drifting, 175 feet of crosscutting, and 596 feet of raising. This work was completed early in November, at which time the mill was started and run continuously for the remainder of the year.

[Reference: Annual Report, 1938, Part E.]

Ymir.

Blackcock. This property, situated on Ymir Creek just above its junction with Huckleberry Creek, is owned and operated by Frank W. Henderson, of Calgary, Alberta. Operations at the mine are under the direction of R. H. Weaver. Eight men were employed during most of the year. A small mining

plant was installed, which consisted of an 80-horse-power Widdop Diesel engine belt-connected to a single stage 12- by 12-inch Jenks compressor.

Ymir Wilcox. This property, situated about three-quarters of a mile above the *Blackcock* on Ymir Creek, is operated under lease by Aitken Wolfe and associates, of Ymir, B.C. A crew of eight men, all partners in the lease, was employed in hand-steel operation. In addition to the ore mined from underground, selected portions of an old tailings dump were found to be of sufficiently good grade to warrant shipping.

Colorado. This property, situated on Ymir Creek at the junction of Huckleberry Creek, is operated by a local syndicate composed of J. D. Ferguson, W. Griffiths, A. Holstrom, and S. Curwen, of Ymir, B.C., with J. D. Ferguson as mine manager. The mine was operated intermittently during the year, three men being employed. Development-work was limited to 100 feet of raising.

Ymir Commodore Mines Co. The *Ymir Commodore* property, situated on Ymir Creek, is operated by the Ymir Commodore Mines Company, of Spokane, Washington, with J. D. Ferguson in charge. Development-work, carried out by machinery by a crew of four men, consisted of 500 feet of drifting and 150 feet of raising.

Ymir Consolidated Gold Mines, Ltd. Company office, 704 Royal Trust Building, Vancouver, B.C.; mine office, Ymir, B.C.; R. C. McCorkell, President; T. G. Cowan, Secretary-Treasurer; G. G. Sullivan, Mine Manager. Capital: 1,500,000 preferred shares, no par value; 2,500,000 common shares, no par value. Issued, 2,159,453 common shares. The company owns and operates the *Goodenough* mine on Elise Mountain. A development programme was carried on by the company under the direction of G. G. Sullivan until April. The property, including all the mechanical equipment except the mill, was then leased to R. Cooper, A. and M. Burgess, and associates. A crew of six to eight men was employed by the leasers. Late in the year the mill was taken over by the leasers and operated on a one-shift basis.

The *Ymir* mine adjoins the *Goodenough* and is owned by the same company. It was operated by two separate groups of leasers working in different parts of the mine. The lower levels were leased by Harold Watson and associates and the upper by Leo Madden and partners, a total crew of eight men being engaged.

Ymir-Yankee Girl Gold Mines, Ltd. Company office, 525 Seymour Street, Vancouver, B.C.; mine office, Ymir, B.C.; E. P. Crawford, President; R. B. Lamb, Managing Director; W. A. Sutton, Secretary-Treasurer; L. G. Morrell, Mine Manager. Capital: 3,000,000 shares, no par value; issued, 2,225,005. The company owns and operates the *Yankee Girl* mine on Oscar Creek, 3 miles from Ymir. The mine and mill were operated continuously throughout the year. During the early part of the year an option was taken on the adjoining *Dundee* property and a crosscut was driven from the 1,235 level to develop this vein. Stoping on this vein and mining of pillars and remnants of ore in the original *Yankee Girl* mine has provided the supply for the mill. An average crew of seventy-eight men was employed. Fifty of these were employed in underground work. Development consisted of 397 feet of drifting, 64 feet of crosscutting, and 889 feet of raising in the *Yankee Girl* workings; and 973 feet of drifting, 1,118 feet of crosscutting, 508 feet of raising, and 91 feet of sinking in the *Dundee*. Of the 53,527 tons of ore milled, 36,540 came from the *Yankee Girl* workings and the remainder from the *Dundee*. The production from this ore was 10,205 oz. of gold and 55,292 oz. of silver, as well as lead and zinc.

Wesko. This property, situated near Ymir, was leased during the last three months of the year by Oscar Anderson and E. P. Haukendahl, of Ymir, B.C. Hand-steel operations were confined to a vein on the No. 3 level. A crew of four men was employed.

SALMO.

Clubine Comstock Gold Mines, Ltd. Company office, 616 Stock Exchange Building, Vancouver, B.C.; Charles F. Hunter, Secretary. Capital: 2,000,000 shares, 50 cents par. This company owns and operates the *Clubine-Comstock* mine on Boulder Creek, about 4 miles north of Salmo. Mining was carried on for the

first eight months of the year. Of the seven-man crew, four were employed underground. A low level crosscut was completed and some drifting done on the vein. Total development included 75 feet of drifting, 269 feet of crosscutting, and 176 feet of raising.

[Reference: Annual Report, 1936, Part E.]

SHEEP CREEK.

Kootenay Belle Gold Mines, Ltd.

Company office, 475 Howe Street, Vancouver, B.C.; mine office, Sheep Creek, B.C.; Jonathan Rogers, President; J. A. Clarke, Secretary-Treasurer; Vere McDowall, Mine Manager. Capital: 750,000 shares, 50 cents par; issued, 675,200. The property is on Sheep Creek, about 10 miles by road from Salmo. The mine and mill operated continuously throughout the year, employing an average of 142 men, with 104 underground. The greatest part of the ore recovered in the year's operation was from the area served by the main shaft between the 6 and 10 levels. The remainder came from the older parts of the mine and from the *Dixie* vein on the north side of Sheep Creek. The ground below the 10 level is now being prospected by a winze. Total development included 4,663 feet of drifting, 1,764 feet of crosscutting, 40 feet of sinking, and 610 feet of diamond-drilling. A total of 38,837 tons of ore was mined and treated, and this yielded 12,743 oz. of gold and 3,507 oz. of silver.

Golden Belle.

This property is situated between the *Motherlode* and *Gold Belt* mines. It is being operated under option by the Kootenay Belle Gold Mines, Limited. During the summer a complete small mining plant was installed and camp accommodation provided for sixteen men. A crew of seventeen men, with nine underground, was employed for the last four months of the year. Underground development consisted of 842 feet of drifting. A quarter of a mile of road was reconditioned and rebuilt to connect the property with the old Gold Belt-Motherlode Road.

Sheep Creek Gold Mines, Ltd.

Company office, 616 Stock Exchange Building, Vancouver, B.C.; mine office, Sheep Creek, B.C.; R. W. Bruhn, President; James Anderson, Secretary-Treasurer; H. E. Doelle, General Superintendent and Managing Director. Capital: 2.000,000 shares, 50 cents par; issued, 1,875,000. The company owns and operates the *Queen* mine on Waldie Creek, a tributary of Sheep Creek, and has options on adjoining properties. On the *Queen* and adjoining properties an average crew of 102 men was employed throughout the year with sixty-seven working underground. Development in the *Queen* included 4,119 feet of drifting, 1,860 feet of crosscutting, 744 feet of raising, and 428 feet of diamond-drilling. On the *Ore Hill* property, 279 feet of drifting, 1,326 feet of crosscutting, and 1,145 feet of diamond-drilling were done. The underground work on the *Ore Hill* property is an extension of that in the main *Queen* mine. Development on the adjoining *Midnight* property included 134 feet of raising and 191 feet of diamond-drilling. Development on the *Bonanza* property, held under option from C. Donaldson, of Salmo, included 813 feet of drifting, 372 feet of crosscutting, and 1,145 feet of diamond-drilling. A total of 55,077 tons of ore yielded 26,229 oz. of gold and 8,337 oz. of silver.

Gold Belt Mining Co., Ltd.

Company office, 616 Stock Exchange Building, Vancouver, B.C.; mine office, Sheep Creek, B.C.; A. E. Jukes, President; James Anderson, Secretary-Treasurer; H. E. Doelle, Mine Manager. Capital: 3,000,000 shares, 50 cents par; issued, 2,535,000. The property is situated on Sheep Creek, between the *Reno* and *Kootenay Belle* holdings, about 14½ miles from Salmo. An average crew of 126 men, with ninety-two underground, was employed throughout the year. Development-work included 4,736 feet of drifting, 1,799 feet of crosscutting, and 933 feet of raising. A total of 62,366 tons of ore was mined and treated and the bullion yielded 16,948 oz. of gold and 6,875 oz. of silver.

Reno Gold Mines, Ltd.

Company office, 525 Seymour Street, Vancouver, B.C.; mine office, Salmo, B.C.; K. G. Nairn, President; W. A. Sutton, Secretary-Treasurer; W. S. Ellis, General Superintendent. Capital: 2,000,000 shares, $1 par; issued, 1,880,000. The company owns the *Reno, Motherlode, Nugget,* and *Bluestone* mines and the *Coyote* prospect, all of which form a

block of ground in the Sheep Creek camp which adjoins the *Gold Belt* and *Motherlode* on the north. The *Reno* was inactive during the year. On the others an average crew of sixty-eight men, with forty-nine underground, was employed throughout the year. The property is equipped with two complete mining plants, at the *Motherlode* and *Bluestone* respectively, and a 140-ton capacity cyanide mill. The mill was operated continuously until November 15th when it was closed down for lack of ore, but development was continued on the *Motherlode*, *Nugget*, and *Coyote*. Development on the *Motherlode-Nugget* consisted of 2,746 feet of drifting, 279 feet of crosscutting, 630 feet of raising, 276 feet of sinking, and 74 feet of diamond-drilling. The greatest proportion of the ore milled was recovered from the area in which this work was done. At the *Bluestone* development consisted of 596 feet of drifting, 132 feet of crosscutting, 41 feet of raising, 190 feet of sinking, and 1,360 feet of diamond-drilling. In addition some surface-trenching was done on the *Bluestone* vein. At the *Coyote* workings development consisted of 179 feet of drifting, 922 feet of crosscutting, and 47 feet of diamond-drilling. Bullion from a total of 35,978 tons of ore yielded 11,200 oz. of gold and 3,795 oz. of silver.

The *Nugget* mine was operated continuously throughout the year by two leasers using hand-steel. Activities were confined to the older parts of the mine and to the tailings dump of the old mill. A total of 1,191 tons of ore was recovered and shipped to Trail. This yielded 628 oz. of gold and 426 oz. of silver.

Eureka. This property is situated on Muskrat Creek, a tributary of Sheep Creek. Intermittent hand-steel operation was conducted during the year. The property is equipped with a small water-power grinding and amalgamation unit.

ERIE CREEK.

Relief-Arlington Mines, Ltd. Company office, 626 Pender Street West, Vancouver, B.C.; mine office, Erie, B.C.; Bert F. Smith, President and Managing Director; D. G. Marshall, Secretary-Treasurer; S. M. Manning, General Superintendent. Capital: 3,000,000 shares, $1 par; issued,.3,000,000. The company is controlled by Premier Gold Mining Company, Limited, which holds 1,530,000 shares. The company owns and operates the *Second Relief* mine, situated on Erie Creek, about 13 miles from Salmo. The mine and mill operated continuously throughout the year, employing an average of 134 men, with eighty-seven underground. The ore from the mine is hand-sorted, about 40 per cent. being rejected before treatment in the mill. Development-work included 2,125 feet of drifting, 529 feet of crosscutting, and 1,359 feet of raising in the main workings. Across Erie Creek, 462 feet of drifting, 24 feet of crosscutting, and 70 feet of raising were done on the *Rand* vein. A total of 31,333 tons of ore was milled, and the bullion yielded 10,604 oz. of gold and 3,556 oz. of silver.

Arlington. This property, situated on Keystone Mountain, 3 miles north of Erie, is owned by the Relief-Arlington Mines, Limited, and operated under lease by R. Oscarson, of Spokane, Washington. Twelve men were employed throughout the year under the supervision of Albert J. Johnson. Hand-steel only was used. Development included 218 feet of drifting, 49 feet of crosscutting, and 373 feet of raising. A total of 819 tons of ore yielded 1,150 oz. of gold and 2,461 oz. of silver.

Keystone. This property, situated on Keystone Mountain, 3½ miles north of Erie, was operated under option by the Slocan Silver Mines, Limited, who did 500 feet of surface-trenching. Late in the year it was subleased to Arthur F. Forsyth and associates who are mining underground with hand-steel. Four men were engaged in this work. No ore was shipped during 1940.

Harriett. This property, owned by E. Ballinger, of Salmo, and leased by S. Curwen and associates, is situated on Craigtown Creek, about 3 miles above the *Second Relief* road. Seven men were employed, four of them underground. The property is equipped with a small mining plant. Development-work included 500 feet of drifting and 50 feet of crosscutting.

[Reference: Annual Report, 1937, Part E.]

ROSS SPUR.

Reliance Group.—This property, situated near Ross Spur, about 9 miles south of Salmo, is under lease to G. H. Grimwood and associates. A small mining plant was installed late in the year.

Pend-d'Oreille River.

Bunker Hill.—This property is owned by the Waneta Gold Mines, Limited, and, for a short time, was operated under lease by A. H. W. Crossley and associates. Hand-steel only was used.

SOUTH KOOTENAY LAKE AREA.

Bayonne Consolidated Mines, Ltd. Company office, 308 Pacific Building, Vancouver, B.C.; mine office, Bayonne, B.C.; W. C. Ditmars, President; H. T. Wilson, Secretary-Treasurer; John Broatch, Mine Manager. Capital: 2,500,000 shares, no par value; issued, 2,500,000. The company owns and operates the *Bayonne* mine, situated on Summit Creek, about 23 miles by road from Tye Siding. An average crew of seventy-four men was employed. The development programme undertaken in 1939 blocked out sufficient ore to keep the mill in operation since April of this year. Exploratory work has exposed commercial ore on the lowest adit level, No. 8 level. Development included 1,818 feet of drifting and 570 feet of crosscutting. Ore totalling 13,083 tons was milled, and the bullion yielded 6,720 oz. of gold and 13,925 oz. of silver. During the summer a bush fire destroyed the office, assay office, powder-house, stable, and several dwellings and outbuildings. These were replaced.

[Reference: Annual Report, 1937, Part E.]

Spokane. This property, owned and operated by R. M. and K. K. Laib, is situated on Wall Mountain, 18 miles from Tye Siding. Five men were employed during the summer and autumn months. Hand-steel only was used. Ore totalling 230 tons from underground and taken from old dumps yielded 133 oz. of gold and 1,826 oz. of silver, as well as lead and zinc. Development consisted of 30 feet of drifting and 25 feet of raising.

[Reference: Annual Report, 1937, Part E.]

Wisconsin. This property is situated on Hughes Creek, a tributary of Midge Creek, about 11 miles from Kootenay Lake. It is owned by the Vendors, Limited, and was optioned to the Canadian Exploration, Limited. A crew of sixteen men was employed during the summer months under the direction of H. L. Batten. The property is equipped with a complete small mining plant. Development-work included 250 feet of drifting and 180 feet of crosscutting, all on the No. 1 level north of the shaft. In addition all the surface-cuts were cleaned out and resampled and some additional stripping done on the south end. No ore was shipped.

Sanca. This property, situated about 2 miles from Ginol Landing on Kootenay Lake, is under option to P. D. McTavish, of Vancouver, and associates. During the latter part of the year eleven men under the direction of W. E. Johnson were engaged in building an aerial tram some 3,700 feet long to connect the mine workings with the end of the road. The mine is equipped with a small portable compressor. No work was done underground.

ROSSLAND AREA.

Mount Roberts.

Midnight.—This property is owned and operated by B. A. Lins and associates, of Rossland, B.C. It is equipped with a small mining plant. A crew of four men was employed. Very little development was done during the year.

I.X.L. *This property was operated under lease by Chris Jorgensen and Vic* Larsen. It is equipped with a small mining plant and employs four men, all partners. A small amount of development-work was done. The 38 tons of ore mined yielded 390 oz. of gold and 135 oz. of silver.

O.K. and Gold Drip.—A small amount of hand-steel work was done on these properties by leasers.

Rossland.

Jumbo. This property, situated about 1 mile east of Rossland and just off the main Cascade Highway, is owned by Mrs. Charlotte Finch Smith, of California, and is operated under lease by M. J. Doran and M. Michaley. Four men, all partners, were employed, and hand-steel only was used.

SOUTH BELT.

Mayflower. This property is operated under lease and bond to the Mayflower Mining Syndicate, comprised of Lloyd A. Smith and associates, of Penticton. R. W. Haggen acts as consultant and Frank Brinson as mine foreman. The property is equipped with a small mining plant. Five men were employed for the greater part of the year. Development included 210 feet of drifting, 203 feet of crosscutting, 320 feet of surface-trenching, and 693 feet of diamond-drilling.

VERNON AREA.

Kalamalka.—This property, situated on Brewer Creek, 2 miles from Lavington, is leased by S. M. and C. Penny and J. A. Thomasson. Hand-steel only was used. The property was operated continuously from February 1st.

Monashee. This property is situated on the Vernon–Edgewood Highway, 30 miles east of Lumby. Late in the year it was leased by G., M. F., and F. H. Peterson, S. Flodstrom, and William McLaren. All the milling and mining equipment has been removed from this property and the present operation is confined to areas within the mine where the ore, mined by hand-steel, can be taken out in wheelbarrows.

TEXADA ISLAND.

Gem Gold Mines, Ltd. Company office, 1604 Royal Bank Building, Vancouver, B.C.; mine office, Vananda, B.C.; Ralph A. Logan, President; R. E. Logan, Secretary-Treasurer; W. J. Sclater, Mine Manager. Capital: 2,000,000 shares, $1 par; issued, 1,669,628. This company owns the *Gem* mine on Texada Island, 5 miles from Blubber Bay. From the bottom of No. 2 shaft, which was sunk in 1939 to a depth of 250 feet from the surface, a crosscut was driven to the No. 2 vein, a distance of 20 feet from the shaft, and drifting was done on this vein for a distance of 115 feet in a north-easterly direction. A crosscut was then driven 215 feet in a south-easterly direction to connect to No. 1 vein, and drifting on this vein amounted to 110 feet.

No further work has been done underground, but surface work on the outcrops was continued.

Seccondee Mines, Ltd. Company office, 325 Standard Bank Building, Vancouver, B.C.; mine office, Vananda, B.C.; John Morgan, Secretary. Capital: 50,000 shares, $1 par; company in voluntary liquidation (February, 1940). This company was operating the old *Marjorie* property, but work was discontinued in February.

VANCOUVER ISLAND.

ZEBALLOS.

Privateer Mine, Ltd. Company office, 602 Stock Exchange Building, Vancouver, B.C.; D. S. Tait, President; N. E. McConnell, Manager. Capital: 2,500,000 shares, no par value; issued, 2,454,080. The company operates the *Privateer* mine in Spud Valley, 4 miles by road from Zeballos. The property is equipped with a 75- to 90-ton amalgamation and cyanide mill. Most of the stoping in this mine is now on the No. 2 vein. The shaft is sunk to the 1,200 level from the 1,100 level and preparations are being made to continue sinking. Drifting has been carried on for 300 feet on the No. 2 vein in the 1,200 level. The total amount of drifting for the year amounts to 3,149 feet; crosscutting, 1,309 feet; raising, 708 feet; and diamond-drilling, 10,855 feet. A crew of 115 men was employed. This company also operates the *Prident* mine. Some work was done there and preparations are being made to resume operations.

[Reference: Lode Gold Deposits, Zeballos Area, 1938.]

Mount Zeballos Gold Mines, Ltd. Company office, 1001 Federal Building, Toronto, Ont.; mine office, Zeballos, B.C.; F. M. Connell, President; A. Cockeram, Secretary-Treasurer; W. S. Hamilton, Mine Manager. Capital: 1,500,000 shares, $1 par; issued, 1,100,000. The company operates the *Mount Zeballos*

mine, on the west side of Spud Creek. Seven levels have been opened up, all from the surface. Stoping is being carried on in the 1,500, 1,600, 1,800, 1,900, and 2,000 levels. The 2,150 level is in 179 feet. Total amount of drifting done was 3,439 feet; crosscutting, 9 feet; raising, 1,450 feet; and diamond-drilling, 815 feet. A crew of eighty-five men was employed.

[Reference: Annual Report, 1938, Part F.]

White Star Mine, Ltd. Company office, 814 Rogers Building, Vancouver, B.C.; mine office, Zeballos, B.C.; R. P. Stockton, President; T. D. Pickard, Manager. Capital: 200,000 shares, $1 par. This company operates the *White Star* mine on Spud Creek. Stoping has been carried out on the Nos. 1, 2, and 3 levels in both Nos. 1 and 2 veins. The total drifting for the year amounted to: No. 1 level, 120 feet; No. 2 level, 315 feet; and No. 3 level, 670 feet. Crosscutting on No. 3 level, 155 feet. About seventeen men are employed.

[Reference: Lode Gold Deposits, Zeballos Area, 1938.]

Zeballos Pacific Mining Co. Company office, 716 Stock Exchange Building, Vancouver, B.C. This company has started operations on the *Gold Peak* property. A Gardner-Denver compressor operated by an International Diesel engine has been installed, giving 350 cubic feet of free air per minute. Two drifts have been started, one on the No. 4 vein is in 600 feet and one on the No. 1 vein is in 450 feet. Seventeen men are employed.

Spud Valley Gold Mines, Ltd. Company office, 703 Royal Bank Building, Vancouver, B.C.; mine office, Zeballos, B.C.; A. J. Hendrey, President; N. F. Brookes, Manager. Capital: 2,500,000 shares, $1 par; issued, 2,100,000. The company operates the *Spud Valley* mine in Spud Valley, 7 miles from Zeballos, B.C. The claims extend beyond the ridge between Spud Valley Creek and Gold Valley Creek. In all, six tunnels are operating—Nos. 2, 3, 4, 5, 6, and 7. Stoping is carried on in all levels in the *Goldfield* vein and in the *Spud* vein in No. 4 level. Some drifting in the *Spud* vein has been done in No. 3 level. Total amount of drifting, crosscutting, and raising for the year is 4,638 feet. All the tunnels down to No. 5 are driven through the mountain from Spud Valley to Gold Valley. No. 7 tunnel is in 1,660 feet from the Spud Valley side. The mill is the amalgamation-flotation type, and handles 60 to 70 tons per day. A crew of ninety-five men was employed.

Central Zeballos Gold Mines, Ltd. Company office, 815 Hastings Street West, Vancouver, B.C.; mine office, Zeballos, B.C.; A. J. Hendrey, President; N. F. Brookes, Manager. Capital: 2,500,000 shares, $1 par; issued, 1,450,000. Reno Gold Mines, Limited, in March, 1939, acquired a 40-per-cent. interest in the company for financing $30,000 development-work. Active development-work has been carried out since.

At the present time all the stoping is done above the No. 2 level, mostly on the west side. A winze was sunk from the No. 2 level and levels 3, 4, and 5 turned off east and west. In No. 3 level 570 feet of drifting has been done and 400 feet in east and west in No. 4 level. An adit has been started just above mill level; this will not intersect the vein at the No. 9 level. Total drifting for the year amounted to 1,603 feet; raising, 113 feet; crosscutting, 282 feet; sinking, 218 feet. The mill has a capacity of 25 to 40 tons. A crew of forty-five men was employed.

[Reference: Annual Report, 1938, Part F.]

Homeward Mine. Situated in Nomash Valley, Zeballos; G. G. Sullivan, Manager. A 25-ton mill is under construction at this property. Two drifts have been driven, each over 600 feet. A crew of seventeen men was employed, mostly on mill construction.

[Reference: Annual Report, 1938, Part F.]

Tagore Mine.—Situated on west side of the Zeballos River, about 2 miles from Zeballos. The only work being done on this property was sinking a shaft. It had reached a depth of 150 feet. Work has been suspended.

[Reference: Annual Report, 1938, Part F.]

CLAYOQUOT.

Musketeer Mines, Ltd. H. T. James, Managing Director; John L. Swanson, Manager. The *Musketeer* mine is owned and operated by Musketeer Mines, Limited, and is situated on Sam Craig Creek, in the Bedwell River district. The company began operating in this district on December 1st, 1938, with a crew of fourteen men engaged in building 9 miles of pack-horse trail to the *Musketeer* claims, together with an additional 7 miles of trail to the *Corsair-Casino* camp. Prior to January 1st, 1940, 1,144 feet of drifting and crosscutting was done on the various claims on this property and a further 2,195 feet driven during the present year. The power plant consists of a Schramm compressor, model 210, with a capacity of 210 cubic feet a minute, belt-driven by a 60-horse-power Allis-Chalmers 4-cylinder gasoline-engine. The ventilation in the main adit is provided by a Sheldon No. 3 fan with a capacity of 1,500 cubic feet of air a minute, belt-driven by a 3-horse-power Fuller-Johnson gasoline-motor. An average crew of thirteen men was steadily employed.

[Reference: Bulletin No. 8, 1940.]

Buccaneer Mines, Ltd. H. L. Hill, General Manager. This company operates the *Buccaneer* mine in the Bedwell River district, served by the same road and trails as the *Musketeer* mine and located approximately 2 miles beyond the latter property. During the latter part of 1939 and early 1940, operations were confined principally to the construction of 2 miles of pack-horse trail from the *Musketeer* mine to the *Buccaneer* camp and the cutting of trails from the camp to the different veins on the property. Underground work during the present year consisted of 895 feet of drifting between the lower and upper adits on the main vein and 473 feet of drifting in the west adit on the west vein. A winze was sunk from the latter adit for a distance of 31 feet on the vein, this being located a short distance from the portal.

[Reference: Bulletin No. 8, 1940.]

Noble "B" Mine. O. T. Bibb, Manager. This group of claims is owned by the Noble Bear River Syndicate and located in the vicinity of the Bedwell River Road, approximately 6 miles from the head of Bedwell Sound. Operations were begun in August on this group with a crew of three men and, up to the end of December, had been principally confined to surface-trenching and constructing the necessary camp buildings.

[Reference: Bulletin No. 8, 1940.]

NANAIMO.

Vulcan. R. A. Pitre, Manager. This property is owned by the Crown Gold Mining Syndicate, of Victoria, and is situated in the Nanaimo Lakes district, approximately 25 miles from Nanaimo. According to available information, a shaft was sunk on a showing of gold-bearing ore to a depth of 105 feet some thirty-five or forty years ago and two comparatively short drifts were driven, one from the shaft and the other from the surface, but apparently the values found did not warrant a continuation of operations in those early days. In May R. A. Pitre, of Victoria, took an option on the property and contracted to carry on a limited amount of prospecting and development-work with a view to proving the extent of the ore body. The shaft was drained to a depth of 100 feet and 78 feet of drifting done. Mr. Pitre's option expired at the end of July and the mine remained idle until September, when M. Zablosky and associates resumed operations under a lease from the owners, work being carried on until the middle of November by a crew of three men who drifted on the vein a distance of 15 feet at a point close to the bottom of the shaft.

A total of 12 tons of ore was sacked and shipped to Tacoma for treatment when the mine closed down in November.

United Prospectors, Ltd. Company office, Bank of Toronto Building, Victoria, B.C.; R. A. Pitre, General Manager. Capital: 100,000 shares, no par value. This company owns the *Thistle* mine. It was operated under lease by John Separovich and associates from the beginning of the year until October 20th, on which date the above lease terminated. During this period an average crew of

twelve men was engaged and several shipments of ore made to the Tacoma smelter for treatment, all of this tonnage being practically produced from open-cuts on the surface and the "glory-hole" method of mining.

Nanoose Bay Gold Mines, Ltd.

