

# Minister of Mines

PROVINCE OF BRITISH COLUMBIA

---

## ANNUAL REPORT

For the Year Ended 31st December

**1958**



Printed by DON McDIARMID, Printer to the Queen's Most Excellent Majesty  
in right of the Province of British Columbia.

1959

BRITISH COLUMBIA DEPARTMENT OF MINES  
VICTORIA, B.C.

HON. W. K. **KIERNAN**, *Minister.*

**P. J. MULCAHY**, *Deputy Minister.*

J. W. PECK, *Chief Inspector of Mines.*

S. **METCALFE**, *Chief Analyst and Assayer.*

HARTLEY SARGENT, *Chief, Mineralogical Branch.*

K. B. **BLAKEY**, Chief Gold Commissioner and Chief *Commissioner,*  
*Petroleum and Natural Gas.*

J. D. **LINEHAM**, *Chief, Petroleum and Natural Gas Conservation Branch.*

To His *Honour* FRANK MACKENZIE ROSS, C.M.G., M.C., LL.D.,  
*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 1958 is  
herewith respectfully submitted.

W. K. KIERNAN,  
*Minister of Mines*

*Minister of Mines' Office,*  
*May, 1959.*

John G. Biggs died on January 23<sup>rd</sup>, 1958, in his eighty-second year. He was **born** in 1877 in County Durham, England. He came to Canada in 1905, at the age of 28, and settled first at Wellington on Vancouver Island, where he found employment with Canadian Collieries (Dunsmuir) Limited. Shortly afterwards he moved to **Cumberland**, where he was employed by the **same** company until 1919, when he joined the Department of Mines as Inspector of Mines. He was stationed at Merritt from 1919 until 1928, when he was transferred to Princeton. He remained there until his retirement in 1941.

Harry E. Miard died on December 21<sup>st</sup>, 1958, in New Westminster. He was **born** in Paris, France, in 1879, emigrating to Canada in 1897. His association with coal-mining in British Columbia began in 1901 at Coal Creek. In 1914 he left the position of overman at Coal Creek to return to France as a soldier of the Republic. In 1919, shortly after returning to Coal Creek, he joined the staff of the Inspection Branch of the Department of Mines at Femie. His duties as Inspector of Mines and as a member of the Board of Examiners took him to many of the mining camps of the Province. He retired at Femie in 1946. After his retirement he did consulting work for The Consolidated Mining and Smelting Company of Canada, Limited, and The Crow's Nest Pass Coal Company Limited. He held a life membership in the Canadian Institute of Mining and Metallurgy.

## CONTENTS

	PAGE
INTRODUCTION .....	A 7
REVIEW OF THE MINERAL INDUSTRY .....	A 8
STATISTICS—	
Method of Computing Production .....	A 10
Table I.—Total Mineral Production for All Years Up to and Including 1958 .....	A 14
Table II.—Production for Each Year from 1836 to 1958, Inclusive .....	A 14
Table III.—Quantity and Value of Mineral Products for Years 1949 to 1958 .....	A 15
Table IV (Graph).—Mineral Production Value, 1895–1958 .....	A 17
Table V (Graph).—Principal Lode-metals Production, 1913–1958 .....	A 18
Table VI.—Production of Principal Metals, 1858–1958 .....	A 19
Table VIIA.—Production, 1957 and 1958, by Mining Divisions—Summary .....	A 21
Table VIIB.—Production, 1957 and 1958, by Mining Divisions—Principal Lode Metals .....	A 22
Table VIIc.—Production, 1957 and 1958, by Mining Divisions—Miscellaneous Metals .....	A 23
Table VIID.—Production, 1957 and 1958, by Mining Divisions—Industrial Minerals .....	A 24
Table VIIe.—Production, 1957 and 1958, by Mining Divisions—Structural Materials .....	A 25
Table VIIIA.—Production to Date by Mining Divisions—Summary .....	A 26
Table VIIIB.—Production to Date by Mining Divisions—Principal Lode Metals .....	A 27
Table VIIIC.—Production to Date by Mining Divisions—Miscellaneous Metals .....	A 28
Table VIID.—Production to Date by Mining Divisions—Industrial Minerals .....	A 30
Table VIIIE.—Production to Date by Mining Divisions—Structural Materials .....	A 32
Table IXA.—Quantity (Gross) and Value of Coal per Year to Date .....	A 33
Table IXB.—Coal Production (Gross) by Districts and Mining Divisions .....	A 33
Table IXc.—Quantity and Value of Coal Sold and Used, 1948–58 .....	A 34
Table X.—Coke and By-products Production for Years 1895 to 1925 and 1926 to 1958 .....	A 35
Table XI.—Dividends Paid by Mining Companies, 1897–1958 .....	A 36
Table XII.—Principal Items of Expenditure, Reported for Mining Operations of All Classes .....	A 40
Table XIII.—Average Number Employed in the Mining Industry, 1901–58 .....	A 41
Table XIV.—Lode-metal Mines—Tonnage, Number of Mines, Net and Gross Value of Principal Metals, 1901–58 .....	A 42
Table XV.—Lode-metal Production in 1958 .....	A 43
Table XVI.—Lode-metal Mines Employing an Average of Ten or More Men during 1958 .....	A 48
DEPARTMENTAL WORK .....	A 49
Deputy Minister .....	A 49
Administration Branch .....	A 49
Central Records Offices (Victoria and Vancouver) .....	A 50
List of Gold Commissioners .....	A 50
Gold Commissioners' and Mining Recorders' Office Statistics, 1958 .....	A 51
Coal, Petroleum and Natural Gas .....	A 52
Mining Laws and Laws Relating to the Mineral Industry .....	A 53
Analytical and Assay Branch .....	A 53
Inspection Branch .....	A 54