Company office, Room 10, Herald Building, Nanaimo, B.C.; F. A. Whitehouse, Secretary and Manager. Capital: 50,000 shares, $1 par. The company is developing a gold prospect approximately 20 miles north of Nanaimo, within a quarter of a mile from the Island Highway. From May 1st to September 30th two men were engaged in constructing a flume to carry the creek past the shaft and extending the drift an additional distance of 25 feet. The power plant consists of a small Gardner-Denver compressor which is driven by a Buick gasoline-engine.

PHILLIPS ARM.

Alexandria.

The old *Alexandria* mine was reopened by the Alex Mining Company for the purpose of taking out any ore that was in sight. The shaft from No. 2 tunnel was dewatered down to the 100-foot level and stoping carried on between this level and No. 2 tunnel. Some stoping was also done in No. 2 tunnel. A crew of thirty men was employed for a few months and work was discontinued.

THURLOW ISLAND.

Piedmont Mining Co.

J. J. Fagan is in charge. This company opened up the old *Douglas Pine* property. A 25-ton mill was erected and an aerial tram-line put in from the mine to the mill. Two levels were driven in a few hundred feet and a little stoping done. A crew of five men was employed.

GOLD-COPPER DEPOSITS.

TELKWA AREA.

Hunter Basin Group.

This group is owned by O. A. Riegle, of Smithers, and is located at the head of Cabin Creek, about 17 miles from the town of Telkwa on the Canadian National Railway. It is reached by road from Telkwa for a distance of 17 miles to the camp at altitude 4,900 feet. The property is optioned by the Conwest Exploration Company, with office at 514 Royal Bank Building, Vancouver, B.C. F. M. Connell, President.

Work was carried out on the *King* claim and consisted of drifting east and west on the "King" vein at the upper adit-level. A crosscut, with the objective of intersecting the possible downward extension of the "King" vein at 125 feet lower elevation was also commenced.

At the close of the year, a car-load of ore was shipped direct to the smelter. Two lots of selected ore, consisting respectively of 3.1565 tons and 3.9799 tons, were also shipped to the sampling plant at Prince Rupert.

[Reference: Annual Reports, 1904, 1908, 1909, 1911, 1914, 1915, 1916, 1925, and 1929.]

VANCOUVER ISLAND AREA.

Tyee Consolidated Gold Mining Co., Ltd.

Company office, 553 Granville Street, Vancouver, B.C. Capital: 2,000,000 shares, $1 par. The Sheep Creek Gold Mines, Limited, operated the *Tyee, Lenora,* and *Richard III.* mines, situated in the Mount Sicker area, which they optioned from the Tyee Consolidated Gold Mining Company in the early part of December, 1939. At that time a small crew of men was sent in to clean up and repair the main tunnel of the *Lenora* mine while the mechanical staff was overhauling the compressor and surface machinery.

Underground work consisted of 850 feet of crosscutting and drifting, 75 feet of raising, 51 feet of sinking, and 3,070 feet of diamond-drilling, which included a number of advance and flank holes in the face of the main drift as a safety measure against inadvertently contacting the abandoned workings of the *Tyee* and *Richard III.* mines.

Surface work consisted of 905 feet of diamond-drilling, together with a certain amount of stripping and trenching. During the course of the operations an average crew of ten men was employed steadily, six underground and four on the surface.

GREENWOOD-GRAND FORKS AREA.

Brooklyn. This property, situated at Phoenix, is owned by Robert Forshaw and is operated under lease by W. E. McArthur, of Greenwood. The mine was operated until March, 1940, when the lease was given up and all equipment owned by the lessees was removed. Up until that time an average crew of thirteen men was employed between the mine and the mill. Development-work included 75 feet of raising. Ore totalling 1,979 tons was mined and treated in the mill at Greenwood. The concentrates were shipped to Tacoma and yielded 619 oz. of gold, 731 oz. of silver, and some copper.

Granby. This property, situated at Phoenix, is owned and operated by W. E. McArthur, of Greenwood. A complete mining plant, formerly used at the *Brooklyn*, was moved to this property. Ore was milled at a 50-ton plant at Greenwood. The crew employed at mine and mill varied from three men in January, when only development was in progress, to a total of eighteen men when this property was in production. Development included 250 feet of drifting, 180 feet of crosscutting, 90 feet of raising, and 50 feet of sinking. A total of 9,816 tons of ore was mined and 9,132 tons milled and the concentrates shipped to Tacoma.

Athelstan. This property, situated in the Wellington Camp near Phoenix, is operated under lease by W. E. McArthur. A gasoline-driven compressor has been installed. Two men were employed continuously throughout the year. Development included 25 feet of drifting, 225 feet of crosscutting, and 25 feet of sinking. Ore totalling 88 tons was mined and yielded 51 oz. of gold and 83 oz. of silver.

Winnipeg.—This property, situated in the Wellington Camp, was operated under lease by Arthur Cox and Wilfred Tomblay. A small mining plant was installed. Some ore was mined from shallow workings.

ROSSLAND AREA.

Consolidated Mining and Smelting Co. of Canada, Ltd. Company office, 215 St. James Street West, Montreal, Quebec; mine office, Trail, B.C.; Sir Edward Beatty, Chairman; S. G. Blaylock, President and Managing Director; J. E. Riley, Secretary; Jas. Buchanan, General Manager; R. W. Diamond, Assistant General Manager. Capital: 4,000,000 shares, $5 par; issued, 3,271,669. This company owns the *Centre Star, War Eagle, LeRoi, Josie, Iron Mask, No. 1, Annie,* and *Columbia* and *Kootenay* on Red Mountain at Rossland. These properties were operated continuously throughout the year by leasers. From fifty to sixty-five men were engaged in mining ore from underground and surface on some eighteen to twenty-five separate leases. Some of the leasers have installed small, complete mining plants. The work of the leasers was carried on under the supervision of J. K. Cram, of Trail, B.C.

Velvet. This property, situated on the Cascade Highway, 13 miles east of Rossland, is owned by the Velgo Mining Incorporated of Seattle, Washington, and is operated under lease by the Velvet Leasing Syndicate, consisting of Harold S. Elmes, Renaldo Bielli, and Ole Osing, of Rossland, B.C. The property is equipped with a complete mining plant and a 100-ton flotation-mill. It was operated practically continuously throughout the year and employed twenty-eight men, twelve working underground. Development included 265 feet of drifting, 300 feet of raising, and 385 feet of diamond-drilling. A total of 7,300 tons of ore was milled and the product, a gold-copper concentrate, was shipped to Tacoma. This yielded 2,171 oz. of gold, 1,358 oz. of silver, as well as copper.

GOLD-COBALT DEPOSITS.

HAZELTON AREA.

Hazelton View Group.

This group is located on the north-west slope of Rocher Déboulé Mountain, 4 miles south of South Hazelton and 3 miles east of the railway. A pack-horse trail 3 miles long leads from Comeau's ranch at the foot of the mountain to the mine camp at altitude 4,100 feet. The workings are immediately above the camp, between elevations 5,100 and 6,025 feet.

The claims were acquired by the New Hazelton Gold Cobalt Mines, Ltd., in 1916, and were developed continuously until 1919. Further work was done in 1925. During 1928 the property was operated by the Aurimont Gold Mines, Ltd.

During these former operations, several appreciable shipments of ore were made to the smelter and in 1918 a car-load was also shipped to the Ore Testing Laboratories, Mines Branch, Ottawa.

During 1940 the property was operated by Jack Lee, Hazelton, B.C., under a leasing agreement with R. C. McCorkell, 703 Royal Trust Building, Vancouver, B.C. From this operation, at the latter part of the year, 7.6635 dry tons of ore was shipped to the sampling plant at Prince Rupert.

[Reference: *See also* New Hazelton Gold Cobalt Co. and Aurimont Gold Mines, Ltd. Annual Reports, 1916 to 1918, 1925 to 1929.]

SILVER-GOLD-LEAD DEPOSITS.

SMITHERS AREA.

Duthie Mines, Ltd.

J. J. Herman and associates continued their option on this property, which is about 9 miles by road from Smithers. The property was examined for the purpose of ascertaining additional localities from which shipping-grade ore could be extracted. The following are the assay results from samples taken for this purpose:—

"*Womens Cut,*" selected from fine-grained galena: Gold, 0.14 oz. per ton; silver, 69.8 oz. per ton; copper, 0.2 per cent.; lead, 59.5 per cent.; zinc, 12.5 per cent.; arsenic, 1.1 per cent.; antimony, 0.4 per cent.

"*Dome Cut,*" selected yellow-brown decomposed oxidized vein matter: Gold, 1.2 oz. per ton; silver, 42.4 oz. per ton.

"*Dome Cut,*" average of ore dump to be cobbed and sorted: Gold, 0.08 oz. per ton; silver, 72.6 oz. per ton; copper, 1 per cent.; lead, 60.9 per cent.; zinc, 5 per cent.; arsenic, 2 per cent.; antimony, 0.4 per cent.

"*Dome Cut,*" grab of twenty-two sacks of sorted ore: Gold, 0.26 oz. per ton; silver, 59.1 oz. per ton; copper, 0.7 per cent.; lead, 50.7 per cent.; zinc, 9.5 per cent.; arsenic, 4.6 per cent.; antimony, 0.5 per cent.

In order to direct the shipment of ore from the property to the smelter, numerous test samples were shipped to the sampling plant at Prince Rupert.

During the year, several car-loads of ore were shipped direct from the property to Trail smelter.

Coronado Group.

This property is located on Hudson Bay Mountain and joins the *Mamie*, *Duthie*, and *Victory* groups. It is owned by the R. J. McDonnell estate. It is 16 miles by road from Smithers. The property is under lease to Harold Orm and Fred Griffin, of Smithers. These operators carried out stripping, open-cutting, and drifting with the objective of locating shipping-grade ore.

In order to direct the shipment of ore from the property to the smelter, several test shipments were made to the sampling plant at Prince Rupert. Bulk ore was also shipped direct to the Trail smelter.

[Reference: Annual Reports, 1914 and 1939.]

GREENWOOD AREA.

Providence. This property, situated about 1 mile north of Greenwood, was operated continuously throughout the year by W. E. McArthur and associates. It is equipped with a complete small mining plant. A crew of thirteen men, with seven underground, was employed. Development included 500 feet of drifting, 200 feet of raising, and 20 feet of sinking. A total of 1,280 tons of ore was shipped crude to Trail. This yielded 568 oz. of gold, 96,629 oz. of silver, as well as lead and zinc.

Crescent. This property, situated on the Greenwood–Phoenix Road, 3 miles from Greenwood, was operated under lease during the summer months by Eric Larsen, Mike Balint, and John Poelzur. Five men were employed and a small gasoline-driven compressor and gasoline-hoist were installed.

Gold Finch. This property is situated half a mile from Greenwood and is owned by the Mark F. Madden estate. Toward the end of the year a lease was acquired by Eric Larsen, A. D. Broomfield, and J. J. Malone. Five men were employed. A small mining plant was installed.

GRAND FORKS.

Regal Mines, Ltd. Company office, Room 40, Williams Building, Vancouver, B.C.; George L. McInnis, Secretary. Capital: 5,000,000 shares, no par value. The company owns the *Yankee Boy* mine, situated 4 miles from Grand Forks. It is operated under lease by Norman Cunningham, of Rossland, B.C. A total of four men was employed. A small mining plant, sufficient to operate one drill, was installed. An attempt was also made to ship an old dump after concentrating it by washing and screening.

SILVER-GOLD DEPOSITS.

SLOCAN LAKE AREA.

Slocan Silver Mines, Ltd. Company office, 504 Empire State Building, Spokane, Washington; Percy C. Morey, Secretary. Capital: 500,000 shares, $1 par. This company owns the *McAllister*, on London Ridge, near Three Forks. It was operated under two separate leases by Harold Allen and partners and J. Vandergrift and sons, all of New Denver. A total of five men was engaged in the two leases. Hand-steel only was used although the property is equipped with a complete mining plant. Development consisted of 123 feet of drifting and 87 feet of sinking. A total of 518 tons of ore was mined and shipped to Trail. This yielded 5 oz. of gold and 25,069 oz. of silver.

Jo Jo. This property, situated near the *McAllister*, was leased for a short time during the summer by E. Battelli and C. Stedile, of New Denver. Hand-steel was used to mine 9 tons of ore. This was shipped to Trail and yielded 1,709 oz. of silver.

Slocan Idaho Mines Corporation. Company office, 204 Howard Street, Spokane, Washington; John Stanford, Manager. This company operates the *Molly Hughes* mine, which is located about a mile north of New Denver. The property is equipped with a complete mining plant. Seventeen men, with fifteen underground, were employed until September, when the mine closed. During the last few months, the operation was conducted by leasers who were former employees of the company. Total development-work included 457 feet of drifting, 226 feet of crosscutting, 249 feet of raising, and 353 feet of diamond-drilling for the year. A total of 387 tons of ore yielded 107 oz. of gold, 31,339 oz. of silver, and some lead and zinc.

SILVER DEPOSITS.

PORTLAND CANAL AREA.

Mountain Boy Mining Co., Ltd. The head office of this company is at 112 St. James Street, Montreal. The British Columbia office is at 716 Hall Building, 789 Pender Street West, Vancouver. Armand Derome, Secretary-Treasurer. Capital: 6,000,000 shares. The property comprises eight claims and three fractional claims, situated on the west side of American Creek, about 18 miles from the town of Stewart. It is reached by motor-road from Stewart up the Bear River Valley for a distance of 14 miles, whence a good trail extends for 4 miles to the property.

During the year a small amount of mining was carried on for the purpose of extracting shipping-grade ore. Ore totalling 3.0555 tons was shipped to the sampling plant at Prince Rupert.

[Reference: Annual Reports, 1910, 1919, 1922, 1929, and 1938.]

ALICE ARM AREA.

Dolly Varden Group. This property consists of seven Crown-granted mineral claims owned by the Dolly Varden Properties, Ltd. In 1935 the property was leased by T. W. Falconer, Alice Arm, and in 1936 this lease was renewed for a five-year term. The property is located in the Upper Kitsault River Valley, about 18 miles from seaboard at the town of Alice Arm. From this point a narrow-gauge railway extends up the west side of the Kitsault River Valley for 18½ miles to Camp 8 at altitude 950 feet, whence a good pack-horse trail extends up the mountain-slope for five-eighths of a mile to the working camp at 1,730 feet elevation.

During the period of T. W. Falconer's lease up to the end of 1939, the lessee had been actively mining and shipping high-grade ore direct to the smelter. During 1940, 1.3595 tons was shipped to the Government sampling plant at Prince Rupert.

[Reference: Annual Report, 1936, Part B.]

SILVER-LEAD-ZINC DEPOSITS.

TOPLEY-BABINE LAKE AREA.

Golden Eagle Group.—D. Heenan, owner. This property is located about 7 miles by road from Topley. It was operated under lease for a short time during the summer.

Newman Group. This group consists of the *Newman, Home, Jim, Jean,* and *Nord* mineral claims, owned by E. F. Campbell, 1325 Fifteenth Avenue West, Vancouver, B.C., and associates. It is located on the south side of Copper Island, Babine Lake, about 11 miles from Topley Landing.

During the season, at about 30 feet westerly from the lake-shore and 30 feet higher elevation, a shaft was sunk to a depth of 35 feet, from which point the zone was intersected by crosscutting and explored by some lateral drifting. Details of this work are shown on a map which may be obtained for a small charge on application to the Department of Mines, Victoria, B.C.

[Reference: *Richmond* and *Robinhood,* Annual Reports, 1927 and 1929.]

BEAVERDELL AREA.

Highland Bell, Ltd. Company office, Penticton, B.C.; mine office, Beaverdell, B.C.; F. V. Staples, Managing Director. Capital: 1,500,000 shares, $1 par; issued, 1,315,856. The company owns and operates the *Highland Bell,* which is situated on Wallace Mountain, about 5 miles from Beaverdell. A crew of thirty-nine men was employed throughout the year. Development-work in-

cluded 300 feet of drifting, 400 feet of crosscutting, and 125 feet of raising. A total of 7,752 tons of ore was mined and shipped to Trail. This yielded 236 oz. of gold, 993,803 oz. of silver, as well as lead and zinc.

Sally Mines, Ltd. Company office, Penticton, B.C.; mine office, Beaverdell, B.C.; S. J. Crocker, President; H. B. Morley, Secretary-Treasurer; R. C. McLanders, Mine Manager. Capital: 1,000,000 shares, $1 par; issued, 1,000,000 shares. This company owns and operates the *Sally*, on Wallace Mountain, adjoining the *Highland Bell* and *Wellington*. The property is equipped with a complete mining plant. Seven men were employed until early autumn when the mine was closed down. The work was confined to a section of ground adjoining the *Wellington*, access being obtained through the 5 level of that mine under an agreement with the management of that company. A total of 270 tons of ore was mined and shipped to Trail. This yielded 17 oz. of gold, 51,898 oz. of silver, as well as lead and zinc.

In addition to this operation, J. L. Nordman and partner leased a section of the surface on which they worked with hand-steel.

Beaverdell-Wellington Syndicate, Ltd. Company office, Greenwood, B.C.; mine office, Beaverdell, B.C.; Jas. Kerr, President; G. S. Walters, Secretary-Treasurer; A. J. Morrison, Manager. Capital: 50,000 shares, $1 par; issued, 50,000. This company owns the *Wellington*, on Wallace Mountain. The property is operated under lease by A. J. Morrison and associates. Three men were employed. The property is equipped with a complete mining plant. Efforts were directed chiefly to recovering remnants of ore in old stopes and to general salvage-work. A small amount of development-work was done.

Beaver Silver Mines, Ltd. Company office, Box 609, Kelowna, B.C.; mine office, Beaverdell, B.C.; R. B. Staples, President; J. C. Ralston, Secretary. Capital: 2,000,000 shares, 50 cents par; issued, 1,600,000. This company owns the *Beaver* claim, adjoining the ground of the *Highland Bell*. During the year the property was operated by two leasers. Entry to the workings is underground, through the *Highland Bell* property. Compressed air was obtained from the *Highland Bell*.

Revenge.—A small amount of development-work was done on this property late in the year under the direction of A. St. Clair Brindle. The property adjoins the *Highland Bell*.

Napanee-Cobalt.—This property is situated on Wallace Mountain. A small amount of development-work was done by the owner, E. J. Cummings.

Highland Chief. This property, situated on Wallace Mountain, adjoining the *Highland Bell*, is owned by Mark Smith, of Beaverdell, B.C. During the year it was operated under lease by Alex. Bell and associates. Four men were employed, using hand-steel. Development-work included 30 feet of drifting, 240 feet of crosscutting, and 15 feet of raising. In addition, 140 feet of surface-stripping and open-cutting was done.

Midnight Group.—This property is on the main road, 1½ miles south of Beaverdell. A small amount of development was done by the owner, William Youngsten.

LARDEAU AREA.

True Fissure.—This property is situated 3½ miles from Ferguson. J. Van de Haeghe and two partners were engaged in cleaning up and shipping zinc concentrates from previous milling operations.

SLOCAN.

KASLO-THREE FORKS.

Lucky Boy.—This property is situated at Blaylock, B.C., and is owned and operated by C. Lind and sons, of Kaslo.

Rambler. This old property, situated on McGuigan Creek, was operated under lease by S. N. Ross and H. Lazier, of Nelson. Activity was confined to reclaiming of the old dump from the upper levels and concentration of this material by washing, screening, and jigging. A total of 116 tons of concentrates was shipped to Trail.

Lucky Jim. This property, situated at Zincton, B.C., is now owned by the Zincton Mines, Limited, a subsidiary of the Sheep Creek Gold Mines, Limited. Work was chiefly confined to reconditioning of underground workings and overhauling of the surface plant and mill. From three to fifteen men were employed toward the end of the year. A total of 10½ tons of concentrates, cleaned up around the mill, was shipped to Trail.

Utica. This property, located on Paddy's Peak, about 9 miles from the Kaslo–Three Forks Highway, is owned and operated by the Utica (1937) Mines, Limited, 815 Pender Street, Vancouver, B.C., and was operated during the summer under the direction of D. M. Armstead. The property is equipped with a complete mining plant operated by Diesel and water power. Work was confined to driving a raise to connect the low-level crosscut with the old upper workings, but this was not completed. A crew of eight men was employed, five working underground. No ore was shipped.

Kokanee Chief.—This property, situated at the head of Woodbury Creek, was operated for a short time during the summer by the owner, R. G. McLeod. Hand-steel only was used.

Cork Province.—This property is situated on Keen Creek. Clean-up around the mill accounted for 18 tons of concentrate, which was shipped to Trail.

Caledonia.—This property, situated at Blaylock, B.C., was operated for a short time by J. E. McCready, who shipped 6 tons. This yielded 331 oz. of silver and some lead and zinc. Development consisted of 20 feet of sinking.

SANDON-THREE FORKS.

Ruth Hope Mining Co., Ltd. Company office, Vancouver Block, Vancouver, B.C.; R. H. Stewart, President; R. S. Lennie, Secretary-Treasurer. Capital: 2,500,000 shares, $1 par; issued, 1,500,000. This company owns the *Ruth Hope* mine at Sandon. Leases were held by W. C. Stewart and S. Mazoli. A total of 38 tons of ore shipped to Trail yielded 1 oz. of gold, 3,356 oz. of silver, as well as lead and zinc.

Silversmith Mines, Ltd.—Company office, 916 American Building, Seattle, Washington; B. P. von Anderson, Secretary. This company owns the *Silversmith* mine at Sandon. Activities were confined to cleaning and reconditioning old workings. Five men were employed.

Silver Ridge Mining Co., Ltd. Company office, Sandon, B.C.; R. A. Grimes, President; D. D. Townsend, Secretary-Treasurer. Capital: 2,000,000 shares, 50 cents par; issued, 760,000, of which 260,000 pooled. This company owns and operates the *Sunshine* group, situated on Silver Ridge, about 4½ miles from Sandon. The property is equipped with a small Diesel mining plant. Company operation was suspended on March 1st; during the first four months of the year, development consisted of 146 feet of drifting and 481 feet of crosscutting. A crew of six men was employed. Later in the year a lease was taken by J. Tattrie and partners, who mined 45 tons of ore.

Victor. This property, situated about 3 miles from Sandon, is owned by Mrs. D. Petty, of Nelson, and is operated under lease by E. Doney and son. A total of 33 tons of ore yielded 3 oz. of gold, 4,912 oz. of silver, as well as lead and zinc. Development consisted of 130 feet of drifting, 35 feet of crosscutting, and 80 feet of raising.

Monitor.—This property is located at Three Forks. Hans Peterson and partner operated under lease and mined 5 tons from shallow workings and surface-cuts.

Newport.—This property is situated on the Three Forks–New Denver Road, near Alamo. E. J. Vandergrift and partners mined 2.13 tons near the surface by hand-steel.

Other properties in the area, operated under lease by hand-steel, made shipments as follows:—

Capella, by C. Stedile, 5 tons, which yielded 1 oz. of gold and 914 oz. of silver.

Freddie Lee, by S. and N. Sibillean, 3 tons, which yielded 227 oz. of silver and some lead and zinc.

SILVERTON-NEW DENVER.

Bosun. This property is situated on Slocan Lake, between New Denver and Silverton. It is owned by Colin J. Campbell, of New Denver, and was operated by several small groups of leasers during the year. Hand-steel only was used. A total of 95 tons yielded 2 oz. of gold, 5,856 oz. of silver, as well as lead and zinc.

Galena Farm Consolidated Mines, Ltd. Company office, 616 Stock Exchange Building, Vancouver, B.C.; S. W. Miller, President; James Anderson, Secretary-Treasurer. Capital: 2,500,000 shares of no par value; issued, 1,602,203. This company owns the *Hewitt* mine, about 6 miles from Silverton. Early in the year it was leased by Ed. Mathews and R. Sherradan, who mined by hand-steel. Later it was operated under lease for a short time by H. V. Dewis, of Silverton, and associates. A small semi-portable compressor plant was installed and four men were employed. A total of 317 tons was mined, which yielded 4 oz. of gold, 8,427 oz. of silver, as well as lead and zinc.

Western Exploration Co., Ltd. A. M. Ham, General Superintendent; B. Avison, Mine Superintendent; T. Leask, Mill Superintendent. This company operates the *Standard* mine, situated on Emily Creek, 2 miles from Silverton. It is equipped with a complete mining plant and a 200-ton selective flotation-mill. The mill was put into operation on September 11th on a rate of about 170 tons a day to treat zinc tailings which had been dumped into Slocan Lake from earlier operations. A total of 16,197 tons of these tailings was milled. New equipment, installed for recovering tailings, included an electrically-driven double-drum hoist and drag-line scraper, with a bin and belt-conveyer to put the tailings in the fine-ore bin in the mill. Early in November a small crew started to open up old underground workings and prepare for stoping. Some 50 feet of old raise was reconditioned. From underground mining 343 tons of ore was recovered. The number of men employed varied from twelve when the mill alone was operating to a total of thirty-four in both the mine and mill. A total of 1,884 tons of concentrates was shipped to the U.S. Smelting, Refining, and Mining Company at Salt Lake City, Utah. This yielded 5 oz. of gold, 29,909 oz. of silver, and lead and zinc.

AINSWORTH.

Amazon. This property is situated on Woodbury Creek, about half a mile from Kootenay Lake. It is owned by T. E. Levasseur, of Nelson, and was operated for a short time under lease by J. Flagel and four partners. Hand-steel only was used to mine 31.5 tons of ore.

Other properties in this area from which small amounts of ore were shipped are as follows: *Highland,* 7 tons; *Silver Coin,* 4 tons; and *Silver Cup,* 3.5 tons.

SLOCAN CITY.

Ottawa. This property is situated on Springer Creek, about 5 miles from Slocan City. During the year it was operated under lease by W. Hicks and associates, of Slocan City. Four men were employed. Hand-steel only was used for mining, although a mechanical ventilation system was kept in operation. A total of 85 tons of ore yielded 1 oz. of gold and 22,392 oz. of silver. Development consisted of 175 feet of raising.

Meteor.—This property is located at the head of Tobin Creek, a tributary of Springer Creek. Messrs. Larsen and Lundstrom, of Slocan City, operating under lease with hand-steel, shipped 7 tons of ore during the year.

In addition to the above operations a small amount of work, chiefly development and assessment, was done on the following properties in this area: *Speculator, Richmond, Myrtle, Jack,* and *Morning Star.*

NELSON AREA.

Emerald. This property is situated 8 miles from Salmo. Three men, using hand-steel, were employed throughout the year. Development included 159 feet of drifting and 60 feet of crosscutting. This development is

entirely separate from the original *Emerald* workings, some 750 feet distant from them. The recent work has been done in what is known as the *Dodger* tunnel.

CRANBROOK AREA.

Consolidated Mining and Smelting Co. of Canada, Ltd.

Company office, 215 St. James Street, Montreal, Quebec; mine office, Trail, B.C.; Sir Edward Beatty, Chairman; S. G. Blaylock, President and Managing Director; J. E. Riley, Secretary. Sullivan mine office, Kimberley, B.C.; William Lindsay, General Superintendent; J. G. Giegerich, Mine Superintendent; H. R. Banks, Mill Superintendent. Capital: 4,000,000 shares, $5 par; issued, 3,271,669. The company owns and operates the *Sullivan* mine at Kimberley.

The modified methods of extraction, described in the report for 1939, have been applied successfully in the course of 1940 in parts of the mine in which, owing to the uncertain nature of the backs or for other reasons, the application of the method of mining generally followed presented some difficulty or increased hazard. Considerable and conspicuously successful use of long-hole blasting has been made, fan-shaped rounds being bored from sub-levels, at 2-yard intervals, by means of a small and easily transported type of diamond-drill, the performance of which has been remarkable in this kind of work. The filling of worked-out stopes was resumed in the spring and continued until late in the fall, a total of 245,000 cubic yards, equivalent to 882,000 tons of ore in the solid, being placed in the course of the year. Of the stowing material used in this manner, 200,376 cubic yards or 81.78 per cent. was obtained from the surface, and the balance came from development operations and induced caving.

As waste rock alone constitutes a stowing lacking the desired amount of cohesion, it is customary to use it for this purpose in only a part of any one stope and to complete the work with finer material obtained from the surface which, eventually, penetrates and cements the coarser fill effectively. The proportion of water mixed with the gravel and clay, excavated and brought to the raises by bulldozers and a Le Tourneau carry-all, has to be gauged rather closely, as the ultimate quality of the fill and the distance to which it will run from the foot of the raises depend largely upon it. A very effective technique has been developed in this respect and the results, wherever observed, left very little to be desired.

A development of considerable interest and importance is the installation of a tin-recovery plant at the concentrator, work on which was well advanced at the end of the year, this representing the culmination of research carried on locally for some time. As the metal, in the form of cassiterite, is present in the ratio of only about 1 lb. per ton of tailings, with a comparatively large percentage of it of so-called 1,500-mesh size, the process of concentration is a rather complicated one, but a 50-per-cent. recovery is expected. The plant is expected to be in operation at the beginning of 1941.

The total number of persons on the pay-roll at the end of 1940 was 1,223, of which 623 were employed underground, 309 in various capacities on the surface, and 286 at the concentrator.

St. Eugene Mining Corporation, Ltd.

Company office, 25 King Street West, Toronto, Ontario; W. S. Morlock, President; W. B. Malone, Secretary-Treasurer. Capital: 3,000,000 shares, $1 par; issued, 1,589,505. The company acquired the holdings at Moyie of the St. Eugene Extension Gold Mines, Limited. All activities were limited to diamond-drilling from the surface on both sides of Moyie Lake. This work was done under contract in the early part of the summer.

GOLDEN AREA.

Base Metals Mining Corporation, Ltd.

Company office, 350 Bay Street, Toronto, Ontario; mine office, Field, B.C.; J. H. C. Waite, President; G. C. Ames, Secretary-Treasurer; J. D. Galloway, Manager; H. D. Forman, Mine Superintendent; J. A. Edwards, Mill Superintendent. Capital: 3,000,000 shares, no par value; issued, 2,330,715. The company operates the *Monarch* mine on Mount Stephen, 3 miles east of Field. The property is equipped with a 300-ton concentrator. The mill was started on January 15th and production has been maintained since.

The major part of the output was supplied by the *East Monarch*, but it was found that some low-grade ore, abandoned in former years in the western section of the mine, could be mined profitably and that part of the property was re-equipped for production. The development-work done comprised 61 feet of raising, 180 feet of crosscutting, and 366 feet of long holes drilled for exploratory purposes.

The company also owns the *Kicking Horse* mine on Mount Field, on the north side of the Kicking Horse Valley. The property is at approximately the same altitude as the *Monarch*. Operations were resumed in October after having been suspended for nearly three years. It was necessary to complete the construction of the aerial tramway, left unfinished in 1937, and to establish connections between the underground upper terminal of the tramway and the partly developed ore-bodies above it. The latter part of the programme involved 170 feet of raising, the straightening of an existing raise over a length of 80 feet, and 17 feet of crosscutting. The entrances to the mine are on the face of a very abrupt cliff and are somewhat difficult of access. Production was expected to begin on or about February 1st, 1941. The ore will be transported by trucks from the lower terminal of the tramway to the *Monarch* concentrator.

[Reference: Annual Reports, 1935 and 1938, Part E.]

COPPER DEPOSITS.

BURNS LAKE AREA.

Reid Group.

This group consists of the *Golden Glory No. 1, Good Luck, Echo No. 1,* and *Echo No. 2,* with which are associated the *Hyland* and *Echo* claims. It is owned by W. Reid, A. Ostrem, and associates, of Burns Lake. The claims are located on the south side of Decker Lake, opposite Decker Lake Station and about 1½ miles from the lake-shore in the canyon of Reid Creek, around altitude 1,990 feet (altitude of Decker Lake, 1,800 feet).

In one place on the *Golden Glory No. 1* claim, a sparse and irregular mineralization of galena and sphalerite associated with seams of chalcopyrite in a quartzose gangue occurs.

This mineral deposit has been known for a number of years and open-cutting and a small amount of underground exploration has been carried out on it from time to time. Most of the old workings are caved. No appreciable mineralization was observed in the workings and outcrops examined.

In order to determine the degree of values associated with the mineralization, samples were taken and assayed as follows:—

(1.) *Hyland* mineral claim, elevation 2,025 feet. Pyritized dioritic rock intrusive into red andesitic breccia: Gold, *nil;* silver, *nil;* copper, 0.2 per cent.

(2.) *Golden Glory No. 1,* sample of 13 tons of mineralized material in a collapsed bin (reported by W. Reid to have been extracted from an adjacent caved shaft): Gold, 0.01 oz. per ton; silver, 2.9 oz. per ton; copper, 4.4 per cent.

[Reference: Annual Reports, 1926, 1927, and 1930.]

SIMILKAMEEN RIVER AREA.

PRINCETON.

Granby Consolidated Mining, Smelting & Power Co., Ltd.

Company office, 675 Hastings Street West, Vancouver, B.C.; mine office, Copper Mountain, B.C.; Julian B. Beaty, President; A. S. Baillie, General Manager; B. E. Perks, Secretary; A. W. Seaton, Treasurer; W. R. Lindsay, Mine Manager. Capital: 600,000 shares, $5 par; issued, 450,260. The company owns and operates the *Copper Mountain* mine, 12 miles south of Princeton. During the year a 10,000-k.v.a. unit was added to the steam-electric power plant. The coal-supply for the steam generators is from the company's own coal-mining operations in the Princeton district.

This year mining development at Copper Mountain was concentrated at the south end of the mine. Here the principal effort was directed toward recovery of stope pillars. Underground ventilation has been improved by the installation of three fan units located on the Nos. 4, 5, and 6 levels. Exploration and development included 9,376 feet of drifting, 15,847 feet of raising, and 37,504 feet of diamond-drilling. A total of 69,648 tons of concentrates was produced. An average of 643 men was employed.

HIGHLAND VALLEY.

Snowstorm Group. This group is located about 26 miles south-east of the town of Ashcroft, on the eastern side of Highland Valley. Work was done under the supervision of James Rodda. At the time of inspection an old shaft had been dewatered and repaired. The intention was to sink this shaft farther on a small and irregular bornite vein and, if the results of this work proved satisfactory, to drift on the vein from the bottom of the extended shaft.

VANCOUVER AREA.

HOWE SOUND.

Britannia Mining and Smelting Co., Ltd. Company office, 730 Fifth Avenue, New York City; mine office, Britannia Beach, B.C.; E. B. Sebley, President; C. P. Charlton, Secretary-Treasurer; C. P. Browning, General Manager; C. V. Brennan, Assistant General Manager; and George C. Lipsey, Superintendent. The company operates the *Britannia* mine at Britannia Beach, on Howe Sound. The property is fully equipped with mining and milling plant to handle an output of 6,000 to 7,000 tons a day.

In the *Victoria, Fairview, No. 5,* and *Bluff* mines the regular development-work and stoping was carried on throughout the year. In the 4,100 tunnel district two ore-bodies are being opened up and an inclined shaft is being sunk. This shaft is now below the 4,200 level. The 4,100 tunnel is within 2,500 feet of the *Victoria* shaft. This tunnel, when it reaches the *Victoria* shaft, will be about 4 miles in length. The recovery of metals was augmented by the operation of the copper precipitation plant, which continued to treat the copper-bearing portion of the mine-drainage water.

Development-work totalled 28,677 feet or 5.43 miles, made up as follows: drifting, 10,895 feet; crosscutting, 3,771 feet; raises and winzes, 11,602 feet; powder-blast working, 2,155 feet; and shafts, 254 feet. A total of 41,977 feet of diamond-drilling was done. Around 1,200 men were employed over the whole operations at this property.

COPPER-SILVER DEPOSITS.

TELKWA.

HUNTER BASIN.

Conwest Exploration Co., Ltd. Company office, 86 Richmond Street, Toronto, Ontario; British Columbia office, 514 Royal Bank Building, Vancouver, B.C.; F. M. Connell, President; Alan Cockeram, Secretary-Treasurer; Gordon F. MacDonnell, in charge of B.C. operations; F. C. Tomlinson, Manager. Capital: 2,000,000 shares, no par value; issued, 1,250,007 shares. Work was commenced late in 1939 and continued through 1940. A crosscut at 5,804 feet elevation was driven to intersect the vein. Some drifting was done on the vein and high-grade ore was mined selectively. A second crosscut driven at 5,680 feet elevation also intersected the vein. A road about 9 miles in length was built from the Bulkley Valley coal-mine road. A camp was built and small power plant installed. A tramway was installed to connect the camp with the portal of the lower tunnel. Camp elevation is 5,240 feet. Work was continued during the winter. Thirteen men were employed.

Development totalled 150 feet of crosscutting and 300 feet of drifting. About 45 tons of ore was mined; 7 tons of this was shipped, yielding 7 oz. of gold, 122 oz. of silver, as well as copper.

ANTIMONY DEPOSITS.

FORT ST. JAMES AREA.

Stuart Lake Antimony.

This property, located on the south shore of Stuart Lake, 12 miles west of Fort St. James, is under option to Pioneer Gold Mines of B.C., Limited. During the past year a shaft, inclined at 45 degrees, was sunk 130 feet. At the bottom of the shaft a small amount of lateral development was done. In addition to this development a drift, 150 feet long, was driven on another showing. Sixteen men were employed. Operations were suspended for the winter.

MANGANESE DEPOSITS.

FORT FRASER AREA.

Big Marcelle Claim.

This claim is owned by Ben Teed, of Fort Fraser. It is reached by motor-road for about 10 miles from Fort Fraser via Stellaco to Fondeur's ranch, whence a trail extends for 1½ miles to the showing. The formation in the area consists of cherty quartzite which occupies a ridge rising to altitude 2,700 feet. At the top of this ridge a shaft has been sunk to a depth of 12 feet on a small discontinuous slip about 2 inches in width, in which leached manganese oxide has been deposited. Towards the bottom of the shaft the slip is composed of gouge and crushed rock. The fracture planes of the quartzite are also stained with a thin coating of black manganese oxide. In the vicinity of the shaft some sections of the quartzite are also superficially stained with a thin coating of manganese oxide. No manganese mineralization of any commercial importance was observed on these showings.

MERCURY DEPOSITS.

FORT ST. JAMES AREA.

PINCHI LAKE.

Consolidated Mining and Smelting Co. of Canada, Ltd.

E. Bronlund, Superintendent. The property owned by this company is located on the north side of Pinchi Lake, north of Fort St. James. Production commenced during the past summer. At about 110 feet below the surface (710 feet above lake-level), an adit was driven in and through the ore-body. Four raises were put up to surface in the ore and a glory-hole opened around the raises. Ore is drawn off in the tunnel and trammed to a bunker, from which point it is taken by truck to the treatment plant. A new tunnel was started at 300 feet above lake-level, just above the treatment plant, which will eliminate the truck-haul and permit further underground prospecting. Change-house, bunk-house, and other buildings were erected. The plant is powered by steam. A road 11 miles long was built connecting the mine with the Fort St. James–Omineca River Highway. A crew of forty-one men was employed.

[Reference: Bulletin No. 5, 1940.]

BRIDGE RIVER AREA.

Empire Mercury Mines, Ltd. Company office, 2050 Eighteenth Street West, Vancouver, B.C.; mine office, Minto, B.C.; C. P. Riel, President; S. W. Taylor, Secretary-Treasurer. Capital: 3,000,000 shares, 50 cents par. Development-work was almost entirely confined to effecting a connection between the No. 2 workings, which had access to the mill, and the No. 3 workings which opened on to the opposite slope of the hill, and in which several bunches of ore had been previously discovered. A crew of eleven men was employed to do this work.

[Reference: Bulletin No. 5, 1940.]

Red Eagle Group. During 1940 a syndicate headed by A. E. Jukes spent four months at exploratory work on this property. This work, done under the supervision of E. R. Shepherd, consisted of about 200 feet of tunnelling at shallow depth and open-cutting along the strike of the mineralization for a distance of some 1,500 feet. Four miles of trail was also made passable for pack-horses.

[Reference: Bulletin No. 5, 1940.]

PYRITE DEPOSITS.

ECSTALL RIVER.

Northern Pyrites, Ltd. Company office, 744 Hastings Street West, Vancouver, B.C.; mine office, Port Essington, B.C.; R. H. Stewart, President; Sherwood Lett, Secretary-Treasurer; E. E. Mason, Mine Manager. Capital: 1,100,000 shares, 50 cents par; issued, 1,050,716. The property is situated on the east side of Ecstall River, about 45 miles from Port Essington, and is reached by river-boat from that point. During the summer the main adit was extended 904 feet. Four crosscuts, with total length of 635 feet, were driven into the ore-bodies. A raise was put through to the surface and three stations cut at intermediate levels; 5,964 feet of diamond-drilling was done from the underground workings.

The total workings underground now comprise the adit tunnel, 2,780 feet in length; seven crosscuts totalling 864 feet in length; and a raise at 60 degrees, about 600 feet in length.

TUNGSTEN DEPOSITS.

ATLIN AREA.

Consolidated Mining and Smelting Co. of Canada, Ltd. McLeod White, Manager. This company carried out extensive stripping in deep overburden and some open-cutting on the *Tungsten* and *Wolframite* groups located at the head of Boulder Creek. The mineral deposit consists of irregular quartz veins in a feldspar porphyry phase of phanerocrystalline granodiorite. The quartz is generally barren, but wolframite occurs in very sparse and widely-distributed patches and specks.

WELLS.

Columbia Tungstens Co., Ltd. Company office, 61 Broadway, New York, N.Y.; F. Hewitt, President; A. E. Pike, Mine Superintendent. This company owns and operates the *Hardscrabble* mine on Hardscrabble Creek, 5 miles north of Wells. Only development-work was done at the property of this company. The two-compartment shaft which gives access to the mine was extended 94 feet and is now 312 feet deep. The 300 level, as measured from the collar of the shaft, was then opened up. On this level a crosscut was driven 65 feet in a westerly direction to the

major shear, which strikes north-westerly. Forty feet from the shaft a second crosscut was collared on the north wall of the first crosscut and advanced 573 feet, roughly paralleling the major shear. From this long drive several short crosscuts were driven to the shear. A quartz vein about 3 feet wide and well mineralized with pyrite was intersected at 385 feet from the collar of the long drive, and after the drive was stopped this vein was followed for several rounds. A little scheelite mineralization was detected in a fracture, in the right wall of the drive at 170 feet from the collar. This fracture was followed with a drift and a small body of scheelite was exposed. The crew averaged eleven men. There were no additions to the surface plant and the mill remained inactive throughout the year.

[Reference: Bulletin No. 10, 1941.]

BRIDGE RIVER.

Phillips Group. This group is located on both sides of the Manitou Road, on the south side of Tyaughton Creek, and about 2 miles from the *Manitou* mine. It is owned by E. Phillips, of Minto, who has worked the property intermittently and has made several small shipments of tungsten ore.

[Reference: Bulletin No. 10, 1941.]

REVELSTOKE AREA.

Regal Silver. This property, situated on Woolsey Creek, is now controlled by W. S. Campbell, J. F. McMillan, and E. N. Kennedy, 36 Dominion Bank Building, Edmonton, Alberta. The property is equipped with a complete mining plant and a mill of 75 to 100 tons capacity, the latter located underground. A total of twenty-two men, fifteen underground, was employed from August 15th to the end of the year, under the direction of A. S. MacCollough. Additions have been made to the mill equipment in an attempt to improve the scheelite recovery. The mill is operated electrically and a 60-horse-power Fairbanks-Morse Diesel, belt-connected to a 75-k.v.a. generator, has been installed in the power-house for this purpose. Development included 125 feet of drifting.

[Reference: Bulletin No. 10, 1941.]

PLACER-GOLD DEPOSITS.

ATLIN AREA.

SPRUCE CREEK.*

Dream Lease. No. 1 shaft: John W. Noland is the owner and operator. During the year the Columbia Development, Limited, made an arrangement by which this company was given a lay on 2,000 feet up-stream from the face of the *Dream* workings, with an option on an additional 1,000 feet.

The Columbia Development started sinking operations in the No. 2 shaft and also in the drift off No. 1 shaft. Part of the programme of this company consists of completion of a second exit from the underground workings. Soon after work began difficulty developed with the power equipment, and it was necessary to install new machinery. Thirty-five men were employed.

Spruce Creek Mining Co., Ltd. Company office, 615 Credit Foncier Building, 850 Hastings Street West, Vancouver, B.C.; J. G. Wheeling, Manager. Capital: 50,000 shares, $1 par. No. 1 shaft: This is the upper shaft, which is now operated on a lay by J. Clee and partners. They are working up-stream, close to the old workings, in ground not worked previously by the Colpe Mining Company. Four men are employed on single shift.

* Reference: Annual Report, 1936, Part B.

No. 2 shaft: Matson and partners have a lay on this shaft from which there is a connection to No. 1 shaft. All water from both shafts is handled at No. 2. The object of the present operation is to reach the *China* section of the mine where there remain some recoverable pillars. Four men were employed.

No. 4 shaft: This shaft is operated by the company. There has been considerable difficulty with water owing to caving which occurred where pillars had been drawn. As a result it has been necessary to build a surface flume to carry across the area disturbed by the caving. Twenty men were employed.

No. 5 shaft: A lay has been in effect at this shaft for some time but little has been done on account of the water. The fluming of the creek mentioned above should permit operation.

Clydesdale Lease. McDonald, McKay, and Munro, operators. This lease adjoins No. 4 shaft of the Spruce Creek Mining Company. Seepage of surface water has delayed operations but, here too, the recent fluming of the creek will be beneficial. Only the laymen were employed.

Wolf Lease.—Vickstrom, Malm, and Johnson, laymen. This is a bench lease. The laymen are employed in drifting up-stream adjacent to No. 4 shaft.

Croker Lease.—Fred Ohman and partners. This is a bench lease. A drainage-tunnel from the *Poker* lease has been completed. A connection was also made through to the *Brown* shaft, and these workings were unwatered.

Poker Lease (Lower).—Troha and partners. These workings have been idle since the flume collapsed on the *Olalla* lease.

Peterboro Lease. Otto Miller and sons. These men have been working around old workings which were damaged by water when the flume collapsed on the *Olalla* lease. A settlement was made between Miller and the Columbia Development, Limited, and development of a new opening into the workings is now in progress.

Gladstone Lease.—John Logar and partners. Three men were engaged drifting into the bench and extracting pillars.

From this point down-stream to the lowest working on the creek, the *St. Quentin* lease, most of the ground is being worked by laymen.

Boulder Creek.

Consolidated Mining and Smelting Co. of Canada, Ltd.—McLeod White, Superintendent. This is a hydraulic operation employing twenty-two men.

Pine Creek.*

Northern Resources, Ltd. P. Jensen, Superintendent. This organization has only recently commenced operations in the district. Options have been acquired on all of Pine Creek and Gold Run up to Surprise Lake. Drag-line and bull-dozers are used to move gravel to a mobile sluice-box. Pine Creek has been deepened from a point below the Spruce Creek Road in order to give drainage on bed-rock farther up-stream. Thirty men were employed.

Otter Creek.

Compagnie Francaise des Mines d'Or du Canada.—Walter Sweet, Manager. Underground operations have been suspended. Walter Johnson & Company have an option on the property and have done a considerable amount of prospecting and sampling. Sweet and three partners, working on a lay, opened a small hydraulic pit down-stream from the underground workings.

Birch Creek.

Several groups of men were engaged in ground-sluicing.

Wright Creek.

Arctic Lease.—Hodges and Moran, laymen. This is a hydraulic operation employing five men. Water is scarce, sufficient only for four to five runs of half-hour duration daily.

Three other groups of men were engaged ground-sluicing farther up-stream.

* Reference: Annual Report, 1936, Part B.

RUBY CREEK.

Surprise Lake Mining Co., Ltd.—P. Matson and partners, laymen. This is a hydraulic operation employing five partners.

Allen and Cawder Leases.—The Columbia Development, Limited, had an option on these leases and did some prospecting. The lease was dropped.

Scott Lease.—J. W. Noland, owner. Three men had a lay on this and were drifting into the bench.

MCKEE CREEK.

Conroy Fraction.—Clayton Gibbs and partners, laymen. Three men were engaged drifting into the bench.

P. Nord is working alone driving drainage-tunnel to his lease. This is now in over 300 feet with 150 feet yet to drive.

Watt, Lindgren, and Swanson.—The partners and three other men were engaged in preparing for a hydraulic operation. A deep drainage-ditch has been cut for 250 feet through rim rock.

FOURTH OF JULY CREEK.

Two groups of men were engaged prospecting on the creek.

Brown Shaft. Oscar Nelson and partners. This lease has not worked for a number of years on account of excess water. When the connection was made from the *Croker* lease and the mine drained, operations were commenced by the laymen. Three men were employed.

Friendship Lease. Wright and Brown, laymen. This property did not work during the year on account of excess water. The McRae interests have taken an option on this lease and other up-stream creek leases as far as the small canyon below the Spruce Creek Mining Company No. 5 shaft. In this area considerable drilling was done during the summer.

Rose Claims.—Nelson and Johnson, operators. Five men were employed drifting and extracting pillars. Only the upper shaft was used.

Columbia Development, Ltd. James H. Eastman, Manager. This company worked on the *Olalla* lease. Steam-shovel surface operations were continued. At the start of the season drag-line methods were tried but were discontinued. Early in the season delay was caused by the collapse of the flume which carries the creek around the shovel pit. Twenty men were employed.

Poker Lease (Upper).—Ivanic and partners. This bench lease adjoins the *Olalla* and *Rose* leases. Four men are employed drifting up-stream and into the bench.

SQUAW CREEK AREA.

Squaw Creek is located in the extreme north-westerly corner of the Province and flows across the Yukon Boundary to its confluence with the Tatchenshini River. Individual placer-mining has been carried out on this creek for several years by both Indian and white miners.

During 1940 twenty-five men were employed at thirteen different operations on this creek, from which 175 oz. of gold is reported to have been produced from the handling of 3,000 cubic yards.

STIKINE AREA.

This area was not visited during the year.

MANSON CREEK AREA.*

LOST CREEK.

Lost Creek Placer Gold, Ltd. Company office, 736 Granville Street, Vancouver, B.C.; Bert McDonald, Manager. Capital: 100,000 shares, $1 par. This is a hydraulic operation at the mouth of Lost Creek, using one monitor in the pit and another stacking tailings in Manson Creek. Slightly over 6 miles of ditch and flume have been built to bring an adequate head of water from Manson Creek.

* Reference: Annual Report, 1936, Part C.

The pipe-line from the pressure-box to nozzle is 2,900 feet long and has a head of 225 feet. Approximately 125,000 cubic yards of gravel was moved. Fourteen men were employed.

SLATE CREEK.

The Consolidated Mining and Smelting Company did not operate during the year.

GERMANSEN CREEK.

Germansen Mines, Ltd. Company office, 789 Pender Street West, Vancouver, B.C.; R. C. McCorkell, President; M. A. Manson, Secretary; A. A. McCorkell, Manager. Capital: 750,000 shares, 50 cents par. This company has a hydraulic operation on the east bank of Germansen Creek. The overburden is heavy and there is a band of glacial clay above the pay-gravels. The clay is very resistant to water and usually comes down in large pieces which have to be blasted in the pit. Thirty men were employed.

Venture Exploration Co. (East Africa), Ltd. Company office, Stanley House, Hardinge Street, Nairobi, Kenya Colony; British Columbia office, Prince Rupert, B.C.; A. A. Lawrie, Secretary; W. H. Eassie, Manager. Capital: 3,000 shares, no par value. This company has a hydraulic operation on the west bank of Germansen Creek, near its junction with the Omineca River. One pit was in full operation during the past season and another was being prepared. Two monitors were in use in the operating pit, the face of which is over 100 feet high. Over 1,000,000 cubic yards was moved during the season. Fifty-three men were employed.

There are a considerable number of individuals employed on the various small creeks in the district, sniping and prospecting.

TAKLA LAKE AREA.

TOM CREEK.

Tom Creek Placers, Ltd. Company office, 510 Hastings Street West, Vancouver, B.C.; T. A. Kelley, President; Laura L. McGhee, Secretary; J. J. Warren, Manager. Capital: 250 shares, $100 par. This is a steam-shovel operation employing fifteen men. A narrow canyon was encountered in the channel and shovel operations were suspended about the end of August.

Prospectors were engaged on Vital, Harrison, Silver, and Quartz Creeks.

CARIBOO AREA.

BARKERVILLE-WELLS.

Lowhee Mining Co., Ltd. Company office, Rust Building, Tacoma, Washington; mine office, Barkerville, B.C.; C. W. Lea, President and General Manager; Paul Barker, Secretary-Treasurer; Henry Lea, Superintendent. Capital: 750,000 shares, $1 par; issued, 635,156. The company operates an hydraulic mine on Lowhee Creek near Barkerville. The hydraulic pit was advanced 260 feet during the season and about 250,000 cubic yards of material were washed through the sluice-boxes. Operations started in mid-April and continued to the end of October. During high water in the spring about fifteen men were employed on two daylight shifts; after the water dropped in the autumn only one shift was employed. The face of the pit is now only about 150 yards from the dam at the head of the creek.

Barkerville Gold Mines, Ltd. Company office, Royal Trust Building, Vancouver, B.C.; J. A. Wright, Secretary; C. A. McPherson, Superintendent. Capital: 200,000 shares, $1 par. This company continued to develop the *Waverly Placers* at Grouse Creek. A search is being made for the outlet of the old *Grouse Creek* channel, known also as the *Glasgow* channel. Drilling during the year located a portion of this channel and also some shallow pay-gravels alongside it. It was decided to work these pay-gravels but, in order to establish dumping space and grade for the sluice-boxes, it was necessary to pipe out a very narrow and irregular gutter leading from the old pit to the location of these newly discovered gravels. This work was completed at the time of inspection, and it is estimated that 86,000 yards of gravel has been moved.

French Creek Placers.—A crew of ten men under the supervision of I. I. Felker was employed at this property during the early part of the 1940 season. At the time of inspection a No. 6 monitor was working under a head of 280 feet. It is reported that 15,000 yards of gravel was hydraulicked.

Red Gulch Placers. This property was worked during the season by J. J. Gunn, layman. He employed as many as seven men during high water, and was using a No. 4 monitor. He was engaged in removing remnants of the channel left by other operators, but was unable to reach bed-rock at the mouth of his sluice-boxes.

Black Jack Cariboo Mines, Ltd.—This company was engaged in small-scale sluicing operations on Williams Creek, Grouse Creek, and Canadian Creek.

Little Valley Creek.

Lease of A. Fleury.—It is reported that two men sluicing on this creek treated 3,000 yards of gravel.