DEPARTMENTAL WORK— <i>Continued</i>	PAGE
Mineralogical Branch.....	A 55
Petroleum and Natural Gas Branch.....	A 57
Grub-staking Prospectors.....	A 58
Museums.....	A 62
Rock and Mineral Specimens.....	A 63
Publications.....	A 63
Maps Showing Mineral Claims, Placer Claims, and Placer-mining Leases.....	A 63
Joint Offices of the British Columbia Department of Mines and the Department of Mines and Technical Surveys, Canada.....	A 63
TOPOGRAPHIC MAPPING AND AIR PHOTOGRAPHY.....	A 64
DEPARTMENT OF MINES AND TECHNICAL SURVEYS.....	A 65
Geological Survey of Canada.....	A 65
Field Work by the Geological Survey in British Columbia, 1958.....	A 65
Publications of the Geological Survey.....	A 66
Mines Branch.....	A 66
LODE METALS.....	1
REPORTS ON GEOLOGICAL, GEOPHYSICAL, AND GEOCHEMICAL WORK.....	61
PLACER.....	77
STRUCTURAL MATERIALS AND INDUSTRIAL MINERALS.....	83
PETROLEUM AND NATURAL GAS.....	107
INSPECTION OF LODE MINES, PLACER MINES, AND QUARRIES.....	118
COAL.....	133
INSPECTION OF ELECTRICAL EQUIPMENT AND INSTALLATIONS.....	156
LODE-METAL DEPOSITS REFERRED TO IN THE 1958 ANNUAL REPORT.....	165

## LIST OF ILLUSTRATIONS

### PHOTOGRAPHS

Pocket Inlet, Moresby Island.....	8
Pillow lava lying above limestone, Louise Island.....	8
Glacier Gulch, Hudson Bay Mountain.....	12
Packing to the Glacier Gulch showings.....	12
Bralorne Mines Limited, mill and part of camp.....	19
Pioneer Gold Mines of B.C. Limited, mill.....	19
Bethlehem Copper Corporation Ltd., 4600 level adit portal.....	23
Birkett Creek Mine Operators Ltd., Craigmont 3500 level adit portal.....	23
Cowichan Copper Co. Ltd., mill.....	58
Sunro Mines Limited, adit portal.....	58
Nadu River No. 1 well, Graham Island.....	110
Well head with pump, Fort St. John oilfield.....	110
Mine-rescue team, Victoria competition.....	130
Mine-rescue team, Victoria competition.....	130

### DRAWINGS

FIGURE	
1. Bralorne Mines Limited—part of vein system.....	16
2. Limestone in the Ashcroft-Clinton area.....	93
3. Limestone in the Merritt area.....	95
4. Oliver Silica Quarry.....	106

# ANNUAL REPORT OF THE MINISTER OF MINES, 1958

## Introduction

A Report of the Minister of Mines of the Province of British Columbia has been published each year since 1874.

The Annual Report records the salient facts in the progress of the mineral industry, also much detail about individual operations, including those undertaken in the search for, exploration of, and development of mineral deposits, as well as the actual winning of material from mineral deposits.

The Annual Report of the Minister of Mines now contains introductory sections dealing with Statistics and Departmental Work, followed by sections dealing with Lode Metals; Placer; Structural Materials and Industrial Minerals; Petroleum and Natural Gas; Inspection of Lode Mines, Placer Mines, and Quarries; Coal; and Inspection of Electrical Equipment and Installations at Mines and Quarries, each with its own table of contents. A table listing the properties described, in geographic groupings, precedes the index.

An introductory review of the mineral industry and notes at the first of several of the main sections deal generally with the industry or its principal subdivisions. Notes in the various sections deal briefly with exploration or production operations during the year or describe a property in more complete detail, outlining the history of past work and the geological setting as well as describing the workings and the mineral deposits exposed in them. Some notes deal with areas rather than with a single property.

The work of the branches of the Department is outlined briefly in the section on Departmental Work. This section is followed by notes dealing briefly with the work of other British Columbia or Federal Government services of particular interest to the mineral industry of British Columbia. Information concerning mine operations and some of the activities of the Inspection Branch of the Department of Mines is contained in the section on Inspection of Lode Mines, Placer Mines, and Quarries, early in the section on Coal and in the section on Inspection of Electrical Equipment and Installations at Mines and Quarries.

The section on Statistics begins with an outline of current and past practice in arriving at quantities and calculating the value of the various products.