Lease of R. Niemeyer.—Sluicing and hydraulicking operations on this lease were undertaken on a small scale. About 1,500 yards of material was treated.

Lease of G. Halverson.—Two men hydraulicking on this lease treated 2,500 yards of material.

Two-bit Creek.

Lease of T. Dunlop.—This lease is located on Two-bit Creek, a tributary of Little Valley Creek. Three men sluiced about 1,500 yards of gravel during the season.

McArthur's Gulch.

Lease of Knut Johannson.—This ground lies beside the Wells–Barkerville Highway, midway between the two towns. Working alone, K. Johannson hydraulicked about 2,000 yards of material with a small monitor.

Wolfe Creek.

Lease of Thompson and Dowsett.—Wolfe Creek is a tributary of Antler Creek and lies about 7 miles south of Barkerville. It is reported that a test-shaft was sunk and that about 1,200 yards was hydraulicked.

Cunningham Creek.

Trehouse Placers. Three leases located on Cunningham Creek, about 12 miles south of Barkerville, are owned by the Tregillus brothers and J. House, of Barkerville. They were worked by W. G. Beamish and associates, laymen. These men used a small monitor and washed about 5,000 yards of gravels from three small pits. They were unable to get to bed-rock, and to do so would require considerable development-work.

Test-work was also being done on this creek on behalf of Fraser and Pears, of Quesnel.

Copper Creek.

Triple Hydraulic Placers.—Development-work was continued at this operation and about 15,000 yards of material was moved with a small monitor.

Shepherd Creek.

Claim of R. D. Rees.—It is reported that R. D. Rees, working alone, treated about 1,000 yards of material.

Pine Creek.

Lease of J. P. Roddick.—The lessee and two other men were engaged at this property. A No. 2 monitor was in use at the time of inspection. Some test-work was also done.

Wells-Stanley.

Ketch, Ltd. This property is located beside the Quesnel–Barkerville Road, about 5 miles west of Wells. Working under the supervision of R. E. McDougall, of Wells, a maximum of ten men was employed during the season.

The equipment was not changed during the year, but the operation was on a smaller scale and there was available only 1,100 hours of water as compared with 1,400 last year. A new pit is being advanced towards the old and is also being used to prospect lower benches than formerly worked. About 60,000 yards was hydraulicked in the old pit and about 20,000 in the new.

Dragon Creek Placers. This hydraulic operation, owned by Messrs. Peebles and McDougall, is located on Dragon Creek, about 5 miles northerly from the *Ketch* property. Advance this season was through ground worked by Chinamen in the early days. A No. 2 monitor is used and a hoist and high-line permit removal of large boulders. About 35,000 yards of material was removed in an advance of about 500 feet. This advance was to establish grade for the boxes, and is heading for virgin ground above the Chinese workings. Some gold was recovered, including coarse nuggets left behind by the Chinese.

Montgomery Creek Placers. Owned and operated by William Hong, this property is located about 1 mile south of the *Dragon Creek Placers*. Development-work was continued during this season. At the time of inspection two men were clearing ground and piping from the top of the narrow pit, which was about 60 feet deep. This pit is being advanced on grade up Montgomery Creek from the Willow Creek flats. It has not yet reached bed-rock, and is as yet non-productive. Some further drilling to outline the pay-channel was also done.

Sangdang Placers. This property is owned and operated by William Hong, of Barkerville. It is located on Slough Creek benches, about 1 mile north of the *Ketch* property. Gravel from an area of approximately 7 acres was removed by hydraulicking. This area was south-west of and lower than the location of last year's operation. The amount of water available, the equipment, and height of the banks were all about the same as last year. The scarcity of large boulders reduced the powder consumption, but the gold-recovery was low and much of the gold was in the crushed bed-rock. Fifteen men were employed. Three monitors used an average of 30 second-feet of water.

Coulter Creek Placers. Coulter Creek enters Slough Creek directly across from the *Sangdang* operation. Three laymen were operating in the pit of this property for two months during the summer. They were using a No. 2 monitor working under a head of 100 feet. Little water was available, which fact necessitated the use of a flood-gate.

JACK OF CLUBS CREEK.

Jack of Clubs Lake Mining Syndicate.—It was the intention of this syndicate, headed by H. R. Hatch, to drift on ground lying about 5 miles up Jack of Clubs Creek from the Wells Highway. A good road was made to the property and a camp established; after this, work was discontinued.

LIGHTNING CREEK.

Grub Gulch Placers. This operation is located on Grub Gulch, which enters Lightning Creek from the west at Van Winkle. It is owned jointly by William Hong, Jack Hind, and Frank Freeman, all of Barkerville, and R. H. Harlin, of Seattle. During the year two of the partners, with one other man, installed sluice-boxes and pipe-line and washed about 10,000 yards from two small pits. A No. 3 monitor under a 75-foot head used about 18 second-feet of water.

Bowman Mines, Ltd. R. E. McDougall and associates, of Wells, have obtained a working option on the property of this company, which lies along the west side of Lightning Creek above Amador Creek. Development-work was confined to the *Eldorado* claim, located at the confluence of the two creeks about 2 miles south-east of Stanley. A narrow gutter was piped out in the belief that it was the probable outlet of a Tertiary channel in which test-work done some years ago had revealed good values. A large portion of the hillside above Lightning Creek was caused to slide into the creek by hydraulicking down to sloping beds of slum. In all, about 225,000 yards were moved by these means and in the actual piping out of the gutter.

Stanley Mining Co., Ltd. This company is developing an underground placer operation beneath Lightning Creek at Stanley. The work is supervised by A. Brown, of Barkerville. Before actual mining was started considerable drilling was done to prove the ground. A shaft has been sunk 16 feet to clay. A head-frame, dry, machine-shop, and warehouse have been erected.

STANLEY-QUESNEL.

Donovan Creek Placers. This property has been purchased from M. Sunberg by Mr. Graham, of Kamloops, who intends to enlarge the scope of the operation. He has cleaned the existing ditch and has started another, which eventually will tap Peters Creek. At present this new ditch adds to his water-supply by tapping several springs on the hillside. This has permitted the installation of a larger pipe-line and monitor.

Langford Mines, Ltd. Company office, Saunders Avenue, Wells, B.C.; H. B. King, Secretary; K. K. Langford, Manager. Capital: 100,000 shares, $1 par. This company owns the property known as *Langford Placers*, located 7 miles north of the highway at Beaver Pass. During the first part of the past season the property was operated by the Coast and Lakes Alluvials, Limited. A carry-all and bulldozer were added to the equipment, as described in the Annual Report for 1939. This year about 50,000 yards of bench gravels have been washed. The Coast and Lakes Alluvials, Limited, ceased operations in midsummer and the property reverted to the Langford Mines, Limited. The latter company has installed a gravity water system for the sluice-boxes and a small steam plant which provides power to stack tailings by scraper. A bulldozer will move the gravels to the sluice-boxes. Capacity of the sluice-boxes and undercurrents is about 60 yards per hour.

C.B.A. Mines, Ltd. K. K. Langford is President and Manager of this company. The property lies midway between the Wells Highway and the Langford Mines, Limited. Two monitors are used, and the tailings are stacked by a large crescent scraper run off a double-drum hoist, powered by a 50-horse-power Diesel engine.

Fry's Placer.—This hydraulic operation was operated during 1940 by Thomas Fry and two hired men. The slide mentioned in the Annual Report for 1939 made it necessary to open a new pit farther up Larsen's Gulch.

Carlsen's Placer.—This property is located about 1 mile north of *Langford Placers* and is operated by Mr. Carlsen alone. During the year he was engaged in the construction of flume and sluice-boxes.

Slade Creek Placers.—This operation is located on Slade Creek beside the Langford road about 4 miles north of the Wells Highway. Pipe and sluice-boxes have been installed and a hydraulic pit started.

Pearson's Placers. This operation is located about 3 miles from the Wells Highway at Beaver Pass, and adjoins the ground of the *C.B.A. Placers*. D. Pearson, owner of the lease, and E. Dreske, owner of a small monitor and pipe-line, operated during the year. One other man was employed. Work was concentrated on shallow gravels at the mouth of Kee Khan Creek. Large boulders were hoisted out of the pit on a stone-boat which was pulled up an inclined skid-road by means of a hand-winch and block and tackle.

Hyde Creek Placers.—It is reported that some work was done at this property near Beaver Pass Valley, owned by Dr. O. R. Hougen, of Mission City.

Slade Placers, Ltd. The operation of this company is located at the mouth of Mosquito Creek, which enters Lightning Creek about 2 miles west of Wingdam. The pit opened up last year was enlarged and about 37,500 yards were treated. The plant and crew were the same as the previous year.

Lease of E. J. Norman.—Formerly known as Svenson's Lease. Norman and various partners carried out development-work and did considerable prospecting during the year. The ground is located along the Swift River, between Lightning and Sovereign Creeks.

Sovereign Creek.—D. D. Fraser and associates, of Quesnel, have done considerable test-work on their ground on Sovereign Creek.

Quesnel-Prince George.

Cottonwood Gold Dredging Co., Ltd. (N.P.L.). Company office, 612 Vancouver Block, Vancouver, B.C.; President, Charles Wm. Neville; Secretary, Rowland John Neville. Capital: 25,000 preferred shares, $1 par; 100,000 common, no par value. This company conducted test-work on the holdings of Jones, Burt, and Ayton on the Cottonwood River, about 7 miles below Cottonwood House. Seventeen test-pits were sunk in shallow gravels and about 1,000 yards were treated by hand-sluicing methods.

Cariboo Cottonwood Placers, Ltd. Company office, 470 Granville Street, Vancouver, B.C.; J. W. Phillips, Manager. Capital: 250,000 shares, $1 par. The property of this company is located about 7 miles up the Cottonwood River from the Prince George–Quesnel Highway, at Cinema, 20 miles north of Quesnel. Hydraulicking operations commenced early in the year and continued until freeze-up. It is reported that 460,000 yards were treated. The greater part of this consisted of Cottonwood gravels which overlie the deep Tertiary channel. It is understood that the Tertiary channel proper was entered about the end of the season. At the time of the last inspection eight men were working on three shifts, operating two monitors under a head of 300 feet. The gravels were washed into sluice-boxes which were 5 feet wide, laid with a slope of 7 inches in 12 feet for a total length of 164 feet. The riffles were 40-lb. rails laid longitudinally. At the lower end there were five undercurrent boxes with slopes of 1 and 1½ per cent. These are covered with a mat and metal lathing. The main sluice-boxes can be cleaned in eight hours. The undercurrents are cleaned in four hours, one at a time, twice a week. All the material is washed through a Laurentsen gold-saving box, and the gold is not handled until it is removed from this box in the form of a high-grade concentrate. Water-supply is adequate and dumping-space entirely satisfactory. Boulders are few and there is no heavy timber-growth on the surface.

During the summer a storage-dam and spillways were constructed to provide emergency water-supply at a lake 14 miles from the pit. During the period of construction the crew totalled about twenty-four men. The road to the property was gravelled.

Property of A. Bellos and Associates. This property adjoins that of the Cariboo Cottonwood Placers, Limited. Mr. Bellos worked a 50-foot bench on the north side of the river at Mile 19, or about 1½ miles above the *Cariboo Cottonwood* pit. Using a 4-inch centrifugal pump to raise water from the river to operate a No. 1 monitor with a 2-inch nozzle, he was able to treat ordinary gravel and sand at the rate of about 25 yards per day.

Kent Dredging Co.—It is understood that test-work conducted on ground at the mouth of the Cottonwood River was for the account of this company.

Tabor Creek.

Operation of Thomas Robertson et al. This operation is on bench leases located along the Fraser River about 15 miles south of Prince George. At the time of inspection in June the equipment consisted of a ¾-yard gas-shovel and two dump-trucks, each of 3-yard capacity. The trucks were used to haul gravel from the shovel to a grizzly over the sluice-boxes. Six men were employed, all on one shift.

Cormack Mining Co., Ltd. The property of this company is located on the west side of the Fraser River, about 20 miles north of Quesnel. It is directly across the river from the old *Tertiary* mine, and access is by means of the *Tertiary* mine road. The ground that it is proposed to mine by underground methods is said to be the extension to the south-west of the channel in the *Tertiary* mine workings. Old drift workings are flooded to the river-level, but above this are still accessible. At the time of inspection a frame building had been erected to house a Denver gold-pan and a small compressor, the latter to operate a jack-hammer. A small storage-bin had been built above the gold-pan and a ramp extended from this to the portal of an old adit. Four men were employed.

Tertiary Mine.—It is understood that E. J. Reese, of Quesnel, is attempting to recover values from the old dumps at this mine. Two partners built a small dredge with the intention of recovering gold from a sunken bar down-stream from this mine.

QUESNEL-WILLIAMS LAKE.

FRASER RIVER.

Operation of A. P. Himmelman.—Himmelman rented the Ainlay bowl plant belonging to the Canamco Mining Company, and used it on his bench leases at Alexandria.

QUESNEL RIVER.

Operations of H. Craig, Munn, and E. J. Reese. This operation is conducted on a bench on the north bank of the Quesnel River, down-stream from the mouth of Buxton Creek. At the time of inspection of this property a mobile washing plant was being constructed. This consisted of an incline to the top of a wooden tower, erected on skids, and with a bin at the top. A bulldozer moves gravel to the bottom of the incline where it is dumped into a skip. On its return for more gravel the bulldozer hoists the skip to the top of the incline where it dumps automatically into the bin. From the bin the gravels enter the sluice-boxes through a grizzly. A Diesel centrifugal pump is used to hoist the water to the boxes. As soon as the gravels within economic range have been treated, the entire plant is moved to a new location along the bench.

Bullion Placers, Ltd. Company office, 917 Vancouver Block, Vancouver, B.C.; R. F. Sharpe, President and Mine Manager; H. Ray, Secretary-Treasurer. This company owns and operates the *Bullion* property on the South Fork of the Quesnel River. The season started on April 1st and continued until September, when labour trouble caused the premature suspension of work for the year. It is estimated that the gravel handled amounted to 1,037,000 yards from the South Fork pit, and 512,000 yards from the Drop pit. In addition, about 150,000 yards of solid rock was removed to provide a sluice-channel at the latter pit. During the earlier part of the season two monitors were employed, one in each pit. Later, when work was confined to the Drop pit, there was used a specially built monitor with an 11½-inch nozzle, which required in excess of 90 second-feet of water under a head of about 400 feet. The crew varied from sixty to seventy-five men, a large number of these being required for maintenance on the waterways leading to the pits.

BLACK BEAR MOUNTAIN (VICINITY OF LIKELY).

Perseverance Gold Mines, Ltd. L. O. Gostling, Manager. The adit mentioned in the Annual Report for 1939 had been advanced to a point 650 feet from the portal at the time of inspection in June. It had passed through one channel, several feet above bed-rock, and was half-way across a second channel when it broke into a small slum-body and had to be discontinued. An up-stream drive was then started in order to reach bed-rock in the main channel. It is understood that this has been advanced about 50 feet, and that a ventilation raise has been driven 44 feet.

KEITHLEY.

Placer Engineers, Ltd. Company office, 504 Randall Building, Vancouver, B.C.; mine office, Keithley Creek, B.C.; George Harrison, President; George V. F. Hudson, Secretary-Treasurer; E. Lang, Superintendent. Capital: 750,000 shares, no par value; issued, 541,452. The company is operating an hydraulic mine on Keithley Creek, about 4 miles from the town of Keithley. Operations started in the *Onward* pit this year were planned to prove that the ancient *Keithley* channel extended easterly from this pit. When the desired information was obtained work was resumed in the *China* pit, where a remaining bench was cleaned off. After this was completed, work was started to reopen the *Onward* pit, where it will be necessary to cut a rock channel for the sluice-boxes. The channel which it is proposed to work is above the old gutter drifted on by Veith and Borland in 1900. A crew of twelve men was employed on three shifts throughout the greater part of the season.

There was ample water until the middle of October. One monitor was used with a 15-inch intake and 6-inch nozzle. The head of water in the *Onward* pit was about 240 feet; the monitor used about 30 second-feet.

Burrard Placers, Ltd. Company office, 555 Burrard Street, Vancouver, B.C.; B. Boe, Manager. Capital: 2,000 shares, $1 par; issued, 2,000 shares. At Pine Creek, 5 miles east of Keithley, this company continued operations with practically the same crew and equipment as last year. One monitor was destroyed by a bank-slide early in the season. The pit was ringed with a ditch to carry surplus water from the hillside into the supply-flume, and so prevent further slides that could be caused by seepage between the boulder-clay and gravel strata.

Harvey Creek Mines, Ltd. Company office, 555 Burrard Street, Vancouver, B.C. This property is on Harvey Creek, about 5 miles north-east of Pine Creek. A new pit was started early in the season, down-stream from previous workings. The overburden was stripped for about 1½ miles and the sluice-boxes were built and installed. It is understood that piping of the pay-gravels commenced toward the end of the season.

CLINTON AREA.

WATSON BAR CREEK.

Canyon Lease. This lease extends up-stream from the mouth of the North Fork of Watson Bar Creek, tributary of the Fraser River, about 35 miles north of Lillooet. The lessee, J. Ross, and his two sons are drifting to bed-rock and have advanced an adit about 150 feet in glacial clay and gravels.

Sunrise Lease. This lease lies immediately above the *Canyon* lease. Messrs. H. McLeod and J. Ormond, partners, were engaged in ground-sluicing and in sinking a shaft to bed-rock. A 1½-inch pump was used to remove seepage from the shaft.

Homestake Lease. This lease lies above the *Sunrise* and is the top lease on the stream. During the past season M. Daly and J. C. McWhirter have been engaged in driving a long open-cut and adit on water-grade to reach bed-rock at the lower end of their lease. The open-cut is about 300 feet long. The adit extends 150 feet from the end of the open-cut. To reach bed-rock an additional advance of 150 feet is required in the adit.

LILLOOET AREA.

FRASER RIVER.

Lease of L. D. Leonard. This lease extends northward along the east bank of the Fraser River from Sallus or 14-Mile Creek. L. D. Leonard, the lessee, is testing an old channel which intersects the Fraser at the mouth of Sallus Creek and again about 1½ miles farther north. He has driven two short tunnels along the rim of this channel and has done some open-cutting, all at the down-stream exposure.

MCGILLIVRAY CREEK.

Lease of Leonie Weeden.—About 2,000 yards of gravel was moved on two leases. Large boulders were handled by blasting and mechanical means.

CAYOOSH CREEK.

Lease of Clayton D. Waring.—This is located about 5 miles above the mouth of Cayoosh Creek. D. Waring, lessee, has done considerable testing on this lease, and at the end of the year was engaged in driving a tunnel to divert the creek from the pay-gravels.

Operation of Frank Johnson and Associates.—These men were attempting to recover gold from the bed of Cayoosh Creek, about 7 miles above its mouth. A dam was built to deflect the river through a diversion channel. The dam did not hold.

VERNON AREA.

Rambler Placers. This property is situated on Monashee Creek, a tributary of Cherry Creek, about 42 miles from Vernon, B.C. It is owned and operated by H. J. Fallow and associates, of Vernon, B.C. The gold-bearing gravel is in an old channel just below the present creek-bed and is mined by stripping the overlying ground and taking up the pay-dirt by means of a gasoline-operated shovel mounted on a truck. The gravel is then hauled by truck up a ramp and dumped through a grizzly into a standard sluice-box. Water is supplied by a 12- by 24-inch wooden flume with the intake some 700 feet up the creek. Boulders on the grizzly are collected in a bin and moved by truck. Some 3,100 feet of new road was built and about the same length of old road reconditioned to give access to the property from the Vernon–Edgewood Highway. Camp buildings were constructed. Six men were employed until November, when the operation ceased.

ROCK CREEK.

Jolly Creek Placers. This property is situated on Rock Creek, about 3 miles from Camp McKinney, and is owned and operated by V. J. Melsted, of Rock Creek, B.C. An old channel is being mined by drift methods. About 200 feet of drifting and crosscutting was done during the season. The pay-dirt is stripped from bed-rock and transported in wheelbarrows to the surface where the gold is recovered in a standard sluice-box. Four men were employed.

NELSON AREA.

Nelson Placers, Ltd.—This property is situated on Forty-nine Creek, about 8 miles from Nelson. It was operated under a lease by Herman Hallett and W. Swift. The gravel is washed into standard sluice-boxes by monitors.

HALL CREEK.

Several small operations were conducted during the summer.

PEND-D'OREILLE RIVER.

Several small operations employing one or two men were conducted along the river during the summer months.

BIG BEND AREA.

The only activities in this area during the past season were on Lease No. 202 on McCullough Creek, owned and operated by C. M. Williams and D. M. Fulmore, and on the *Hail Columbia* lease at 62-Mile, owned and operated by Alex. McCrae and sons.

CLAY AND SHALE.

NEW WESTMINSTER AREA.

Clayburn Co., Ltd. Company office, 850 Hastings Street West, Vancouver, B.C.; W. C. Cummings, Secretary-Treasurer; J. W. Ball, Manager. Capital: 4,000 shares, $100 par. The mines and plant of this company are situated about 50 miles east of Vancouver. The method of operating the fireclay deposits is similar to the operating methods in the coal mines. The roadways and working-places are well timbered and ventilation is good. Thirteen men are employed underground. The production for the year amounted to: Fireclay from Kilgard mine, 14,363 tons; No. 4B mine, 1,485 tons; No. 9 mine, 1,935 tons; and shale, 462 tons.

Sumas Firebrick Co.—This company operates a small fireclay quarry at Kilgard. The clay is transported by truck to the plant at New Westminster. Three men are employed.

GABRIOLA ISLAND.

Dominion Brick Co.

Thomas G. McBride, Manager. This property was formerly operated by the Gabriola Shale Products, Limited. Work under the Dominion Brick Company was begun in August with a crew of twenty-three men steadily employed until November, when the plant was closed for the season. The quarry operations proper are under the supervision of an experienced workman and all blasting is done by electric cable and battery.

GYPSUM.

FALKLAND AREA.

Gypsum, Lime, and Alabastine, Canada, Ltd.

Company office, Paris, Ontario; British Columbia office, 804 Richards Street, Vancouver, B.C.; R. Haire, President; S. H. Reid, Secretary; Alex. Jessiman, Superintendent. Capital: 100,000 shares, no par value. The company operates four quarries situated at Falkland, 40 miles south of Kamloops, near the Kamloops–Vernon Highway. Shipping facilities are provided by the Canadian National Railway, over which the gypsum is shipped to the calcining and board mill at Port Mann, B.C.

Nos. 1, 2, 3, 4, and 5 quarries are operated at an elevation of 500 to 800 feet higher than the railroad bunkers, to which the gypsum is transported by an aerial tram some 3,500 feet long. The gypsum is mined in open quarries, and during the present year work has been confined to operating the Nos. 2 and 5 quarries. The overburden is thin, and with the quarry work advancing into the side of the mountain the walls rise to a considerable height above the quarry floors, making it necessary to keep the walls at a low angle of inclination for the safety of the employees. The drilling is done by jack-hammers. Sixteen men are employed and approximately 3,000 tons of gypsum is shipped from these quarries per month.

LIMESTONE.

KOEYE RIVER AREA.

Koeye River Limestone Co.—P. Christensen, operator. The property of this company comprises two small quarries on the Koeye River, about 7 miles south of Namu. Limestone is shipped to the Pacific Mills at Ocean Falls. During the year 19,380 tons were produced. Eight men were employed.

GRAND FORKS AREA.

Consolidated Mining and Smelting Company of Canada, Ltd.—The company owns and operates the *Fife* limestone quarry, situated at Fife, B.C., above Christina Lake. About 22,000 tons of limestone was mined and shipped to Trail to be used as a flux. An average of eighteen men was employed.

TEXADA ISLAND.

Pacific Lime Co.—O. Peele, Manager. Two quarries are operated by this company at Blubber Bay. The plant produces quicklime, hydrated lime, and other limestone products. About thirty-two men have been steadily engaged in the quarries.

B.C. Cement Co.—This company operates a limestone quarry on the opposite shore of Blubber Bay from the Pacific Lime Company. The limestone is shipped to the Bamberton plant. Robert Hamilton is in charge. Ten men are employed.

Van Anda Quarries.—F. J. Beale, Manager. The quarries and crushing plant are situated at Vananda. Twenty-three men have been steadily employed in producing limestone and products from this operation.

VANCOUVER ISLAND.

B.C. Cement Co. Office, Belmont Building, Victoria, B.C. Capital: 32,000 shares, $100 par. This company operates two limestone quarries—one at Bamberton and one at Texada Island—and a cement plant at Bamberton. The total crew for the whole operation is around 110 men.

MICA DEPOSITS.

BAKER INLET AREA.

Baka-Mica Group. This property of two claims is located in Baker Inlet, about 20 miles southerly of Prince Rupert. It is owned by P. M. Ray, of Prince Rupert. The mineral deposit consists of a micaceous zone varying from a few inches to several feet in width and occurring in altered mica schists of the Prince Rupert series.

The zone is traced by stripping and natural outcrop for a distance of about 666 feet and occurs at about 400 feet elevation and about 600 feet from the shore. In the traced length of 666 feet, about 420 feet is exposed and comprises lengths from 6 to 100 feet consisting of from 10 to 90 per cent. sericite mica content across widths of from 2 to 7 feet.

During the year, 80 tons of crude sericite mica were produced and shipped from the *Sericite* claim to Vancouver for marketing.

[Reference: Annual Report, 1934, Part B.]

STONE, SAND, GRAVEL.

VANCOUVER AREA.

BURRARD INLET.

Coast Quarries, Ltd.—T. Burrows, Superintendent. The quarries are situated at Granite Falls, near the head of Burrard Inlet. The stone is used for general construction-work. From seven to ten men are employed.

NORTH VANCOUVER.

Deeks Sand and Gravel, Ltd.—Company office, 101 First Avenue, Vancouver, B.C.; H. S. Armstrong, Secretary; T. O. Burgess, Superintendent. Six men are employed.

Cascade Sand and Gravel Co.—Company office, 470 Granville Street, Vancouver, B.C.; W. J. Timlick, Secretary-Treasurer; W. A. McCullum, Manager. Capital: 1,000 shares, $100 par. Fifteen men are employed.

Highland Sand and Gravel Co. (formerly B.C. Sand and Gravel Co.).—This plant is now under the management of the Cascade Sand and Gravel Company. Complete alterations are being made to the screening plant. Until this is completed, no work is being done at the gravel pit.

Road Materials Co.—Company office, 789 Pender Street West, Vancouver, B.C.; A. Ellis, Secretary and Manager. Capital: 100 shares, $100 par. Part of this plant has been dismantled. Only two men are employed.

Gilley Bros. Quarry.—The plant and quarry of this company are situated at Silver Valley, on the Pitt River. From twenty to thirty men are employed. The stone from this quarry is used for general construction purposes.

Maryhill Sand and Gravel Quarry.—Operated by Gilley Bros. Around sixteen men are employed. The sand and gravel are moved from the face of the quarry by hydraulic guns and by power-shovels, and carried by conveyer-belts to the screening plant.

NELSON ISLAND.

Vancouver Granite Co.—This company operates a dimension stone granite quarry on Nelson Island. Work has been intermittent throughout the year.

INSPECTION OF MINES.

BY

JAMES DICKSON.

The Province is divided into six Inspection Districts, as follows:—

Inspection District.	Mining Divisions in Districts.
Coast	Quatsino, Clayoquot, Alberni, Nanaimo, Victoria, Vancouver, and New Westminster.
Northern Interior	Lillooet, Ashcroft, Clinton, Quesnel, Cariboo, and Peace River.
Interior	Similkameen, Osoyoos, Nicola, Vernon, and Kamloops.
East Kootenay and Boundary	Greenwood, Trail Creek, Nelson, Slocan, Arrow Lake, Ainsworth, Lardeau, Revelstoke, Fort Steele, Windermere, and Golden.
Northern	Atlin, Stikine, Portland Canal, Skeena, and Omineca.

The Inspectors inspect the coal mines, metalliferous mines, and quarries in their respective districts.

BOARD OF EXAMINERS FOR COAL-MINE OFFICIALS.

James Dickson.....Chairman, Victoria.
James Strang.....Secretary, Victoria.
H. E. Miard.....Member, Fernie.

Messrs. Strang and Miard and the Inspector of Mines of the district in which an examination is being held form the Board for granting certificates of competency to coal-miners.

An Inspector of Mines is empowered to grant provisional certificates to miners for a period not exceeding sixty days between regular examinations.

INSTRUCTORS, MINE-RESCUE STATIONS.

Richard Nichol.....Nanaimo Station.
James L. Brown.....Cumberland Station.
Alfred Gould.....Princeton Station.
John T. Puckey.....Fernie Station.

The District Inspectors of Mines have their headquarters in the different mining areas as follows: John MacDonald, Nanaimo; James Strang, Victoria; Edward R. Hughes, Cumberland; James A. Mitchell, Lillooet; John G. Biggs, Princeton; Hamilton C. Hughes, Nelson; H. E. Miard, Fernie; and Charles Graham, Prince Rupert.

PRODUCTION.

The total tonnage produced by the coal mines of the Province for the year ended December, 1940, was 1,667,827 tons, being an increase of 189,955 tons or 12.8 per cent. over production of 1939.

The Coast District, which includes Vancouver Island, Nicola-Princeton, and Northern Districts, produced 891,309 tons, a decrease of 24,605 tons or 2.6 per cent. from 1939.

Vancouver Island collieries produced 732,659 tons, an increase of 15,325 tons or 2.1 per cent. over 1939.

The Northern District produced 5,824 tons, an increase of 1,056 tons over 1939.

The Nicola-Princeton District produced 152,786 tons, a decrease of 41,026 tons or 21.1 per cent. from 1939.

The East Kootenay District produced 776,518 tons, an increase of 214,560 tons or 38.1 per cent. over 1939.

The following table shows the output and *per capita* production daily and for the year at the various mines:—

Colliery and Mine.	Gross Tonnage of Coal mined during Year.	Days worked.	Total No. of Employees.	Tons of Coal mined per Employee daily.	Tons of Coal mined per Employee for Year.	No. of Employees Underground.	Tons of Coal mined per Underground Employee daily.	Tons of Coal mined per Underground Employee for Year.
Comox Colliery (No. 5 mine)	230,449	232	625	1.59	368	496	2.00	464
Comox Colliery (No. 8 mine)	126,800	242	268	1.95	473	236	2.22	537
Northfield Colliery	146,706	266	322	1.71	455	284	1.94	516
South Wellington (No. 10 mine)	183,162	251	377	1.93	486	233	3.13	786
Lantzville Colliery	3,696	262	16	0.88	231	13	1.08	284
Chambers' mine	5,100	222	15	1.76	392	12	1.91	425
Beban mine	32,818	258	75	1.69	437	57	2.23	575
Loudon mine	*298*	*128*	*3*	*0.77*	*99*	*2*	*1.15*	*149*
Cassidy mine	1,238	240	2	2.58	619	2	2.57	619
Biggs' mine	621	183	2	1.69	310	2	1.69	310
Lewis' mine	713	211	2	1.68	356	2	1.68	356
Big Flame Wellington (Richardson)	379	184	5	0.41	76	5	0.41	76
Neville Prospect	679	108	7	0.90	97	6	1.04	113
Coalmont Colliery	22,449	62	162	2.22	138	88	4.06	252
Middlesboro Colliery	24,618	165	100	1.49	246	66	2.26	373
Granby Consolidated M.S. & P. Co., Ltd.	81,780	250	100	3.27	817	80	4.09	1,022
Princeton Tulameen Coal Co.	23,595	251	37	2.54	637	27	3.48	874
Hat Creek Colliery	344	104	2	1.65	172	1	3.30	344
Bulkley Valley Colliery	5,488	227	13	1.86	422	8	3.02	686
Aveling Colliery	336	78	6	0.73	56	3	1.43	112
Coal Creek Colliery	123,963	181	157	4.36	789	117	5.85	1,059
Michel Colliery	652,555	276	574	4.11	1,136	433	5.46	1,507
Gething Colliery	40	20	4	0.50	10	2	1.00	20

Collieries of Vancouver Island Inspection District.

The output of Vancouver Island collieries was 732,659 tons. Of this amount, 107,492 tons or 14.6 per cent. was lost in preparation for the market; 5,903 tons or 0.8 per cent. was consumed by producing companies as fuel; and 595,368 tons was sold in the competitive market. Of the amount sold in the competitive market, 515,771 tons or 86.6 per cent. was sold in Canada; 34,049 tons or 5.7 per cent. was sold in the United States; and 45,548 tons or 7.7 per cent. was sold elsewhere.

Collieries of the Nicola-Princeton Inspection District.

Of the gross output of 152,786 tons produced by the collieries of the Nicola-Princeton District, 2,055 tons or 1.4 per cent. was lost in preparation for the market; 7,345 tons or 4.8 per cent. was consumed by producing companies as fuel; and 143,202 tons or 93.8 per cent. was sold in the competitive market in Canada.

Collieries of the East Kootenay Inspection District.

The output of the collieries in the East Kootenay District was 776,518 tons. Of this amount, 50,082 tons or 6.4 per cent. was lost in preparation for the market; 14,794 tons or 1.9 per cent. was used by producing companies as fuel; 88,418 tons or 11.3 per cent. was used in making coke; and 623,102 tons was sold in the competitive market. Of this amount, 548,412 tons or 88 per cent. was sold in Canada and 74,690 tons or 12 per cent. was sold in the United States.

The following table shows the *per capita* production of the various districts for the past five years. Similar figures for the years prior to 1936 are shown in previous Annual Reports.

OUTPUT AND PER CAPITA PRODUCTION IN VARIOUS DISTRICTS.

Year.	District.	Gross Tons of Coal mined during Year.	Total No. of Employees at Producing Collieries.	Tons of Coal mined per Employee for Year.	No. of Men employed Underground in Producing Collieries.	Tons of Coal mined per Underground Employee for Year.
1936	East Kootenay District	470,606	606	776	459	1,025
	Coast District	875,865	2,208	396	1,556	563
	Whole Province	1,346,741	2,814	478	2,015	668
1937	East Kootenay District	459,136	628	731	462	972
	Coast District	985,551	2,525	390	1,824	540
	Whole Province	1,444,687	3,153	458	2,286	632
1938	East Kootenay District	434,068	693	626	467	972
	Coast District	875,360	2,269	386	1,621	540
	Whole Province	1,309,428	2,962	442	2,088	675
1939	East Kootenay District	561,958	731	768	538	1,044
	Coast District	915,914	2,245	468	1,629	562
	Whole Province	1,477,872	2,976	496	2,167	682
1940	East Kootenay District	776,518	731	1,062	550	1,412
	Coast District	891,309	2,143	462	1,625	548
	Whole Province	1,667,827	2,874	580	2,175	766

The following table shows the production and distribution of coal by the various collieries and districts, compiled from returns furnished by the owners:—

Collieries of British Columbia—Production, 1940.

Mine.	Sold.			Total Sales.	Lost in Washing.	Used in making Coke.	Used under Companies' Boilers, etc.	Total for Colliery Use.	Stock.		Difference.		Output for the Year 1940.
	In Canada.	In U.S.A.	Elsewhere.						First of Year.	Last of Year.	Added to.	Taken from.	
Vancouver Island District.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Canadian Collieries (D.), Ltd.—													
Comox Colliery (No. 5 mine)	177,633	4,352	14,376	196,361	33,207	.....	1,396	34,603	1,700	1,185	.....	515	230,449
Comox Colliery (No. 8 mine)	95,648	2,343	7,741	105,732	11,725	.....	752	12,477	.....	8,591	8,591	.....	126,800
Northfield Colliery	87,808	12,036	10,310	110,154	20,465	.....	536	21,001	1,140	16,691	15,551	.....	146,706
South Wellington (No. 10 mine)	111,757	15,318	13,121	140,196	42,015	.....	682	42,697	.....	269	269	.....	183,162
Lantzville Colliery	3,218	.....	.....	3,218	.....	.....	478	478	.....	.....	.....	.....	3,696
Chambers' mine	5,100	.....	.....	5,100	.....	.....	.....	.....	.....	.....	.....	.....	5,100
Beban mine	30,759	.....	.....	30,759	.....	.....	2,059	2,059	.....	.....	.....	.....	32,818
Loudon mine	298	.....	.....	298	.....	.....	.....	.....	.....	.....	.....	.....	298
Cassidy mine	1,238	.....	.....	1,238	.....	.....	.....	.....	.....	.....	.....	.....	1,238
Biggs' mine	621	.....	.....	621	.....	.....	.....	.....	.....	.....	.....	.....	621
Lewis' mine	713	.....	.....	713	.....	.....	.....	.....	.....	.....	.....	.....	713
Big Flame Wellington (Richardson)	379	.....	.....	379	.....	.....	.....	.....	.....	.....	.....	.....	379
Neville Prospect	599	.....	.....	599	80	.....	.....	80	.....	.....	.....	.....	679
Totals, Vancouver Island District	515,771	34,049	45,548	595,368	107,492	.....	5,903	113,395	2,840	26,736	24,411	515	732,659
Nicola-Princeton District.													
Coalmont Collieries, Ltd.	19,104	.....	.....	19,104	.....	.....	3,345	3,345	.....	.....	.....	.....	22,449
Middlesboro Collieries, Ltd.	20,442	.....	.....	20,442	.....	.....	3,980	3,980	161	357	196	.....	24,618
Granby Cons. M.S. & P. Co., Ltd.	81,792	.....	.....	81,792	.....	.....	.....	.....	130	118	.....	12	81,780
Princeton Tulameen Coal Co.	21,540	.....	.....	21,540	2,055	.....	.....	2,055	.....	.....	.....	.....	23,595
Hat Creek Colliery	324	.....	.....	324	.....	.....	20	20	.....	.....	.....	.....	344
Totals, Nicola-Princeton District	143,202	.....	.....	143,202	2,055	.....	7,345	9,400	291	475	196	12	152,786
Northern District.													
Bulkley Valley Colliery	5,303	.....	.....	5,303	.....	.....	154	154	103	134	31	.....	5,488
Aveling Colliery	324	.....	.....	324	.....	.....	.....	.....	.....	12	12	.....	336
Totals, Northern District	5,627	.....	.....	5,627	.....	.....	154	154	103	146	43	.....	5,824
East Kootenay District.													
Coal Creek Colliery	88,895	31,690	.....	120,585	.....	.....	3,256	3,256	197	319	122	.....	123,963
Michel Colliery	459,517	43,000	.....	502,517	50,082	88,418	11,538	150,038	.....	.....	.....	.....	652,555
Totals, East Kootenay District	548,412	74,690	.....	623,102	50,082	88,418	14,794	153,294	197	319	122	.....	776,518
Peace River District.													
Gething Colliery	40	.....	.....	40	.....	.....	.....	.....	.....	.....	.....	.....	40
Coal.													
Grand Totals for Province	1,213,052	108,739	45,548	1,367,339	159,629	88,418	28,196	276,243	3,431	27,676	24,772	527	1,667,827
Coke.													
Crow's Nest Pass Coal Co., Ltd.—													
Michel Colliery	38,862	21,575	.....	60,437	.....	.....	.....	.....	3,106	2,457	.....	649	59,788
Total coke for Province	38,862	21,575	.....	60,437	.....	.....	.....	.....	3,106	2,457	.....	649	59,788

Collieries of British Columbia—Men employed, 1940.

Mine.	White Men.																Indians.			Japanese and Chinese.									Total Men employed.		
	Supervision and Clerical.			Miners.			Helpers.			Labourers.			Mechanics and Skilled Labour.			Boys.			Labourers.			Miners.			Helpers.			Labourers.				
Vancouver Island District.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.
Canadian Collieries (D.), Ltd.—																																	
Comox Colliery (No. 5 mine)	20	9	29	138		138				82	43	125	245	48	293	11	5	16											24	24	496	129	625
Comox Colliery (No. 8 mine)	13	1	14	107		107				66	11	77	41	12	53	9	8	17													236	32	268
Northfield Colliery	13	2	15	137		137	35		35	64	16	80	14	9	23	21	11	32													284	38	322
South Wellington (No. 10 mine)	11	6	17	145		145	7		7	45	57	102		48	48	25	7	32											26	26	233	144	377
Lantzville Colliery	2		2	8		8	2		2	1	1	2		1	1														1	1	13	3	16
Chambers' mine	1		1	9		9				2		2		2	2														1	1	12	3	15
Beban mine	4	1	5	40		40				10	3	13		4	4	3		3											10	10	57	18	75
Loudon mine				2		2					1	1																			2	1	3
Cassidy mine	1		1	1		1																									2		2
Biggs' mine				1		1	1		1																						2		2
Lewis' mine				2		2																									2		2
Big Flame Wellington (Richardson)	1		1	3		3							1		1																5		5
Neville Prospect	1		1	2		2	2		2	1	1	2																			6	1	7
Totals, Vancouver Island District	67	19	86	595		595	47		47	271	133	404	301	124	425	69	31	100											62	62	1350	369	1719
Nicola-Princeton District.																																	
Coalmont Collieries, Ltd.	7	9	16	46		46	4		4		16	16	25	43	68	6	5	11											1	1	88	74	162
Middlesboro Collieries, Ltd.	5	1	6	31		31	14		14	16	13	29		12	12		8	8													66	34	100
Granby Cons. M.S. & P. Co., Ltd.	7	1	8	35		35	28		28	6	5	11	4	14	18																80	20	100
Princeton Tulameen Coal Co.	2	1	3	12		12	10		10		7	7	3	2	5																27	10	37
Hat Creek Colliery				1		1					1	1																			1	1	2
Totals, Nicola-Princeton District	21	12	33	125		125	56		56	22	42	64	32	71	103	6	13	19											1	1	262	139	401
Northern District.																																	
Bulkley Valley Colliery	1	1	2	3		3	3		3	1		1		4	4																8	5	13
Aveling Colliery				3		3					2	2		1	1																3	3	6
Totals, Northern District	1	1	2	6		6	3		3	1	2	3		5	5																11	8	19
East Kootenay District.																																	
Coal Creek Colliery	6	3	9	56		56				11	18	29	43	16	59	1	3	4													117	40	157
Michel Colliery	21	11	32	242		242				39	53	92	131	77	208																433	141	574
Totals, East Kootenay District	27	14	41	298		298				50	71	121	174	93	267	1	3	4													550	181	731
Peace River District.																																	
Gething Colliery				1		1	1		1		2	2																			2	2	4
Grand totals for Province	116	46	162	1025		1025	107		107	344	250	594	507	293	800	76	47	123											63	63	2175	699	2874

Note.—U.=Underground; A.=Above ground; T.=Total.

LABOUR AND EMPLOYMENT.

During 1940, 2,874 persons were employed in and about the coal mines of the Province, a decrease of 102 men from 1939. Taking the average of all the mines in Vancouver Island District, about 23 per cent. of the working-days was lost through lack of trade. In the Nicola-Princeton District, the different collieries worked an average of 70 per cent. of the working-days. In the East Kootenay District the average for the year was about 76 per cent.

The table on page 104 shows the number of persons ordinarily employed in and about the mines, distinguishing the persons and different classes employed underground and above ground, compiled from returns furnished by the owners.

FUEL-OIL COMPETITION.

During 1940, imports of crude oil for refining in British Columbia totalled 219,615,000 gallons, and 22,395,000 gallons of fuel-oil was imported as bunker-fuel for shipping. The fuel-oil sold in British Columbia consisted of 147,419,000 gallons of fuel-oil and 37,053,000 gallons of light fuel-oil. Of this amount the major transportation companies operating in the Province used 66,270,000 gallons.

COMPETITION OF COAL PRODUCED OUTSIDE BRITISH COLUMBIA.

During 1940 the importation of coal into British Columbia consisted of 236 tons of anthracite, 2,591 tons of bituminous, and 1,419 tons of lignite. In addition, 600 tons of coke and 453 tons of petroleum coke were imported. All imports were from the United States.

Alberta coal and fuel sold in British Columbia amounted to 311,232 tons. This consisted of 134,840 tons of bituminous coal, 41,055 tons of sub-bituminous coal, 61,747 tons of domestic coal, 70,705 tons of coke, and 2,885 tons of briquettes.

The following table shows the amount of Alberta coal brought into British Columbia during past years:—

Year.	Short Tons.	Year.	Short Tons.
1931	193,060	1936	244,928
1932	136,188	1937	269,023
1933	119,026	1938	238,435
1934	123,968	1939	239,227
1935	221,748	1940	311,232

Of the 1,367,339 tons of British Columbia coal marketed, 147,407 tons was sold for domestic and industrial use in the Provinces of Alberta, Saskatchewan, Manitoba, and Ontario, and 281,831 tons was sold for railroad use in these Provinces; 8,365 tons was sold for railroad use in United States, and 155,504 tons was sold for railroad use in British Columbia; 100,374 tons was exported to United States and 156,537 tons was sold for ships' bunkers; 45,548 tons was sold in other countries. The tonnage of coal used in the Province was 471,773 tons of British Columbia coal, 311,232 tons of Alberta coal and briquettes, and 4,246 tons of imported coal.

ACCIDENTS IN AND AROUND COAL MINES.

During 1940, 2,874 persons were employed in and around coal mines. Six fatal accidents occurred during the year as compared with two during 1939.

The ratio of fatal accidents per 1,000 persons employed was 2.08 as compared with 0.67 for 1939. In 1938 the ratio was 3.37; in 1937, 3.17; in 1936, 2.84; in 1935, 1.67; in 1934, 2.07; in 1933, 0.97; in 1932, 2.21; and in 1931, 1.22. The average for the ten-year period being 2.

The number of fatal accidents per 1,000,000 tons produced during 1940 was 3.65; during 1939 the figure was 1.35; in 1938, 7.63; in 1937, 6.92; in 1936, 5.94; in 1935, 4.21; in 1934, 4.45; in 1933, 2.37; in 1932, 5.21; and in 1931, 2.81. The average for the ten-year period being 4.41 per 1,000,000 tons of coal mined.

The following table shows the collieries at which the fatal accidents occurred during 1940 and comparative figures for 1939:—

Name of Company.	Name of Colliery.	1940.	1939.
F. Beban Lumber Company	Beban mine	1	1
Canadian Collieries (D.), Ltd.	No. 10 mine, South Wellington	4	....
Coalmont Collieries, Ltd.	No. 5 mine	....	1
Crow's Nest Pass Coal Co., Ltd.	Michel	1	....
Totals		6	2

The following table shows the various causes of fatal accidents in 1940 and their percentage of the whole, and comparative figures for 1939:—

Cause.	1940.		1939.	
	No.	Per Cent.	No.	Per Cent.
By falls of roof and coal	....	....	1	50.00
By mine-cars and haulage	2	33.34	1	50.00
By mine explosions	3	50.00	....	....
By falling timber	1	16.66	....	....
Totals	6	100.00	2	100.00

The following table shows the number of tons of coal mined for each fatal accident in their respective classes in the years 1940 and 1939:—

Cause.	1940.		1939.	
	No. of Fatal Accidents.	Tons of Coal mined per Fatal Accident.	No. of Fatal Accidents.	Tons of Coal mined per Fatal Accident.
By falls of roof and coal	....	....	1	1,477,872
By mine-cars and haulage	2	833,913	1	1,437,872
By mine explosions	3	555,942	....	....
By falling timber	1	1,667,827	....	....
Totals	6	277,971	2	738,936

The number of tons mined per fatal accident during 1940 was 277,971 tons, compared with 738,936 tons in 1939. The average for the ten-year period was 226,804.

The following table shows the fatalities from various causes in coal mines during the year 1940 compared with 1939, according to Inspection Districts:—

District.	Number of Deaths from Accidents.				Totals.	
	Falls of Roof and Coal.	Mine-cars and Haulage.	Mine Explosion.	Falling Timber.	1940.	1939.
Vancouver Island	....	1	3	1	5	1
Nicola-Princeton	....	....	....	....	....	1
East Kootenay	....	1	....	....	1	....
Northern	....	....	....	....	....	....
Province (1940)	....	2	3	1	6	....
Province (1939)	....	....	....	....	....	2

RATIO OF ACCIDENTS.

District.	Accident Death-rate.			
	Per 1,000 Persons employed.		Per 1,000,000 Tons of Coal mined.	
	1940.	1939.	1940.	1939.
Vancouver Island	2.90	0.55	6.82	1.39
Nicola-Princeton	.....	2.42	.....	5.15
East Kootenay	1.36	.....	1.29	.....
Northern	.....	.....	.....	.....
Province (1940)	2.08	.....	3.65	.....
Province (1939)	.....	0.67	.....	1.35

The details regarding the occurrences of fatal accidents in coal mines during 1940 are as follows:—

The fatal accident which occurred to Thomas Chapman, fireboss, Beban mine, Nanaimo, on February 27th was due to deceased being crushed between a trip of empty cars that was being run into a level parting. Chapman had ordered the rope-rider to lower the cars, but meantime a loaded car in the parting had become derailed and while rerailing this car he was struck by the empty trip; he died ten hours later.

The fatal accident which occurred to Oscar Numella, tracklayer, No. 10 mine, South Wellington, was due to deceased being struck and crushed by a single car which was being hoisted on a slope. The car was travelling at a low speed and the slope at this point is 11 feet wide at the floor level. Numella died one hour after the accident. There were no witnesses of this accident, although the miners at the face of the slope were only some 60 feet away.

The fatal accident which occurred to Anibale Ius, miner, Michel Colliery, on July 6th was due to deceased being struck on the head by a post timber which sprang out of position 9 feet from where deceased was standing. There was no evidence of sudden weight from the roof to account for this unusual accident.

The fatal accident to Christopher Mills, fireboss; James Waring and Eugino Gava, miners, in No. 10 mine, South Wellington, on December 22nd was due to an explosion of gas. All three men were killed instantly. The details in regard to this explosion are given in another part of this report.

EXPLOSIVES.

The following table shows the quantity of explosives used in coal mines during 1940, together with the number of shots fired, tons of coal produced per pound of explosive used, and the average pounds of explosive per shot fired (these quantities include all explosives used for breaking coal and for rock-work in coal mines):—

VANCOUVER ISLAND DISTRICT.

Colliery.	Quantity of Explosives used in Pounds.	Tonnage for Mine.	Total No. of Shots fired.	Tons of Coal per Pound of Explosive used.	Average Pounds of Explosive per Shot fired.
Comox Colliery (No. 5 mine)	49,167	230,449	68,099	4.61	0.72
Comox Colliery (No. 8 mine)	46,600	126,800	84,750	2.72	0.55
Northfield Colliery	68,033	146,706	102,781	2.15	0.66
South Wellington (No. 10 mine)	74,375	183,162	85,413	2.46	0.87
Lantzville Colliery	4,000	3,696	6,000	0.92	0.66
Chambers' mine	1,600	5,100	3,700	3.18	0.43
Beban mine	14,500	32,818	23,780	2.26	0.61
Loudon mine	150	298	300	1.98	0.50
Cassidy mine	900	1,238	2,200	1.36	0.41
Biggs' mine	300	621	600	2.07	0.50
Lewis' mine	700	713	1,200	1.01	0.58
Big Flame Wellington (Richardson)	450	379	900	0.84	0.50
Neville Prospect	200	679	170	3.38	1.17
Totals for district	260,975	732,659	379,893	2.80	0.68

Nicola-Princeton District.

Colliery.	Quantity of Explosives used in Pounds.	Tonnage for Mine.	Total No. of Shots fired.	Tons of Coal per Pound of Explosive used.	Average Pounds of Explosive per Shot fired.
Coalmont Colliery	6,000	22,449	9,000	3.74	0.66
Middlesboro Colliery	6,150	24,618	9,075	4.00	0.67
Granby Cons. M.S. & P. Co., Ltd.	20,350	81,780	34,500	4.01	0.58
Princeton Tulameen Coal Co.	4,000	23,595	8,000	5.89	0.50
Hat Creek Colliery	200	344	250	1.72	0.80
Totals for district	36,700	152,786	60,825	4.17	0.60

Northern District.

Bulkley Valley Colliery	1,500	5,488	2,700	3.66	0.55
Aveling Colliery	200	336	193	1.68	1.03
Totals for district	1,700	5,824	2,893	3.42	0.58

East Kootenay District.

Coal Creek Colliery	2	123,963	4	61,981.50	0.50
Michel Colliery	54,172	652,555	67,493	12.04	0.80
Totals for district	54,174	776,518	67,497	14.14	0.80

Peace River District.

Gething Colliery	200	40	400	0.2	0.50
Totals for Province	369,049	1,667,827	511,505	4.52	0.72

Quantities of Different Explosives used.

	Lb.
Monobel of different grades	319,741
Permissible rock-powder	49,308
Total	369,049

The following is a list of explosives permitted for use in coal mines by the Honourable the Minister of Mines, under the provisions of section 101, General Rule 11, clause (*i*), "Coal-mines Regulation Act":—

Polar Monobel No. 4.
Polar Monobel No. 6.
Polar Monobel No. 7.
Polar Monobel No. 14.
Polar CXL-ite No. 2.

MACHINE-MINED COAL.

During the year 1940, mining-machines produced approximately 890,000 tons or 53.4 per cent. of the total.

The following table gives the district, number of machines, how driven, and type of machine used:—

District.	Number driven by		Type of Machine used.	
	Electricity.	Compressed Air.	Chain Undercutting.	Puncher Type.
Vancouver Island	....	28	20	8
Nicola-Princeton	....	25	....	25
East Kootenay	....	31	3	28
Totals	....	84	23	61

SAFETY-LAMPS.

There were 2,606 safety-lamps in use in the coal mines of the Province. Of this number, 225 were flame safety-lamps of the Wolf type and 2,381 were electric lamps of various makes, as follows: Edison, 2,311; Wolf electric, 70.

The following table shows the distribution of lamps by district, method of locking, and illuminant used:—

VANCOUVER ISLAND DISTRICT.

Colliery and Mine.	Method of Locking.		Illuminant used.	
	Magnetic Lock.	Automatic Clip.	Naphtha Gasoline.	Electricity.
Comox Colliery (No. 5 mine)	37	499	36	500
Comox Colliery (No. 8 mine)	67	226	31	262
Northfield Colliery	25	267	24	268
South Wellington (No. 10 mine)	17	261	17	261
Lantzville Colliery	2	24	2	24
Chambers' mine	3	18	3	18
Heban mine	7	96	7	96
Loudon mine	2	5	2	5
Cassidy mine	1	5	1	5
Biggs' mine	1	4	1	4
Lewis' mine	1	3	1	3
Big Flame Wellington (Richardson)	1	4	1	4
Neville Prospect	1	6	1	6
Totals for district	165	1,418	127	1,456

NICOLA-PRINCETON DISTRICT.

Coalmont Collieries	6	88	6	88
Middlesboro Colliery	8	70	8	70
Granby Cons. M.S. & P. Co., Ltd.	8	80	8	80
Princeton Tulameen Coal Co.	1	70	1	70
Hat Creek Colliery	1	6	1	6
Totals for district	24	314	24	314

NORTHERN DISTRICT.

Bulkley Valley Colliery	1	21	1	21
Aveling Colliery	6	----	6	----
Totals for district	7	21	7	21

EAST KOOTENAY DISTRICT.

Coal Creek Colliery	12	130	12	130
Michel Colliery	53	460	53	460
Totals for district	65	590	65	590

PEACE RIVER DISTRICT.

Gething Colliery	2	----	2	----
Totals for Province	263	2,343	225	2,381

Approved Safety-lamps, Electric and Flame.

A list of the approved safety-lamps, both electric and flame, was published in the 1930 Annual Report. The following lamps, all electric, are now also approved:—

No. 8.—The electric lamp manufactured by the Edison Storage Battery Company, Orange, New Jersey, U.S.A., under Approval No. 18 of the United States Bureau of Mines. The only bulb approved for use in this lamp carries the symbol BM-18 and is manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio.

No. 9.—The electric lamp manufactured by the Edison Storage Battery Company, Orange, New Jersey, U.S.A., under Approval No. 18F of the United States Bureau of Mines. This model of Edison lamp in reality represents an extension of the lamp approval given under Approval No. 18. The only bulb approved for use with this lamp carries the symbol BM-18F and is manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio.

No. 10.—The electric lamp manufactured by the Edison Storage Battery Company, Orange, New Jersey, U.S.A., under Approval No. 18H of the United States Bureau of Mines. This lamp represents an extension of the No. 18 approval of the United States Bureau of Mines. The only bulb approved for use with this lamp carries the symbol BM-18H and is manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio.

No. 11.—The electric lamp manufactured by the Edison Storage Battery Company, Orange, New Jersey, U.S.A., under Approval No. 24 of the United States Bureau of Mines. The only bulb approved for use with this lamp carries the symbol BM-24 and is manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio. This lamp is known as the Edison Model J lamp.

No. 12.—The electric lamp manufactured by the Edison Storage Battery Company, Orange, New Jersey, U.S.A., under Approval No. 25 of the United States Bureau of Mines. The only bulb approved for use with this lamp carries the symbol BM-25 and is manufactured by the National Lamp Works of the General Electric Company, Cleveland, Ohio. This lamp is known as the Edison Model K lamp.

No. 13.—The electric lamp manufactured by the Koehler Manufacturing Company, and known as the Super-Wheat Model "W" electric safety cap-lamp under Approval No. 20 of the United States Bureau of Mines.

(Unless otherwise specified, all lamps are cap-lamps.)

NOTE.—*While the use of flame safety-lamps is permitted, it is the policy of the Department of Mines to encourage the use of approved electric safety-lamps for all persons underground in the coal mines, except such flame-lamps as may be required by the officials of the mines in the carrying-out of their duty and in such cases as it is considered advisable to provide flame safety-lamps in addition to the electric safety-lamps.*

ELECTRICITY.

Electricity is used for various purposes on the surface at ten mines and underground at five.

The purpose for which it is used, together with the amount of horse-power in each instance, is shown in the following table:—

Nature of its Use.	Aggregate H.P.
Above ground—	
Winding or hoisting	2,538
Ventilation	1,660
Haulage	386
Coal-washing	1,876
Miscellaneous	6,979
Total horse-power	13,439

Nature of its Use.	Aggregate H.P.
Underground—	
Haulage	1,295
Pumping	1,320
Coal-cutting	.....
Miscellaneous	25
Total horse-power	2,640
Total horse-power above and below ground	16,079

Of the above amount, approximately 1,178 horse-power was operated as direct current and 14,901 horse-power as alternating current.

VENTILATION.

The reports of the District Inspectors give detailed information regarding the amount of ventilation in the main airways and working splits of the different mines. In a number of instances where the methane content of the air on face-lines or working areas tended to indicate abnormal outflows as indicated by the flame safety-lamp or other testing devices, the Inspector prohibited the use of explosives until such a condition was remedied, and that part of the mine again examined by him and reported in normal condition.

In no instance was this condition due to the ventilation reaching the minimum of 100 cubic feet per man per minute set out by the " Coal-mines Regulation Act," General Rule 12.

METHANE DETECTION.

The Burrell Methane Detector and the M.S.A. Methane Detector were in general use throughout the year to detect the presence of methane in percentages less than could be detected by means of the flame safety-lamp.

The flame safety-lamp is in general use as the every-day means of testing for the presence of methane by the firebosses and mine officials, and during the year intensive efforts were made by the Inspectors to train firebosses and miners to estimate closely the percentage of methane indicated by very small " gas-caps " on the flame safety-lamp. This work was carried out underground where the gas-caps could be immediately calibrated with the results found at the same time and place by one of the above-mentioned methane detectors.

While practically all workmen underground use the electric safety-lamp, many of the miners were given practical instruction in the use of the flame safety-lamp as a methane detector, and all new men who apply for a coal-miner's certificate of competency must show that they possess this knowledge.

MINE-AIR SAMPLES.

Sampling of mine-air was maintained throughout the year, this varying in the number of samples with the conditions anticipated or existing. During the year 230 samples were taken, and of this number sixteen were lost or destroyed in transit.

The samples are analysed by the Dominion Bureau of Mines, and this service is of much value to this Department. The results, in addition to their immediate value, form a record for future mines that may be opened in the vicinity of the presently operated areas.

INSPECTION COMMITTEES.

With the exception of several small operations where only a few men are employed, all the mines in the Province had inspection committees appointed by the workmen under General Rule 37, section 101, " Coal-mines Regulation Act," in operation throughout the year.

COAL-DUST.

Sampling of dust as per the Regulations for Precautions against Coal-dust was well maintained during the year and a total of 1,744 samples was taken. Very few samples showed less than the minimum of 50 per cent. incombustible content required

by the regulations. This is largely due to the fact that it is the policy of the Inspection Branch to maintain the incombustible content of the dust as high above the minimum as possible, and this is done by frequent reminders to the managements of the different mines when there is a tendency towards a decrease in the incombustible content of the dust.

DANGEROUS OCCURRENCES.

On March 1st while men were being lowered in Northfield shaft, Canadian Collieries, a loose lag-screw allowed the upper end of one of the cage-guides to project sufficiently far to arrest the cage. The cage safety-catches came into action and the cage safely held until the trouble was diagnosed and remedied. The cage and men were suspended as above for fifteen minutes, but no one was injured.

On April 29th while coal was being hoisted in No. 8 shaft, Comox Colliery, the main cross-beam of the cage broke from the main upright member, causing the cage to tilt and jam in the shaft. It was found that faulty or oxidized rivets had failed. No one was injured.

On April 29th, and again on May 10th, outbursts of methane occurred from the floor in 2 West section, No. 5 mine, Comox Colliery. Considerable volumes of gas were given off, accompanied by rumblings in the floor. The men were immediately withdrawn until the gas was cleared off by the ventilation. No one was injured.

On June 7th a violent "bump" occurred in the 26 West district of No. 1 East mine, Coal Creek Colliery. The bump heaved the floor over a considerable area, threw down a large amount of roof, and blew out several of the ventilating-doors. It occurred on night shift when there were no men at work.

On August 4th a 2,200-volt armoured cable on the Main slope of No. 5 mine, Comox Colliery, heated to redness at a point about 1 mile from the shaft, but this was discovered and the power cut off before an open fire resulted. Investigation showed that the cable had been damaged at some time prior to the occurrence.

PROSECUTIONS.

During 1940 there were seven prosecutions made for infractions of the "Coal-mines Regulation Act," as follows:—

Date.	Colliery.	Occupation of Defendant.	Offence charged.	Judgment.
April 22	Michel Colliery	Miner	Stored a supply of explosives underground	Fined $25 and costs.
May 14	Northfield Colliery	Fireboss	Failed to see that all men had taken shelter before he fired a shot	Fined $50 and costs.
May 20	No. 5 mine, Comox Colliery	Fireboss	Firing a shot where there was a visible gas-cap on his flame safety-lamp	Fined $25 and costs.
July 19	No. 5 mine, Comox Colliery	Haulageman	Had lucifer matches in his possession underground	Fined $5 and costs.
Oct. 2	Northfield Colliery	Miner	Quarrelling and fighting underground	Fined $10 and costs.
Oct. 3	Northfield Colliery	Haulageman	Quarrelling and fighting underground	Fined $10 and costs.
Dec. 21	No. 5 mine, Comox Colliery	Timberman	Had lucifer matches in his possession underground	Fined $5 and costs.

GOVERNMENT RESCUE-STATIONS.

The Department of Mines has four fully-equipped mine-rescue stations in charge of trained instructors located in the chief coal-mining districts—namely, at Nanaimo, Cumberland, Princeton, and Fernie. At any of these stations persons engaged in mining may be trained without cost, either on their own application or by request from any mining company. Where a mine is some distance from the rescue-station the instructor, by arrangement, will take the rescue apparatus to such mine and give the necessary training there, this also without cost.

In addition to the above stations, a fully-equipped station with apparatus provided by the Department is maintained at Middlesboro Collieries, Merritt, under the care of the mine management, and a smaller unit of rescue apparatus is stationed at the Premier mine, Stewart. The use of these stations and apparatus is available to any medical practitioner, and during the year many requests for oxygen and apparatus for administering same are received and given immediate response.

In the larger mining areas of Nanaimo, Cumberland, and the Crowsnest Pass, experienced mine-rescue teams maintain a regular schedule of training throughout the year and so keep ready for any emergency calls. The rescue-stations also serve as centres for first-aid lectures and training.

The preliminary training course consists of twelve two-hour lessons in the actual use of oxygen apparatus and Burrell all-service gas-masks in an irrespirable atmosphere, and instruction on the approved method of dealing with mine fires and recovery-work. The training itself is strenuous work, and all candidates have to undergo a special physical examination before starting training and must be under 34 years of age.

During the year, in addition to the regular teams in training, thirty-two new men took the full training and were granted certificates of competency:—

Cert. No.	Name.	Where trained.	Cert. No.	Name.	Where trained.
1070	Adam Graham Watson	South Wellington.	1086	Harry Windley	Cumberland.
1071	John David Williams	South Wellington.	1087	Jack Tantrum	Cumberland.
1072	Ralph Maughan	South Wellington.	1088	Frank Lawson	Cumberland.
1073	Joseph Addison	South Wellington.	1089	Erskine Scott	Cumberland.
1074	Edward McGechie Charles	South Wellington.	1090	Edward Morrisey	Cumberland.
1075	Norman Tony Laskovitch	South Wellington.	1091	Jack Southern	Cumberland.
1076	William Hunchuck	Cumberland.	1092	Alexander Percy Barnes	Bevan.
1077	Frederick Smith	Cumberland.	1093	Frank Wood	Courtenay.
1078	Reginald O'Brien	Cumberland.	1094	James A. Mitchell	Lillooet.
1079	Robert Weir	Cumberland.	1095	Arthur H. Dockrill	Cumberland.
1080	Stanley Lawrence	Cumberland.	1096	Jack Alonzo Millican	Kimberley.
1081	Thomas Cochrane	Cumberland.	1097	Edward Harry Nagle	Kimberley.
1082	George High	Cumberland.	1098	George William Law	Kimberley.
1083	Joseph Frew	Cumberland.	1099	John Robert Carney	Kimberley.
1084	Robert Hannah	Cumberland.	1100	John Stocks Carter	Kimberley.
1085	Alex. Somerville	Cumberland.	1101	Harry Badgley Gilliland	Kimberley.

MINE-RESCUE AND FIRST-AID WORK.

Mine-rescue teams carried on training at the mine-rescue stations at Nanaimo, Cumberland, Princeton, and Fernie, and the different Mine Safety Associations were active in promoting first-aid and mine-safety work during the year.

There are Mine Safety Associations at East Kootenay, Princeton, Vancouver Island, Britannia, Bridge River, Portland Canal, and Zeballos; the membership of these Mine Safety Associations consists of mine officials and working miners who are particularly interested in safety-work, and the Inspector of Mines for each district takes active steps to assist in every possible way to spread this work. The Mine Safety Associations are assisted financially by the Department of Mines, and at all the different centres competitions in mine-rescue work, safety, and first aid were held and materially resulted in an increasing number of miners being interested in working more safely themselves and in spreading safety education generally.

It may be added that while this safety and first-aid movement was originally started for the mining industry, these competitions have attracted men and teams from the logging camps, pulp industry, military units, and several other industries where large groups of men are employed.

In addition to male teams, large numbers of ladies', boys', and girls' first-aid teams take part, and these also help to spread the gospel of "safety first."

SUPERVISION OF COAL MINES.

During the year nineteen coal companies operated twenty-four mines, employing 2,175 men underground. In the supervision of underground employees there were twelve managers, fourteen overmen, 102 firebosses and shotlighters; a total of 128, or one official for every seventeen persons employed underground.

"COAL SALES ACT."

During the year very few complaints were recorded under this Act. These complaints were either on the substitution of an inferior grade of coal for a superior grade or excessive slack in lump or nut coal.

In the Vancouver area, valuable assistance is rendered by the Weights and Measures Inspector for Vancouver City, who keeps a close check on the sale of coal in the City.

LIST OF REGISTERED NAMES OF BRITISH COLUMBIA COALS, APPROVED BY THE CHIEF INSPECTOR OF MINES, IN ACCORDANCE WITH THE PROVISIONS OF THE "COAL SALES ACT."

Registered Names of Coal.	Colliery and District.	Producing Company.
Comox	Nos. 5 and 8 mines, Comox Colliery (Cumberland)	Canadian Collieries (D.), Ltd.
Old Wellington	No. 9 mine (Wellington)	Canadian Collieries (D.), Ltd.
Ladysmith-Wellington	No. 10 mine (South Wellington)	Canadian Collieries (D.), Ltd.
Hi-Carbon	Mixture of Canadian Collieries' coal and B.C. Electric coke	Canadian Collieries (D.), Ltd.
Lantzville-Wellington	Lantzville (Lantzville)	Lantzville Colliery.
Fiddick-Douglas	Fiddick mine (South Wellington)	Fiddick mine.
Chambers-Extension	Chambers' (Extension)	R. H. Chambers.
Wellington Big Flame	Richardson mine	A. B. Richardson.
Biggs-Wellington	Biggs' mine (Wellington)	Biggs' mine.
Berkley Creek-Little Wellington	Berkley Creek Colliery (Extension)	Hugh McLean Davidson.
Nanaimo Jingle Pot	Old East Wellington (Nanaimo)	Thos. Lewis.
Cassidy-Wellington	Cassidy mine (Cassidy)	A. H. Carroll.
Middlesboro	Middlesboro (Merritt)	Middlesboro Collieries, Ltd.
Coalmont	Coalmont (Coalmont)	Coalmont Collieries, Ltd.
Tulameen Valley Coal, Princeton	Tulameen (Princeton)	Princeton Tulameen Coal Co.
Granby Tulameen	Granby (Princeton)	Granby Consolidated M.S. & P. Co., Ltd.
Hat Creek	Hat Creek (Lillooet)	Canada Coal and Development Co., Ltd.
Tulameen	Tulameen Collieries (Princeton)	Tulameen Collieries.
Bulkley Valley	Bulkley Valley (Telkwa)	Bulkley Valley Colliery, Ltd.
Aveling	Aveling (Telkwa)	Aveling Colliery.
Crow's Nest, Coal Creek	Coal Creek (Coal Creek)	Crow's Nest Pass Coal Co., Ltd.
Crow's Nest, Michel	Michel (Michel)	Crow's Nest Pass Coal Co., Ltd.

BOARD OF EXAMINERS FOR COAL-MINE OFFICIALS.

FIRST-, SECOND-, AND THIRD-CLASS CERTIFICATES AND MINE-SURVEYORS' CERTIFICATES.

BY

JAMES STRANG.

The Board of Examiners, which was formed on July 10th, 1919, now consists of James Dickson, Chief Inspector of Mines, Chairman; H. E. Miard, member; and James Strang, member and Secretary to the Board.

The meetings of the Board are held in the office of the Department of Mines in Victoria. The examinations are held in accordance with the amended rules of the Board of Examiners and approved by the Minister of Mines on September 28th, 1929.

Two examinations were held in 1940, the first on May 15th, 16th, and 17th, and the second on November 13th, 14th, and 15th. The total number of candidates at the examinations were as follows: For First-class Certificates, 2 (2 failed); for Second-class Certificates, 5 (2 passed, 3 failed); for Third-class Certificates, 18 (8 passed, 10 failed). There were no candidates for Mine-surveyors' Certificates.

The following is a list of the candidates who successfully passed in the various classes:—

Second-class Certificates.—Thomas Eccleston (Jr.) and Stanley J. Lawrence.

Third-class Certificates.—Sidney Hunt (Jr.), James Cochrane, Primo Cimolini, James Fairley, Reginald O'Brien, John Magielka, John E. Anderson, and Thomas M. Wynne.

EXAMINATIONS FOR CERTIFICATES OF COMPETENCY AS COAL-MINERS.

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

Examinations are held regularly in all coal-mining districts.

No certificate has been granted in any case where the candidate has failed to satisfy the Board as to his fitness, experience in a coal mine, and a general working knowledge of the English language.

During 1940 there were 193 candidates for coal-miners' certificates; of these, 188 passed and 5 failed to qualify.

In addition to the certificates granted above, substitute certificates were issued to those who had lost their original certificates.

The Board of Examiners desires to thank the different coal-mining companies for the use of their premises for holding the examinations when necessary.

The Inspector of Mines in each district has authority under the "Coal-mines Regulation Act" to grant, after a satisfactory examination, a provisional certificate as a coal-miner to applicants, which entitles the holder to follow the occupation of a coal-miner for a period not exceeding sixty days or until the date of the next examination before the Board.

GOVERNMENT MINE-RESCUE STATIONS.

NANAIMO.

BY

RICHARD NICHOL.

The equipment at this station consists of six sets of the Gibbs two-hour oxygen apparatus; six sets of the McCaa two-hour oxygen apparatus; twelve sets of the Burrell all-service gas-masks; two H.H. inhalators; one Sparklet resuscitator; and seventy self-rescuers. A sufficient supply of materials to maintain the above equipment in service is kept at all times.

There is an 85-horse-power truck at this station to permit immediate transportation of the equipment in a case of emergency.

Trained teams from the different mines underwent a monthly practice, and six new men took the full training course and obtained certificates of proficiency in this work.

During the year there were twenty calls for oxygen from the Nanaimo and Ladysmith Hospitals. These calls were given immediate attention, as were also calls for oxygen from the fire and police departments of Victoria and Oak Bay.

Immediate response was made to the call for the rescue truck and apparatus on the occasion of the explosion in No. 10 mine, South Wellington, on December 22nd, where the rescue apparatus was used by a trained crew to explore the part of the mine affected and locate the bodies of those killed.

CUMBERLAND.

BY

JAMES L. BROWN.

The equipment at this station consists of eleven sets of the McCaa two-hour oxygen apparatus; twelve sets of the Burrell all-service gas-masks; one Sparklet resuscitator; one H.H. inhalator; and forty self-rescuers, with sufficient supplies to maintain the equipment in service.

During the year four trained teams carried out rescue training, and twenty new men underwent the full training course and obtained certificates.

Emergency calls for oxygen by the local hospital and medical men were attended to at once, 500 cubic feet being supplied in response to the various calls.

PRINCETON.

BY

ALFRED GOULD.

The equipment at this station consists of eleven sets of the McCaa two-hour oxygen apparatus; eleven sets of the Burrell all-service gas-masks; twenty self-rescuers; one H.H. inhalator, with sufficient supplies to maintain the above in service.

During the year the Instructor from this station made visits to various mines to train men in the use of the rescue apparatus. These men took the full training course and obtained certificates of proficiency in this work. In addition to the mine-rescue work, a large number were given training in first aid.

Calls from the local hospital for oxygen treatment during the year were given immediate attention.

FERNIE.

BY

J. T. PUCKEY.

The apparatus at this station consists of six sets of the Gibbs two-hour oxygen apparatus; eleven sets of the McCaa apparatus; twelve sets of the Burrell all-service gas-masks; one H.H. inhalator; and thirty-five self-rescuers, with sufficient supplies to maintain the equipment in service.

There were no emergency calls from the mines during the year. In response to various calls from the Fernie Hospital, 600 cubic feet of oxygen was delivered throughout the year.

Six men from the Sullivan mine of the Consolidated Mining and Smelting Company of Canada took the full training course and obtained certificates, and the station was in use throughout the year as the centre for first-aid training and instruction.

EXPLOSION AT No. 10 MINE, CANADIAN COLLIERIES (D.), LTD., SOUTH WELLINGTON.

On Sunday morning, December 22nd, an explosion occurred in No. 10 mine, South Wellington, owned and operated by the Canadian Collieries (D.), Ltd.

The explosion occurred in a part of the mine known as No. 4 Heading district, consisting of two headings with the necessary crosscuts, which had been driven from the main slope towards the outcrop of the seam, chiefly to provide a new intake airway.

The No. 4 heading was provided with a separate ventilating current of fresh air with a volume of 10,000 cubic feet of air per minute which passed up the main heading and returned by the counter-heading. These headings had almost reached the extremity of the coal; but as the outcrop at this point is covered by a surface deposit of gravel, a raise was started in the roof strata of the second crosscut back from the heading faces to connect with a 30-foot shaft already sunk through the surface gravels to the rock-head. The heading faces were approximately 100 feet past the crosscut from which the raise was driven.

The faces of the headings were bratticed to the face, although the crosscut from which the raise was started was open except for any raise supplies that were piled between the raise and the counter-heading. Apparently sufficient air was passed around the heading faces to keep them free from gas.

The raise was provided with a manway, midwall, and a " booster " fan, and one-half of the raise was used as a chute for the debris; the fan was used only at intervals for clearing out the smoke and gases due to blasting.

The connection between the raise and the shaft was so nearly completed that the last round of shots fired by the shift finishing at 9 p.m. on the night of December 21st shattered the rock in the bottom of the shaft but did not make an opening. There were also two drill-holes through from the raise to the shaft.

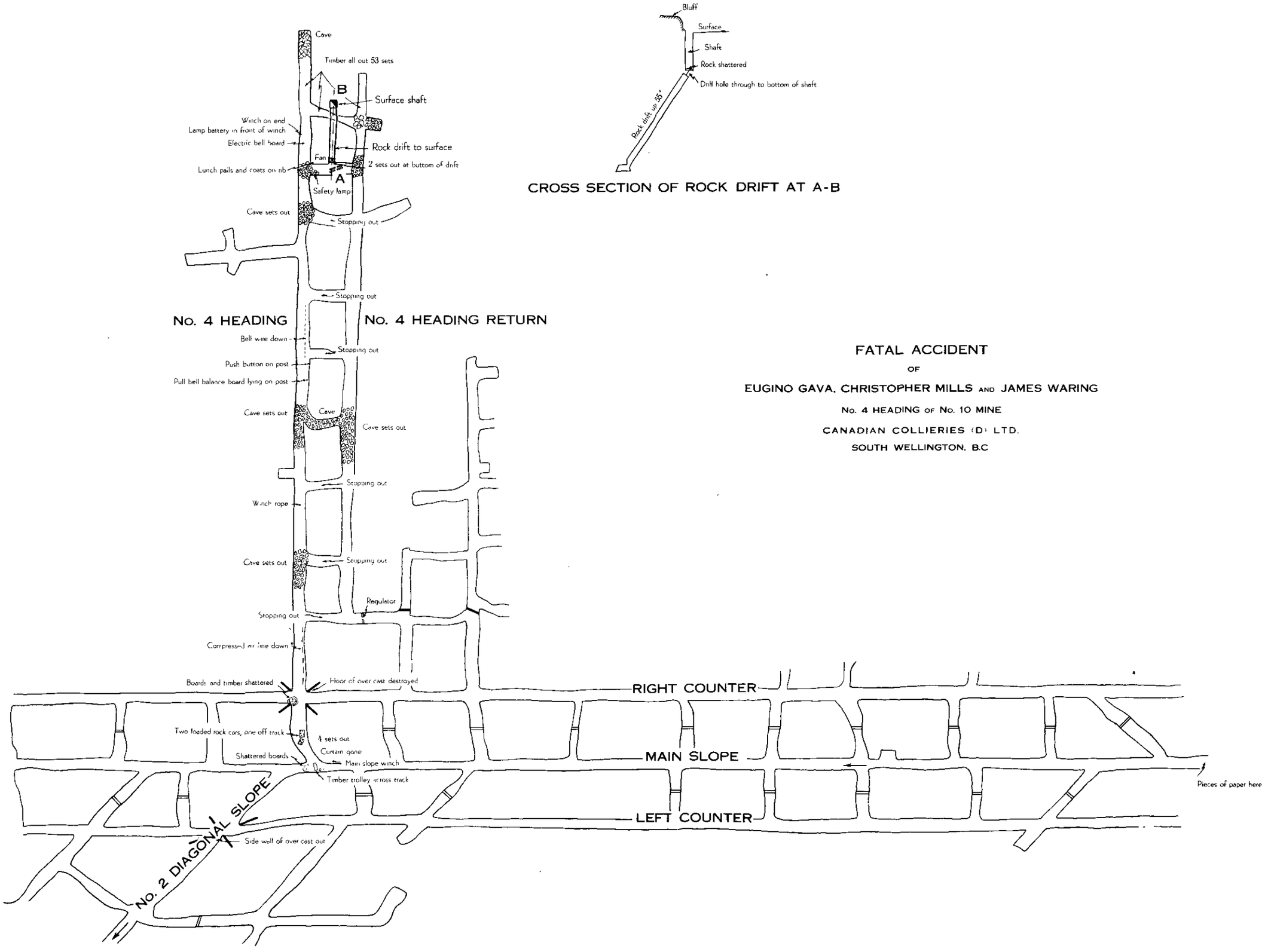
The round of shots on the 21st was fired at the end of the shift and no examination of the place was made by the fireboss in charge and he so reported in the fireboss's report-book. On the night shift starting at 11 p.m. on the 21st there was no one in the mine except the night-shift fireboss; and as there was usually a considerable amount of work involved in reaching the raise face after firing a round of shots, the night-shift fireboss did not examine this area, and made a report to this effect.

On the morning of the 22nd nine men, including the mine manager and two firebosses, went underground, with Christopher Mills, one of the firebosses, and two men, James Waring and Eugino Gava, being detailed to work at the raise in No. 4 heading. Fireboss Mills was informed by the night-shift fireboss that no inspection had been made of the No. 4 heading; this in addition to the report made by the night-shift fireboss in the book; and Mills stated that he would attend to this examination at once.

Apparently Mills took the two men with him up No. 4 heading, but his following course of action is in doubt, as nothing more was known until the explosion which killed all three men. This occurred a few minutes before 8 a.m.

The other men in the mine were engaged in repair-work and did not feel the shock of the explosion, but noticed a disturbance in the air-current, and on investigating found evidence of the explosion at the foot of No. 4 heading and the body of James Waring a few feet up the heading beside a trip of two cars of rock which he had brought down the heading. The mine manager arrived a few minutes later and efforts were made to explore the No. 4 heading, but the gases and smoke made this impossible and an emergency call was made to the Inspector of Mines for the use of the rescue apparatus from the Nanaimo Mine-rescue Station, and for more men.

Meantime efforts were made to restore the ventilation, but it was later found that the No. 4 heading return airway was tightly caved; this necessitated an attempt to advance the ventilation by bratticing the main No. 4 heading. A team using the two-hour oxygen apparatus entered the heading and reached the raise crosscut and the heading hoist where the bodies of Mills and Gava were found. All men had been killed instantly.



FATAL ACCIDENT

OF

EUGINO GAVA, CHRISTOPHER MILLS AND JAMES WARING

No. 4 HEADING OF No. 10 MINE

CANADIAN COLLIERIES (D) LTD.

SOUTH WELLINGTON, B.C

A large amount of timber was blown out, and there was considerable caving over the whole area, although there was only one impassable cave.

CAUSE OF THE EXPLOSION.

There can be no doubt that this was wholly a gas explosion, and that coal-dust did not enter into the propagation of the explosion in any way. From an appraisal of the damage done and the length of roadways damaged by the explosion, there must have been a considerable body of gas; and it is difficult to understand why Fireboss Mills did not discover this gas, as an examination to determine the condition of the atmosphere is the main purpose and duty of a fireboss.

Mills was aware that No. 4 heading area had not been examined by the fireboss on night shift, and stated he would make the required examination at once on reaching it. A contravention of the "Coal-mines Regulation Act" was made when he allowed the two miners to accompany him, as he ought to have made the required examination and report of conditions before permitting these men to enter the section. Whether this contravention had any bearing on the explosion is doubtful, as Mills apparently failed to discover the gas in any case.

SOURCE OF IGNITION.

Mills' flame safety-lamp was found in good condition and no shots had been fired, which left the electric signalling system and bell on No. 4 heading as the only other probable source of ignition. After reaching the raise crosscut the men had loaded two cars from the chute and lowered them down No. 4 heading with Waring accompanying the cars and Mills operating the hoist. The chute is within speaking distance from the hoist and it is probable that no use was made of the electric signalling system until Waring signalled from the foot of No. 4 heading to stop the trip there; the explosion apparently occurred at this moment.

It is possible that Mills examined No. 4 heading as far as the raise crosscut and started the men to work with the intention of later examining the headings and the raise. Mills' flame safety-lamp was found beside Gava's body, which may indicate that Mills at the hoist had sensed the presence of gas and called to Gava to bring the safety-lamp immediately prior to the explosion.

From the evidence of the different witnesses at the inquest concluded on January 6th, no bodies of inflammable or explosive gas had ever been found in this No. 4 heading operation, and it may be that this immunity had produced a false sense of security and belief that this favourable condition would continue. An abandoned mine adjacent to No. 10 mine experienced many sudden outbursts of gas and evidence of such an outburst in No. 4 heading was carefully sought, but there was definitely no evidence of any outburst.

It is possible that some derangement of the ventilation, either due to the firing of the round of shots at 9 p.m. on the 21st or to some caving during the eight hours following, permitted the gas to accumulate either in the raise or in the heading faces; in either case an ordinary examination should have discovered any such body of gas.

The accompanying plan shows the different points in connection with this explosion.

INSPECTION OF COAL MINES.

VANCOUVER ISLAND INSPECTION DISTRICT.

BY

JOHN MACDONALD AND E. R. HUGHES.

Canadian Collieries (Dunsmuir), Ltd.

J. A. Boyd, President, Montreal, Que.; H. R. Plommer, Vice-President, Vancouver, B.C.; P. S. Fagan, Secretary-Treasurer, Nanaimo, B.C.; John Hunt, General Superintendent, Nanaimo, B.C.; H. Baird, Superintendent, Cumberland, B.C.; R. K. Smart, Assistant Superintendent, Nanaimo, B.C. Mr. Hunt retired from active service with the company at the end of May, and was succeeded by Mr. Baird, who has established his headquarters at Cumberland.

Northfield Mine.—A. Newbury, Manager; J. Sutherland, Overman. This mine is situated 4 miles north of Nanaimo and has railway facilities over the Esquimalt & Nanaimo Railway, which makes connection with the company's private lines to the bunkers and wharves at Nanaimo. The colliery operated 266 days during the year and produced 146,706 tons of coal from the Nos. 1, 3, and 4 Wellington seams, the major portion of this tonnage coming from low long-wall faces where the coal is mined by Anderson-Boyes coal-cutting machines and loaded on to Meco shaker-conveyers for transportation to the loading-points on the various levels. All new development during the year was confined to the Nos. 3 and 4 seams which so far had not been touched in this part of the field. The No. 3 seam, with an average thickness of 20 inches, was developed by a heading driven on the full pitch of the seam for a distance of 600 feet from the main haulage-level at the top of No. 5 Incline. As the seam did not increase in thickness, this area was abandoned. The No. 4 seam, which averages from 20 to 22 inches in thickness, was opened up by a main level driven from the hoisting-shaft at a point 75 feet up from the main shaft-bottom. A temporary landing was made for a distance of 120 feet from the shaft and at the inby end of the landing a main heading was turned off and driven for a distance of 650 feet at the end of the year. As in previous years, a considerable amount of advance drilling has been done in doubtful areas to guard against accidental contact with old workings. Working conditions have been found generally satisfactory in the course of inspection and, except for an occasional emission of black-damp when roadways were being driven through gob areas in the No. 5 Incline district, the ventilation was good throughout the workings and measured as follows at the last inspection in December:—

No. 5 Incline split: 16,200 cubic feet of air a minute for the use of forty-seven men and four horses.

Slope split: 18,000 cubic feet of air a minute for the use of thirty men.

Main north return: 47,500 cubic feet of air a minute for the use of seventy-seven men and four horses.

Twenty-one samples of air were taken in the return airways, the analyses showing the methane content to be under 0.5 per cent. travelling in the air in these roadways. Eighty-three samples of dust were collected in accordance with the requirements of the Coal-dust Regulations, all but one of these being well above the minimum standard of incombustible content stipulated in the regulations; 42,000 lb. of rock-dust were used in treating 18,000 feet of roadways in the maintenance of the above satisfactory condition.

No. 10 Mine, South Wellington.—William Frew, Manager; Jos. Wilson, Overman. This mine is situated in the Cranberry District about one-half mile south of the old No. 5 mine, and now ranks as the chief producing mine in the Nanaimo area, operating 251 days during the year with a total production of 183,162 tons. The rapid development of this mine has entailed a number of changes and additions to the plant, consisting of the installation of a Gardner-Denver compressor with a capacity of 750 feet of air a minute; a combined blacksmith and car-repair shop, 20 by 40 feet, was con-

structed convenient to the mine portal; a 35-horse-power electric hoist was installed on the rock dump, and a new road built from the main Island Highway to the mine yards. The old tipple was remodelled and extended to take care of the increased output, and a new fire-protection system installed around the surface works.

Due to the rapid expansion of the workings under limited ventilating facilities, together with an occasional free outflow of gas from the working-faces, it was found necessary on several occasions to prohibit blasting in certain areas and the management advised that a substantial increase in the quantity of air available was required to keep the methane content in the general body of the air to the lowest possible minimum. With a view to effecting a permanent improvement in the general ventilating system, two new return airways, one on each side of the Main slope, were driven and connected to the fan-shaft while a new intake raise was driven from No. 4 Incline to connect with a 10- by 10-foot vertical shaft which was sunk to a depth of 38 feet from the surface to the bed-rock. These roads were all connected and in operation at the end of the year, providing two separate intakes and two returns for the mine. New development has been centred chiefly in the Main slope and No. 2 Diagonal slope; each of these roadways was driven a distance of 1,500 feet during the year with the necessary levels and headings turned off these main arteries to form each district into a separate panel. Apart from the occasions mentioned when it was found necessary to prohibit blasting, the ventilation was generally good, the quantity passing in each split at the last inspection measuring as follows:—

No. 1 split: 35,000 cubic feet of air a minute for the use of forty men.

No. 2 split: 31,500 cubic feet of air a minute for the use of forty-four men.

Main return: 93,720 cubic feet of air a minute for the use of eighty-four men.

Twenty-six samples of air were taken at the testing-stations in the return airways, the resultant analysis showing the methane content to vary from 0.44 per cent. in the return from No. 1 split to 1.25 per cent. in the return from No. 2 split. One hundred and eight samples of dust were collected from the roads in general, all of which were above the standard of incombustible content as stipulated in the Coal-dust Regulations. In this connection, 196,000 lb. of dust was used in treating 30,000 feet of roadways.

Prospect Slope, Extension.—This prospect is situated at Extension on the southerly end of the "Harewood Ridge," and is at present operating the Wellington seam. This slope was originally opened by the old Vancouver Coal Company in 1899 and driven for a distance of 650 feet from the surface. A counter-slope was also driven a distance of 150 feet and connected to the main slope by a small shaft for ventilating purposes. In August of this year, the Canadian Collieries (Dunsmuir), Limited, dewatered the slope to a depth of 550 feet and turned off levels to right and left to prove the seam. These were driven a distance of 120 feet and 130 feet respectively before being abandoned on account of low coal and rock in the seam. Two new levels were started at a point 150 feet from the portal and had been advanced a distance of 80 feet, with the coal varying from 4 to 7 feet in height. The surface plant consists of a locomotive-type boiler which provides power to operate a Dobeson hoist on the surface, a small pumping unit underground, and a Capell-type fan located at the return outlet. This fan is driven by a small vertical engine and has a capacity of 5,000 cubic feet of air a minute.

Beban Mine. F. W. Beban Company, Operators; George Frater, Overman. This mine is situated in the Extension district and operates an isolated portion of the Wellington seam which was left in this area by former operators. No new development-work was undertaken during the year, all operations being confined to retreating with extraction of the pillars from the boundary barriers toward the Main slope. Working conditions have been found fairly satisfactory during the course of inspection, although nearly all roadways suffered materially from crushing incidental to pillar extraction. The ventilation was found satisfactory at all inspections, with an average of 14,000 cubic feet of air a minute for the use of twenty-four men and two horses. Fourteen samples of air were taken, the analysis of these showed a very slight percentage of methane in the return air-current.

Chambers'. *Nos. 2 and 3 Mines.*—R. H. Chambers, Operator; Charles Webber and Thomas McCann, Firebosses. These mines are located in the Extension district and operated in a small portion of the Wellington seam

which had been left by former operators. All available coal that could be extracted with safety was finished in the No. 2 mine in April, when this mine was abandoned. No. 3 mine was developed by a slope driven for a distance of 450 feet from the surface, but a succession of faults and rolls retarded further development in the lower section of the mine. A small gasoline-driven fan was installed at the upcast shaft, but it was seldom found necessary to have it in operation, as a good current of air was available by natural means.

Neville Prospect.

Nos. 1 and 2 Mines.—H. N. Freeman, Manager. These mines are situated on the Extension Ridge and operated in a small portion of the Wellington seam which had been left as a barrier along the outcrop by the management of the old Extension Colliery. Working conditions were found to be generally satisfactory at all inspections. No accidents were reported from these mines.

Big Flame.

Nos. 2 and 3 Mines.—A. B. Richardson, Operator; N. McIntyre, Fireboss. These mines are situated in the South Wellington area and were operated in small outcrop areas of the Douglas seam. No. 1 mine worked 104 days and produced 211 tons before being finally abandoned near the end of May. The No. 2 mine was opened on June 1st, when a slope was started from the surface to reach a few pillars presumably left intact along the outcrop by former operators. An average crew of five men was engaged at these mines on a co-operative basis. Working conditions were found to be fairly good and operations were carried out free from accidents.

No. 5 Mine, Cassidy.

J. McKellar and Associates, Operators; James Nimmo, Fireboss. This mine was opened by a slope 300 feet in length, which was driven from the surface through faulted ground to reach a portion of the Douglas seam left in this particular area when Granby Colliery was abandoned. Three attempts were made to develop this area by levels off the slope, but in each case the coal was pinched out by rolls and steps. It would appear that the future of this operation depends on extending the slope for a distance of approximately 100 feet to reach a virgin portion of the seam already located by a bore-hole from the surface. This extension would have to be driven through solid rock and presents an expensive problem to a small operator. The mine is ventilated by natural means and working conditions have usually been found satisfactory at all inspections. No accidents were reported.

Lantzville Colliery.

No. 1 Mine.—J. A. Challoner and Associates, Operators; J. A. Challoner, Overman. This mine is situated on the shore-line of the Strait of Georgia, 9 miles north of Nanaimo, and operates in the Wellington seam, which is reached by a slope 270 feet in length from the surface. As in former years, operations continue on a co-operative basis with an average crew of fourteen men engaged. Ventilation and working conditions in general were found to be fairly satisfactory during the course of inspection. At the last inspection in December, 12,000 cubic feet of air a minute was circulating for the use of eleven men. Eleven samples of air were taken at the testing-station in the main return airway, none of which showed more than a very slight trace of methane in the general body of the air. No accidents were reported.

Biggs' Mine.

James Biggs, Operator and Fireboss. This mine is located in the Wellington area and was operated over a period of 183 days, producing 621 tons from a small patch of outcrop coal with a crew of three men engaged. The ventilation is provided naturally and has always been found ample for all requirements; working conditions generally were found fairly satisfactory. No accidents were reported during the year.

Loudon's Mine.

W. D. Loudon, Operator; James Rallison, Fireboss. This mine is also located in the Wellington area and operates in a small portion of outcrop coal left in the district by former operators. Working conditions have been found satisfactory and sufficient ventilation is provided by natural means for all practical purposes. No accidents were reported.

Lewis' Mine.

T. and G. Lewis, Operators; G. Lewis, Fireboss. This mine is situated in the East Wellington district and comprises a small area of coal left in the vicinity of the old Jingle Pot slope. The mine was abandoned in

the early part of October as all available coal that could be extracted with safety had been recovered. Working conditions were found generally good at all inspections.

No. 8 Mine, Comox Colliery. James A. Quinn, Manager; John S. Williams, Overman; A. W. Watson and Daniel Morgan, Shiftbosses; W. Johnstone, M. Frame, J. Queen, T. Shields, E. Surtees, J. W. Smith, A. Maxwell, Frank Woods, Frank Coates, and James Weir, Firebosses. The mine is situated in the vicinity of the Lake Trail road and 2 miles east of the mine camp at Bevan. The seams are reached by two shafts, each 1,000 feet in depth. The No. 2 seam is the only one being operated at the present time; it lies at a depth of 700 feet. Before opening out on the long-wall advance method of work, a shaft pillar 1,000 feet in diameter was left and only narrow openings driven through it.

The mine operated throughout the year and during this period all development has been on the south side of the shaft. During the early part of the year the main South level encountered a downthrow fault displacing the seam 27 feet; this fault cutting off No. 1 and No. 2 walls and thus causing coal production to be discontinued in this area. A rock tunnel driven to regain contact with the seam encountered the coal after a drivage of 200 feet. A crosscut was then driven to No. 1 Left level to re-establish ventilation, but no further development was done in this part of the mine. In the No. 1 Incline section, the face of the incline advanced to a point 2,000 feet from the Main level intersection, the advance during the year being made by a long-wall triple-entry system, the incline forming the centre entry and the right and left counters made at the top and bottom of the long-wall face-line. By this method of advance, long-wall conveyer units, of 300 feet in length, have been developed on both sides of the incline. To give the required height, the incline and counter roadways are brushed in the roof and the rock stowed on either side of the roadways. Four long-wall faces of 300 feet in length are developed and working daily, three long-wall faces are developed and ready for operation, and another four long-wall faces are being developed. The total length of active face-line is 1,200 feet with an average seam thickness of 3 feet 6 inches, with varying thickness of bone from 1 inch to 15 inches. Airways have been maintained to keep pace with this development. The coal is mined by means of Anderson-Boyes long-wall machines and solid places driven with post-type punching machines. Meco-type conveyers are used to convey the coal down the working-faces and load it into mine-cars. Roof conditions are not of the best and require close attention on account of the numerous slips encountered, together with cap-rock or false roof of from 1 inch to 6 inches, which comes down with the coal.

The Keith fan which formerly provided the mine ventilation was found to be inadequate for the needs of this growing mine, and on January 14th was replaced by a Sullivan fan having a rated capacity of 250,000 cubic feet of air per minute, with a 7-inch water-gauge. It is becoming increasingly evident that this is a potentially gassy mine, and for this reason it is essential that the area on long-wall face-lines be kept as large as natural conditions will allow. The main air-current of the mine is divided into five splits, and at the time of the last measurements the quantities were found to be as follows:—

No. 1 split: 8,140 cubic feet per minute. No workmen in this split.
No. 2 split: 18,000 cubic feet per minute. No workmen in this split.
No. 3 split: 13,320 cubic feet per minute for thirty-five men and one horse.
No. 4 split: 68,400 cubic feet per minute for sixty men and two horses.
No. 5 split: 12,500 cubic feet per minute for thirty-five men and two horses.
Main South return: 142,065 cubic feet per minute for ninety-five men and five horses.

In addition to the above-measured air-current, ventilation is also provided for the inactive North side. Adding the quantities passing in both the north and south sides of the mine, the total amount of air passing to the upcast shaft during the last measurement was 227,500 cubic feet per minute; this with a water-gauge of 7 inches.

Thirty-six samples of mine-air were collected during the year, two of which were spoiled by leakage. This sampling serves as a check on safety-lamp readings and gives advance information regarding future ventilating requirements. The analysis of the air-sample taken in the main South return airway on December 4th showed a methane

content of 0.86 per cent., with 142,065 cubic feet of air passing at the time; so that 1,221.7 cubic feet per minute of methane was being produced from the active South side, this being equivalent to 1,759,248 cubic feet of methane per twenty-four hours. The analysis of the mine-air sample taken in January, 1940, showed 1.3 per cent. of methane with 76,230 cubic feet of air, or 1,427,025 cubic feet of methane for the twenty-four-hour period. Thus, a substantial increase in methane emission was noted during the year. A total of 327,040 lb. of rock-dust were used underground during the past twelve months, 110,000 lb. of this being used in tamping shots and the remainder in treating the roadways and face-lines of the mine. As an additional precaution against the coal-dust hazard, all main roadways have an adequate water-supply and the coal is subjected to a spray of water as it is discharged from the conveyer-pans. Two hundred and sixteen samples of mine-dust were analysed during the year for the purpose of ascertaining the percentage of incombustible matter and moisture in the dust collected from the roof, floor, and sides of the mine roadways.

This mine was inspected on thirty-one occasions during the year.

No. 5 Mine, Comox Colliery.

R. B. Bonar, Manager; John Christie and Irving Morgan, Overmen; William Herd and Thomas Eccleston, Shiftbosses; Thomas Smith, L. Cooper, A. G. Jones, William Devoy, A. Williams, C. Williams, G. Harvie, A. Dunsmore, R. Walker, R. O'Brien, Thomas Robertson, A. Sommerville, J. Vaughan, and R. Littler (Sr.), Firebosses.

This mine operates the No. 2 seam, which is reached by a shaft 280 feet in depth. All the workings lie to the dip of the shaft and are accessible by four slopes which are driven from the level of the No. 1 seam. All of the output is produced from long-wall faces and their accompanying development places. At the end of the year there were eight active long-wall faces, having a total length of 2,060 feet. The average daily output of coal during the month of December was 800 tons, with 470 men employed underground and fifty-seven men on the surface.

The long-wall faces are equipped with Meco-type pan-conveyers which carry the coal from the face-lines to loading-points on the levels. In addition to the pan-conveyers, two 20-inch gate-end belt-conveyers are used to carry the coal from the pan-conveyers to mine-cars in loading roads where roof brushing is done. Where this system is used the roof brushing is stowed on either side of the roadways. All mining is done in the rock-bands, either in the centre of the seam or underneath, by means of Anderson-Boyes coal-cutting machines which mine the coal to a depth of 6 feet. In the development places the cutting is also done in the rock-bands by means of Hardiax post-type punching machines. Compressed air is used to operate the coal-cutters and conveyers.

A timbering innovation introduced during the year was the use of telescopic legs for supporting stringers in roadways being driven and maintained close to the advancing long-walls. Previously, these roadways had to be brushed and retimbered as many as four times before final settlement took place; this was very costly and hindered haulage and ventilation at the time of maximum squeeze. The use of these telescopic legs, together with roof brushing and subsequent rock stowage has done much to improve roadway conditions in the vicinity of the working-face. The total length of roadways to date using this type of support is approximately 4,000 feet, and while results are so far highly satisfactory, this innovation is yet in the experimental stage.

Due to the gassy nature of the mine the closest attention is at all times required in maintaining efficient ventilation, and while it has been necessary on several occasions during the past year to temporarily prohibit blasting on some of the long-wall faces and levels, there were no instances of protracted prohibitions being required. At the time of the last inspection the quantities measured in the intake airways were as follows:—

Main slope: 38,940 cubic feet per minute for the use of forty-seven men and one horse.

No. 2 West: 48,300 cubic feet per minute for the use of fifty-six men and two horses.

No. 4 West: 37,100 cubic feet per minute for the use of thirty-three men and two horses.

The analysis of mine-air samples taken in the returns during December, together with safety-lamp tests in the East return, indicated that approximately 3,500,000 cubic feet of methane is given off from this mine during the 24-hour period.

Two hundred and sixty-one tons of rock-dust was used during the year. The dust was distributed by hand on the roadways and long-wall faces of the mine for the purpose of combating the coal-dust hazard, and is also used for the tamping of shots. To further counteract the danger from coal-dust, the coal coming off the conveyer-pans is sprayed with water and all Main slope trips are sprayed with water as they leave the various partings. Samples of mine-dust are collected each month from the different roadways as required, and a total of 563 such samples were analysed, all of which exceeded the minimum requirements of the dust regulations.

A 500-horse-power electric hoist situated at the top of the Main slope, carrying 5,300 feet of 1⅛-inch rope, hauls all the coal from the various sections of the mine to the top of the slope. The slope is laid with heavy steel as a precaution against derailment of trips, which of a necessity must travel at a high speed on this long haul. A man-trip is run on this slope to bring the workmen out at the end of the shift. Additional man-trips are run in the No. 2 West and Main slope sections.

The six underground compressors which formerly supplied the compressed-air requirements of the mine have been replaced by three surface compressors located near the top of the No. 3 intake air drift. The compressed-air pipes are placed in this drift. The total rated capacity of the present installation is 4,996 cubic feet of air per minute.

Two electrically heated bath-houses have been erected in the mine-yard for the use of twenty-two mine officials. A large bath-house for the accommodation of 512 workmen is being erected and should be ready for use early in 1941. The heating and water for the large bath-house will be furnished by a hot-water boiler situated outside the main building.

Monthly inspections were made by the miners' "gas committee," and copies of all these reports of inspection were received through the courtesy of the committee members. All report-books required to be kept at the mine were examined regularly and were found to be in order.

This mine was inspected on sixty-five occasions during the year.

NICOLA-PRINCETON INSPECTION DISTRICT.

BY

JOHN G. BIGGS.

The following coal companies operated in this district during 1940: The Coalmont Collieries, Limited; Middlesboro Collieries, Limited; Princeton Tulameen Coal Company, Limited; Granby Consolidated Mining, Smelting, and Power Company, Limited; and the Hat Creek Colliery.

Coalmont Collieries, Ltd.

Blake M. Wilson, President, Vancouver, B.C.; W. H. Malkin, Vice-President, Vancouver, B.C.; R. A. C. Douglas, Secretary, Vancouver, B.C.; D. McLeod, Treasurer, Vancouver, B.C.; George Murray, Superintendent, Blakeburn, B.C. With the abandonment of No. 5 mine during April, the Coalmont Collieries, Limited, at Blakeburn ceased coal production after twenty-four years of operation, during which time over 2,000,000 tons of coal was produced from Nos. 1, 2, 3, 4, and 5 mines. The mines are all exhausted and abandoned, and the equipment at the mines, the aerial tram between the mines, and the preparation plant on the Kettle Valley Railroad are being dismantled and sold.

As there is no other mine or industry in the vicinity of Blakeburn this small settlement will probably be totally deserted.

Middlesboro Collieries, Ltd.

His Honour E. W. Hamber, President, Vancouver, B.C.; E. McDonald, Secretary, Vancouver, B.C.; Robert Fairfoull, Manager, Merritt, B.C. This colliery is situated 1 mile west of Merritt on a branch line from the Kettle Valley Railway. The power plant and preparation installation are at the railroad, while the No. 2 South and No. 3 North mines, the only mines

now operating, are reached by a surface inclined tramway 3,000 feet long. These mines are in steeply inclined seams with the result that chutes are in general use to convey the coal from the working-places to the cars on the different levels. Only compressed air is used for power underground and several raises driven to surface openings provide adequate natural ventilation. No trace of explosive gas was found during the year.

Both mines were developed by the pillar-and-stall method, and as the workings are now retreating all the production is from pillar extraction.

Granby Consolidated Mining, Smelting & Power Co., Ltd.

Julian B. Beaty, President, New York; A. S. Baillie, Vice-President, Copper Mountain, B.C.; B. E. Perks, Secretary, Vancouver, B.C.; A. W. Seaton, Treasurer, Vancouver, B.C.; W. R. Lindsay, Superintendent, Allenby, B.C.; Thomas M. Wilson, Manager, Princeton, B.C. This colliery consists of Nos. 1 and 2 mines situated 6 miles west of Princeton, off the Hope–Princeton Highway. Almost all the output from these mines is used at the company's steam electric power plant near Princeton, which supplies all the power requirements at the Copper Mountain mining operation, the concentrator at Allenby, and at the coal mines.

The coal is transported from the mines by auto trucks to a point near Princeton, from which it is carried across the Similkameen River by an aerial tram to the power plant. During the year the power plant was augmented by the addition of a 10,000-k.v.a. steam electric unit with the steam generated by a modern high-pressure boiler using pulverized coal. The total power capacity of the plant is now approximately 17,000 k.v.a.

The seams operated have a pitch of 20 degrees, and mining is carried on by the pillar-and-stall system, the coal being carried from the working-faces by chutes to the different haulage-levels. With the exception of the main underground electric hoist, all the underground power is from compressed air.

No. 1 mine is divided into two ventilating splits, one on each side of the Main slope, and each split is provided with modern electric-driven fan, and at the last inspection in December, 50,000 cubic feet of air per minute was passing into the mine for the use of thirty-eight men.

No. 2 mine is in the development stage, and is ventilated by natural means.

Princeton Tulameen Coal Co., Ltd.

Guy F. Atkinson, President, San Francisco, California; George H. Atkinson, Vice-President, San Francisco, California; W. D. Seaman, Secretary-Treasurer, Princeton, B.C.; James Taylor, Manager, Princeton, B.C.; Ben Cheetham and Robert Gourley, Firebosses. This mine is situated close to the Tulameen River about 1 mile west of Princeton, and was developed by a slope on a pitch of 17 degrees, which followed the seam from the outcrop for a distance of 1,200 feet. The mine is developed on the pillar-and-stall system.

During the year the Main slope and counter-slope were advanced under the Tulameen River under restrictions from the Chief Inspector of Mines. These restrictions prescribed the size of pillar to be left under the bed of the river and limited the number of drivages that may be driven in this supporting pillar; ordinary mining operations are being developed beyond this prescribed area.

The coal is all mined by percussive air-driven machines of the post-puncher type, and ventilation is supplied by an Aerodyne-type fan. During the last inspection in December, this fan was passing 25,000 cubic feet of air per minute for the use of twenty-two men.

Hat Creek Coal Mine.

L. D. Leonard, Superintendent. This property is 34 miles north of Ashcroft, and is held under lease by L. D. Leonard. The seam worked is almost vertical, and the workings to date consist of levels driven in the seam with a raise driven to the surface for ventilation. The faces have reached approximately 500 feet from the portal. The small surface equipment consists of a bunker, bar-screens, and a 5-horse-power gasoline-driven motor.

PEACE RIVER AREA.

Some prospecting and development was carried on at two properties in the Peace River area, one owned by Quentin F. Gething and the other by George A. Packwood.

At the *Gething* mine, situated 1½ miles north of the Peace River and 12 miles south-west of Hudson Hope, an adit was driven in the "Grant" seam and a small tonnage of coal mined. The seam dips 26 degrees north and a cross-section taken at the face of the adit showed the following structure: Sandy shale roof; 18 inches carbonaceous shale; 4 inches coal; 1½ inches bone; 11½ inches coal; 18 inches rock concretion; 12 inches coal; 1 inch shale; 24 inches coal; 6 inches "blacksmith" coal. Total thickness of coal, 4 feet 9½ inches.

An analysis of the coal at the face gave the following values:—

	Per Cent.
Moisture	1.70
Volatile combustible matter	17.40
Fixed carbon	70.00
Ash	10.90
Sulphur	0.77

B.T.U.'s, 13,237.

The *Packwood* mine is situated on Butler Ridge, about 22 miles north-west of Hudson Hope, and consists of an adit driven in a seam 33 inches thick and dipping 45 degrees. A small tonnage of coal was mined and shipped. An analysis of coal taken from the face showed the following values:—

	Per Cent.
Moisture	1.1
Volatile combustible matter	15.4
Fixed carbon	80.2
Ash	3.3
Sulphur	0.6

B.T.U.'s, 14,136.

NORTHERN INSPECTION DISTRICT.

BY

CHARLES GRAHAM.

Bulkley Valley Collieries.

F. M. Dockrill, Operator; A. H. Dockrill, Fireboss. The mine is situated on Goat Creek, a tributary of Telkwa River, about 7 miles from Telkwa, to which point coal is hauled by truck. The market is chiefly domestic and is confined, by transportation costs, to the area between Prince Rupert and McBride on the line of the Canadian National Railway.

No methane in quantity that could be detected on the flame of a safety-lamp was noted during the year; 4,400 cubic feet of air was passing per minute for the use of nine men. An average of twelve men was employed. Production for the year was 5,960 tons, an increase of 903 tons over 1939. Conditions generally were good.

Aveling Coal Co., Ltd.

J. M. Wilson, Fireboss. This mine is situated on the north bank of the Telkwa River about 6.5 miles from Telkwa, to which point coal is hauled by truck. The "Betty" seam, as it is known locally, shows a fine section of coal as follows: Roof, shale; coal, 2 feet; hard shale, 1.5 inches; coal (blacksmith), 3 feet 4 inches; parting; coal, 3 feet 5 inches; shale, 1.5 inches; coal, 3 feet 8 inches; shale, 8 inches; coal, 4 feet; floor, shale.

The top 2 inches of coal and the 1½ inches of hard shale are left up as a working-roof.

The next section, 3 feet 4 inches, is very high grade and seems to make an excellent blacksmith coal. This is mined separately and sold as blacksmith coal, two car-loads having been sent to Vancouver. There is a distinct parting between the blacksmith coal and the next section of coal, and the blacksmith coal separates cleanly from it. The centre section, containing 7 feet 1 inch of coal with 1½ inches of shale approximately in the middle of the section, is mined as steam or domestic coal. The lower section, 8 inches of shale and 4 feet of coal, is left as a working-floor.

The main slope is started on the vein, where it outcrops in the river-bank about 15 feet above river-level, and has been driven down about 120 feet (due north magnetic)

on a pitch of 16 degrees. The river at this point runs N. 22° E. (magnetic) for about 500 feet and then turns sharply east. The slope is off true dip, which is about N. 30° E. (magnetic). A crosscut has been turned off the slope to the west, which will be driven in about 60 feet and then turned up the pitch to the surface to furnish a second opening.

A single line aerial tram has been stretched across the river from the mouth of the slope to the bunkers on the south side of the river. Two bunkers have been built, the blacksmith-coal bunker having a capacity of 80 tons and the domestic bunker 175 tons. These were completed in November.

No methane was seen at any time and general conditions were satisfactory. The gasoline hoist and the air compressor from the Tatlow property have been installed to furnish the necessary power. Six men were employed. Production for the year was: Blacksmith coal, 78 tons; domestic coal, 256 tons.

Lake Kathleen Anthracite.—This property has apparently been abandoned, nothing being done during the year.

TATLOW AREA.

Nothing was done on the property near Tatlow during the year. The hoist and compressor equipment has been transferred to the Aveling Coal Company at Telkwa.

EAST KOOTENAY INSPECTION DISTRICT.

BY

H. E. MIARD.

The only coal-mining operations active in the Crowsnest district during the year were those of the Crow's Nest Pass Coal Company, Limited, at Coal Creek and Michel. Somewhat greater activity prevailed there than in the previous twelve months, with a net output of 776,518 long tons for the district and the production of 59,788 tons of coke.

Accidents entailing personal injuries to 179 employees were investigated in the course of the year, sixteen having occurred on the surface and 153 underground. In addition, four accidents met in the course of the same period by men engaged in timber-cutting operations on the company's property were recorded at this office but were not investigated.

One fatal accident occurred at Michel. A prop, apparently displaced by a movement of the coal-bench at a long-wall face, fell and struck a man on the head and shoulders, inflicting injuries from which he died on the following day.

Crow's Nest Pass Coal Co., Ltd.

H. P. Wilson, President and General Manager; Thomas Balmer, Seattle, Wash., U.S.A., Vice-President; J. S. Irvine, Fernie, B.C., Secretary; Jas. H. Marshall, Fernie, B.C., Treasurer; William C. Whittaker, Colliery Manager, Coal Creek; Bernard Caufield, Colliery Manager, Michel. This was the only company operating coal mines in the district during the year.

Coal Creek Colliery, No. 1 East Mine.—William C. Whittaker, Manager; John Caufield, Overman; Carmichael MacNay, Shiftboss. This was the only mine active in the course of the year, although the possibility of extending operations to another seam has been considered. The only addition of some importance made to the plant, in the same period, was the provision of a new wash-house.

The chief difficulties against which it is necessary to contend at this operation are the rapid heaving of the pavement in roadways maintained in the immediate vicinity of active areas, the so-called " face " bumps, and the less frequent but highly destructive phenomena known as " roadway " bumps, which may entail extensive damage to the openings affected.

In the course of the past year, three roadway bumps occurred, on June 22nd and October 23rd and 24th respectively, and each partially wrecked the part of the mine affected.

Numerous " face " bumps occurred in the course of the year, and several miners sustained slight injuries, either through being struck by fragments of coal projected

from the face or being thrown off benches. Particularly violent were those occurring in headings driven with the object of releasing accumulated stresses, in a large triangular pillar on the south side of No. 26 West incline and immediately above the 28 West return airway. The preventive measures so far discovered consist in a comparatively slow rate of advance, avoiding rounded corners at the face and keeping the faces of adjoining places on the same line, this paralleling the strike of the seam. In other words, provide the greatest possible facility for expansion.

Samples of air taken in the worked-out area of the 26 West district in the month of May showed the presence of traces of free hydrogen, ethane, and ethylene which, for a short time, induced some anxiety, as these are normal products of the destructive high temperature distillation of hydrocarbons. However, the oxidation quotients remained low, and it was finally decided that the intruding gases had been liberated through the crushing of small pillars abandoned in the waste.

In July, signs of heating were discovered in a small section of the 16 East abandoned area, which had remained imperfectly sealed off while the balance of the district was being reopened. There also, hydrogen and ethylene appeared but, despite abundant condensation on the edges of the affected area, the relative humidity remained extraordinarily low within it, ranging between 54 and 56 per cent., while that normally found in the working sections of the mine is about 88 per cent. The maximum temperature encountered at any point was 94 degrees Fahrenheit, and 90 degrees Fahrenheit was not uncommon, but these came speedily down to 76 degrees Fahrenheit or less when air was admitted to the formerly sealed-off section. This part of the mine was notorious for outbursts of gas and coal at one time, which lends plausibility to the assumption that the chemical activity of the coal there exceeds the normal. Oxygen is seemingly absorbed rapidly, but only in the case of a single one among the samples of air analysed did the oxidation quotient exceed 0.5 by an appreciable margin.

The production of coal-dust in the course of mining and transporting operations constitutes a weighty problem, but the nature of the coal and the extraordinarily small volume of percolating water joining to complicate the task of subduing it. In the course of the year 212,000 lb. of limestone-dust and 40,000 lb. of flue-dust were applied to roadways and working-places, the latter material being used only in abandoned areas and the approaches thereto. Often, however, a small bump shaking a district renders a fresh application of inert dust practically worthless.

The ventilation was on the whole satisfactory, but preparations were being made at the end of the year for a rearrangement intended to increase materially the volume of air passing through the abandoned sections of the mine without diminishing materially that supplied to the active areas. At the time of the last inspection, 27,000 cubic feet of air per minute was supplied to the 26 West district for the use of thirty-two men and three horses, and 14,000 cubic feet per minute was circulating through the 28 West section for thirty men and three horses.

Michel Colliery.—Bernard Caufield, Manager; William Chapman, Assistant Manager; William Gregory, James Littler, and Walter McKay, Overmen. This is at present the most important coal-mining operation in the district.

Two important additions were made to the plant in the course of the year. A new wash-house was completed and ready for occupancy at the end of December, while, at that time, considerable progress had already been made with the installation of a 5- by 7-foot Keith-Sheldon fan, having a rated capacity of 200,000 cubic feet against a 3-inch water-gauge, at an opening on the outcrop of " A " seam. Work had then been started also on another structure intended to be used as a garage and to include, beside, plumber and tool-sharpening shops.

The new wash-house is a brick and concrete building with flat laminated roof, 154 feet long, 66 feet wide, and 16 feet high, containing a 110- by 48-foot changing-room with space for 688 lockers; two shower-rooms with an aggregate floor space of 2,015 square feet and equipped with fifty-one sprays; a lamp-room 42 by 17 feet, with separate work-shop and motor generator set compartment; also separate wash and changing rooms for officials, power-house employees, etc., capable of accommodating fifty-eight persons.

Neither the installation of the new fan nor the erection of the garage had been completed at the end of the year. A small but perhaps interesting addition to the by-products coking plant was the introduction of a naphthalene separator, the primary object of which is not to permit the recovery of the small quantity of the compound that can be scrubbed out, but to avoid the trouble incident to its separation from the gas in the pipe-lines.

"A" Seam.—James Littler, Overman. This has now become the most important section of the colliery and is supplying a constantly increasing share of the steam-coal trade.

The upper bench of the seam, 8 to 10 feet in thickness, is that worked at present, under a shale roof, moderately strong in some parts of the area opened so far but decidedly weak in others. The general method of extraction is the form of long-wall already successfully applied to the overlying "B" seam. Very little, if any, blasting is necessary at the faces, and the coal is mined chiefly with the help of compressed-air picks and that of a chain machine at one of the long-wall faces. In the long-wall section transportation from the faces is effected by means of a system of shaking conveyers and travelling belts, while in development-work this requires a combination of tracks, conveyers, and chutes. It is in this seam that the new airways already mentioned are being driven, and its workings will be those deriving the greatest benefit from the intended remodelling of the ventilation. At the time of the December inspection 11,000 cubic feet of air per minute was supplied to forty-one men and two horses in No. 1 split (or West side) and 12,400 cubic feet was circulating through No. 2 split (South side) for the use of fifty-nine men and three horses. In this, as in other sections of the colliery, some fluctuations in the volume of air circulating take place following variations in the ratio existing between surface and mine temperatures.

"B" Seam.—William Gregory and Walter McKay, Overmen. This is an intensively operated section of the colliery on account of the high coking qualities of the coal and its low intrinsic ash content. The chief difficulty met here is undoubtedly presented by the nature of the roof, a more or less laminated shale, containing many of the irregularities commonly known as "pot-holes" and requiring careful timbering. The coal gives off only a moderate volume of methane but, on the other hand, a considerable amount of coal-dust is liberated in the course of mining and transporting operations. This condition reaches its most objectionable proportions here as elsewhere at the colliery where chutes are in use, and it is highly desirable that some efforts be made towards improving the design of these appliances in such manner as to minimize the emission of dust from coal handled in this manner.

The coal is moderately hard and compressed-air picks are resorted to, as an aid to mining, only occasionally, and in narrow places under roof too frail to permit the use of other mechanical mining equipment. As a rule, the coal is undercut with radial machines in development-work, and chain coal-cutters at the long-wall faces, it having to be subsequently blasted in the former case, an operation seldom necessary in the latter, as usually the coal falls of its own accord behind the machine.

Rather low surface temperatures prevailed at the time of the last inspection of this part of the colliery, and the "booster" fan on the surface passed only 19,000 cubic feet of air per minute, this supplying seventy men and six horses in the No. 4 West entry district and the East side workings, while 9,000 cubic feet of air per minute was passing through the south side for the use of twenty men and three horses. An idea of the effect of changes of temperature may be gathered from the fact that, in midsummer, the same airways passed 22,000 and 12,000 cubic feet per minute respectively.

No. 3 Mine.—Walter McKay, Overman. Final abandonment is approaching apace for this part of the colliery, and all work there has been limited to the extraction of pillars for a couple of years. However, some blocks of coal of considerable size still standing in a part of the No. 12 Incline district may offer an incentive to continue operations in that area for some time to come, should it be found possible to maintain sufficiently efficient ventilation. This has been one of the chief difficulties encountered there within the past eighteen months. The return airway from the split passes first through a fault zone, then enters an area on one side of which the greater part of the

pillars has been extracted, which readily explains why its maintenance is becoming constantly more onerous.

The seam gives off surprisingly little methane, but oxygen disappears rapidly in abandoned and unventilated areas, the resulting black-damp occasionally invading adjacent workings when the atmospheric pressure becomes abnormally low. To avoid a repetition of the trouble experienced on this score in one instance, a small Sirocco fan acting as a booster was installed in the district towards the end of the summer and satisfactory conditions have prevailed there ever since. The roof over this seam is probably better than that found in any other part of the colliery, when first exposed, but it begins to lose its cohesion after being uncovered for some time and, in some sections, becomes particularly brittle under the stresses induced by extensive extraction of the seam.

In the No. 4 Incline section, which covers a comparatively small area, the extraction of pillars is well advanced and the roadways are showing the effects of weight thrown upon them to a considerable extent.

A peculiar feature, for which no satisfactory explanation has yet been found, is that, while extensive areas of abandoned workings remain extraordinarily cool, even after the ventilation has been cut off for some time, a tendency towards heating is observed in similar circumstances within a zone extending for only about 200 feet from the outcrop. Rather high temperatures were observed in the upper section of the old No. 2 Incline towards the end of the year, and this part of the abandoned workings has been kept under close observation since then.

The air measurements taken at the time of the last inspection showed that 8,200 cubic feet of air per minute was circulating through the live workings of the No. 12 Incline section for the use of twenty-nine men and two horses, while about 6,000 cubic feet was supplied to No. 4 Incline district for twenty men and three horses, these being the quantities actually reaching the working-places. The mine return air current amounted to 28,000 cubic feet per minute, at the same time. At no point in any of the return airways did the percentage of methane carried exceed 0.4.

No. 3 East Mine.—This section of the colliery has been sealed off for several years on account of a fire. Samples of the mixture of gases filling the area affected were taken at regular intervals and their analyses tended to prove that no important modification of existing conditions was taking place there, which can be considered as satisfactory.

The total volume of air circulated by the fans, for the entire colliery, amounted to 113,800 cubic feet per minute, under a water-gauge of 2.9 inches.

In the course of the year 540,000 lb. of limestone-dust was applied to working-places and roadways. The consumption of explosives amounted to 49,155 lb. of Polar Monobel No. 4 and 5,017 lb. of Polar CXL-ite No. 2 in 67,493 shots, of which five missed fire.

INSPECTION OF METALLIFEROUS MINES.

BY

JAMES DICKSON.

PRODUCTION.

The output for metalliferous mines for 1940 was 8,026,639 tons, an increase of 815,963 tons over the tonnage for 1939. This tonnage was produced from 216 mines, of which ninety-two produced 100 tons or more.

FATAL ACCIDENTS IN METALLIFEROUS MINES (INCLUDING UNDERGROUND PLACER-MINING).

There were nine fatal accidents in and around metalliferous mines and concentrators in 1940, being a decrease of five from the figures for 1939. In addition to this, two surface placer-workers lost their lives. One placer-miner at Beggs Gulch was found drowned, a boulder had slid down and pinned him in the water; and one man at Bullion Placers was caught by a gravel slide and swept into the sluice. There were no fatalities in the quarries of the Province.

There were 6,027 persons under and above ground in the metalliferous mines and 1,048 persons in the concentrators in 1940. The ratio of fatal accidents per 1,000 persons employed was 1.27 compared with 2.01 in 1939.

The tonnage mined per fatal accident during 1940 was 891,848 tons compared with 515,048 tons in 1939. The tonnage mined per fatal accident during the last ten-year period was 420,565 tons.

The following table shows the mines at which fatal accidents occurred during 1940 and the comparative figures for 1939:—

Mining Division.	Mine.	No. of Accidents.	
		1940.	1939.
Alberni	Havilah	....	1
Zeballos	Privateer	....	1
Vancouver	Britannia	1	5
Lillooet	Bralorne	....	1
Clinton	Vidette	....	1
Cariboo	Columbia Tungstens	....	1
Similkameen	Copper Mountain	1	1
Similkameen	Nickel Plate	2	....
Nelson	Yankee Girl	....	1
Nelson	Wisconsin	1	....
Nelson	Second Relief Mine	1	....
Greenwood	Old Granby Mine	....	1
Fort Steele	Sullivan	1	1
Queen Charlotte Islands	Surf Inlet Mine	1	....
Portland Canal	Silbak Premier	1	....
Totals		9	14

The following table shows the causes of, the percentage to the whole of the fatal accidents, and comparative figures for 1939:—

Cause.	1940.		1939.	
	No.	Percentage.	No.	Percentage.
By falling down chutes or shafts	3	33.34	1	7.14
Haulage	....	.....	2	14.29
Falls of ground	2	22.22	5	35.71
Shaft accidents	....	.....	2	14.29
Slide of muck	....	.....	3	21.43
Electric shock	....	.....	1	7.14
Blasting	2	22.22	....	.....
Miscellaneous (surface)	2	22.22	....	.....
Totals	9	100.00	14	100.00

FATAL ACCIDENTS IN LODE MINES, PLACER MINES, PROSPECTING, AND QUARRYING.

There were eleven fatalities during 1940 in all phases of mining. Of these, nine occurred at producing metalliferous mines and two at producing placer operations.

Ordinary care would have averted most of these fatalities, as few were due to abnormal or dangerous conditions, but were due to a dangerous method of doing routine-work.

Following are the details of the fatal accidents in lode mines:—

The fatal accident which occurred to William Scott, mucker, Surf Inlet Consolidated Gold Mines, Limited, on January 28th, was due to a slab falling from the hanging-wall of a raise. Deceased had been told by his shiftboss not to go into the raise until accompanied by the shiftboss, who would examine the place, as it had not been barred down since the previous blasting. The shiftboss was delayed, and on his arrival found deceased severely injured, death ensuing the following day.

The fatal accident which occurred to Raymond M. West, nipper, *Copper Mountain* mine, Granby Consolidated Mining, Smelting and Power Company, Limited, on February 5th, was due to his being struck by a falling slab of rock from the back of a stope. The barmen had gone over this ground shortly before the accident.

The fatal accident which occurred to Matt Pelto, barman, *Sullivan* mine, Consolidated Mining and Smelting Company, on February 17th, was due to deceased falling down a raise. He had gone to help another man who had difficulty with large pieces of ore he was barring into the raise, and Pelto went on to these rocks to size up conditions, when the rocks rolled from under him and carried him down the raise. He was holding a safety-rope, but had not secured himself to it and was unable to retain his hold.

The fatal accident which occurred to Henry Hansen, pluggerman, *Nickel Plate* mine, Kelowna Exploration Company, on March 29th, was apparently due to deceased drilling into a miss-fire charge in a large piece of ore lying on the stope floor. This miss-fire shot had been clearly marked by the preceding shift and should have been bulldozed. Deceased died two days later.

The fatal accident which occurred to Alex Dykstra, miner, Britannia Mining and Smelting Company, on June 27th, was due to blasting. Dykstra and his helper had spit two shots and the miner in an adjacent bulldoze chamber had spit a third hole in the presence of deceased. Dykstra turned on the warning blasting-whistle and when two reports had been heard he turned off the warning whistle and entered the bulldoze chamber just as the third shot went off, killing him instantly. He had evidently forgotten the third shot.

The fatal accident which occurred to Charles E. Pratt, Diesel operator, *Wisconsin* mine, Canadian Exploration Company, on July 7th, was due to deceased being struck by a falling tree while engaged in fighting a bush fire on the Wisconsin Road. He was killed instantly. The fire-fighting, while being voluntarily done, was under the company's supervision.

The fatal accident which occurred to George D. Kennedy, shiftboss, *Relief Arlington* mine, on July 21st, was due to deceased being carried down a raise by a slide of muck in which he was buried for several hours. He was unconscious when taken out and was apparently making a good recovery in Nelson Hospital, but died suddenly from internal hæmorrhage on August 6th.

The fatal accident which occurred to Regnar Thillesen, carpenter, *Nickel Plate* mine, Kelowna Exploration Company, on October 21st, was due to deceased falling 25 feet into an ore-bin, part of which was being dismantled following a fire. A staging of 2- by 12-inch planks had been installed over the bin and deceased was engaged in rigging equipment to tear down part of the debris due to the fire, and stepped off the staging on to a 1- by 12-inch board, which broke under his weight. He died in Princeton Hospital the same day.

The fatal accident which occurred to Louis Legge, aerial tram operator, *Silbak Premier* mines, was due to deceased being crushed at the Nine-mile angle station on the aerial tram. He had evidently tried to make some adjustment to the running-gear without stopping the tram. The angle stations and the tram-control station are interconnected by telephone but apparently deceased did not call to have the tram stopped. There were no witnesses to this accident.

As this Nine-mile station is in Alaskan territory, the inquest was held there by the United States authorities.

Following are the details regarding the fatal accidents in placer-mining during 1940:—

On May 31st Harry R. Furler, placer-miner, was found drowned in the sluice of his hydraulic operation in Beggs Gulch. Apparently a slide of ground had caught him and carried him towards the sluice-boxes where a boulder held him under the water. He worked alone and was discovered only after a search when he failed to return home at night.

The fatal accident to Rennie A. Blais, jackhammer-driller, Bullion Placers, Limited, on August 4th, was due to a slide of ground that swept him into the sluice which carried him over 1,000 feet to the tailings dump, where he died within a few minutes after the other men reached him. The start of the slide was noticed and a warning shouted to deceased and other men on the floor of the pit. The other men were able to escape to the sides, but Blais had run in the same direction as the slide, which overtook him.

DANGEROUS OCCURRENCES.

On June 17th, at the *Proserpine* operation of the Privateer Company, a used receptacle 8 feet 3 inches long and 3 feet 3 inches in diameter was being prepared to store water for the drilling-machines. While the receptacle was being blown out by compressed air at 80-lb. pressure one end blew off; the mine foreman, who was near-by, was thrown 30 feet away, but escaped with minor injuries.

On August 7th a large slide occurred in the drop-pit side of the *Bullion* placer mine (surface); the men employed in the pit had sufficient warning to withdraw to safety, but the tools and equipment were buried.

On August 23rd the north carriage on the *Hedley Mascot* "quad" double-track aerial tram left the track. No one was injured.

On September 6th, while the East side cage in No. 2 shaft, *Pioneer* mine, was being placed on the shaft station chairs for inspection purposes, the hoistman gave out sufficient slack to kink the rope, which had to be cut and shortened.

On November 8th, in No. 3 shaft, Cariboo Gold Quartz mine, a new "non-spun" hoisting rope for sinking purposes "bird-caged" badly after only three hours' service and had to be removed. Upon investigation it was found that the inner rope and the outer strands had the same lay, due to an error of construction.

On December 10th, while men were being hoisted in the *Island Mountain* mine shaft, the hoistman took the men up past the main station a distance of 40 feet before stopping the cage. The cage was stopped just below the automatic stop, which was in good working order. The hoistman was discharged. There were no injuries or equipment damage.

On December 22nd, while hoisting in the *Silbak Premier* shaft the hoistman applied the brake too strongly, with the result that while he brought the drum to a sudden stop the inertia of the motor forced up and broke the pinion-shaft bearings. The skiptender riding the cage was not injured.

During 1940 there were no prosecutions made for infractions of the " Metalliferous Mines Regulation Act."

EXPLOSIVES USED IN MINING.

During 1940 the explosives used in mining and quarrying in British Columbia consisted of 10,179,000 lb. of high explosives; 3,400,000 fuse detonators; 528,000 electric detonators; 52,000 delay detonators; 13,500 feet Primacord and 24,700,000 feet of safety-fuse. While there were several accidents due to the use of explosives, there were no cases due to faulty explosives.

At a number of abandoned mining and prospecting operations the Inspectors of Mines in the respective districts had stocks of explosives disposed of by destruction or sale, according to the condition of such explosives. As a safety precaution, no stocks of explosives may be left unguarded during the war.

AIR-SAMPLING.

Air-sampling was done in a number of mines, where heavy blasting or long, single drifts were carried on, to determine whether carbon monoxide was present and if the oxygen content of the atmosphere was sufficient. No dangerous conditions were indicated, but in a number of cases augmented ventilation was ordered.

DUST AND VENTILATION.

Further progress in the installation of fans for the general ventilation of mines was made during the year by the installation of fans of fairly large capacity at several of the larger mines, these being in addition to the fan installations given in detail in the annual report for 1939. In no instance have any of the fans mentioned previously been discontinued.

The efforts at the different mines to reduce as far as possible the amount of dust produced by the blasting, handling, transportation, and milling of ore have been well maintained, and there is an increasing efficiency in removing as quickly as possible, by adequate ventilation, any dust that is unavoidably produced.

MINE-LIGHTING.

The use of the safety electric cap-lamp is standard at all the larger mines with one exception, and many of the smaller mines have adopted this advance in safety and efficiency. In no case where the safety electric cap-lamp has been tried has there been a return to the carbide lamp formerly in use.

FIRST-AID AND SAFETY WORK.

First-aid and safety work has been well maintained in all the metalliferous-mining areas and, in addition to the work done along this line by the individual mining companies, there are Mine Safety Associations in all the more important districts, such as East Kootenay, Princeton, Britannia, Bridge River, Zeballos, and Portland Canal. These associations draw their membership from the mine officials and miners interested in safety in the different areas, and are financially assisted in this work by the Department of Mines.

The value of safety committees at the larger mines is recognized as an important factor in making for general safety and they are well supported by the managements of the mines. As the members of these safety committees are selected from different parts of a mine and serve for only short periods, this permits a large number of men being brought directly into contact with this work, so that many of them continue to point out potential dangers to their fellow-employees after their official membership on the safety committee has ended. These safety committees, with their personal knowledge of the mine in which they are employed, are in a position to note and report minor defects as they arise and have these matters remedied before they become a contributing factor in an accident.

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