## Review of the Mineral Industry, 1958

Production in 1958, the centennial year, brought the accumulated value of the mineral output of British Columbia well past the 4-billion-dollar mark. The statistics of mineral production for 1858 show only coal valued at a few thousand dollars and placer gold valued at \$705,000. For 1958, thirty-eight items are listed-fifteen under metals, seven under industrial minerals, thirteen under structural materials, and three under fuels. Their combined value is \$146,875,081, placer gold and coal combined contributing slightly more than 4 per cent of the total.

Lead contributed 23.6 per cent and zinc 29.4 per cent of the value of 1958 mineral output. Fourteen other products each contributed from 1 to 6 per cent. It is noteworthy that asbestos contributed 5.2 per cent of the total value, being greater than gold, silver, and copper, which ranged from 4.6 to 2 per cent of the total value. Although still a relatively small item, natural-gas output contributed 2.6 per cent of the 1958 total value.

The part of total value contributed by each group of mineral products in 1958 was: Principal metals, 63.8 per cent; other metals, 7.2 per cent; industrial minerals, 8.0 per cent; structural materials, 13.6 per cent; fuels, 7.4 per cent. The details of prices, quantities of minerals produced, and values are found in tables on pages A 13 to A 48.

The value of mineral output for 1958 was materially less than that of recent years because of reduced prices for copper, lead, and zinc, and reduced output of gold, silver, copper, coal, and several other products. Increases were recorded for iron ore, petroleum, and natural gas. Mine closures in 1957 and the closing of six mines in 1958 account for the reduction in quantity of gold, silver, copper, tungsten, and coal. The values for the "principal metals" and the "other metals" groups were much below the 1953-57 average and the 1957 figures; consequently the percentages contributed by metals were also reduced. Industrial minerals and structural materials have been increasing in value, and their 1958 values, although less than those of 1957, exceeded the 1953-57 averages. The 1958 value for fuel exceeded the five-year average, increases in natural gas and petroleum more than offsetting the decline in coal output.

The quantity of lead exceeded the average of the preceding five years by about 2 per cent, and that of zinc exceeded the five-year average by 6 per cent, but the combined value of the two metals was 12.6 million dollars below the five-year average. Copper output was reduced sharply compared with recent years. Although there were considerable changes in the output of individual gold mines, their combined output in 1958 was approximately the same as in 1957. However, in comparison with recent years, little gold was won from ores yielding one or more of the metals copper, lead, and zinc as the main product or as principal products. In 1957 such ores yielded about a sixth of the total gold. Silver output was reduced similarly, although at several mines silver output increased with lead output. The value of the "principal metals" group declined more than \$18,000,000 from the 1957 figure. Commercial production of nickel was recorded for the first time; production was started in January and suspended in August. Tungsten production was suspended in August. Iron-ore production was materially greater than in 1957, one producer having operated throughout the year and the other for about nine months. Texada Mines Limited, recovering a copper-gold concentrate as a by-product in concentrating iron ore, and Cowichan Copper, milling ore for the first time, contributed more than half the copper output.

In the "structural materials" field a substantial increase in cement-making capacity was achieved when the plant of Lafarge Cement of North America Ltd. on Lulu Island began operating in January, but the Provincial output for the year was somewhat less than in 1957.

Production of coal was much below the 1957 output, but oil production increased by a half and the 1958 output of natural gas was about eight times that of 1957.



The number of lode-mineral claims recorded in 1958, a measure of exploration activity, was 13, 459, compared with 12,110 in 1957. Lode-mine exploration increasingly is carried on by large companies doing geological, geophysical, and geochemical work, stripping with heavy equipment, diamond drilling, and often meeting transportation problems by using fixed-wing aircraft or helicopters. These procedures contrast with the traditional ones that were responsible for most lode discoveries in the past. Except for the Cassiar property, the new mines of the post-war period are old discoveries which determined and intelligent effort and increased prices have made profitable sources of mineral wealth.

Interest has been shown in a wide range of minerals, including asbestos, barite, gypsum, limestone, magnesite, and silica, in addition to the metals that have been the main contributors of mineral wealth. Exploration in the Merritt-Highland Valley area indicates large reserves of copper, with substantial quantities of good milling grade and very large quantities of low-grade material. Copper mineralization on Racing River and Toad River in the northeastern part of the Province received preliminary exploration. Further work was done on the Boss Mountain molybdenum property, and low-grade molybdenum-bearing material at Glacier Gulch received preliminary testing.

Exploration for oil and gas was carried on actively mainly in northeastern British Columbia, where the area of interest has broadened, as indicated by a considerable enlargement of the area held under permit. Interest was not confined to northeastern British Columbia. More than 2,700,000 acres of land on Graham Island and off the east coast of the Island was taken under permit, and near the end of 1958, 12,700,000 acres in the Skeena Mountains, and a further 445,000 acres lying to the southeast, were taken under permit. Five wells between 1,800 and 6,000 feet in depth were drilled and abandoned along the east coast of Graham Island.

More than forty drilling rigs were operated in 1958, and 484,287 feet of drilling was done on 112 wells, of which, at the end of the year, one was suspended and twenty were drilling, fifty-one had been abandoned, seventeen had been completed as oil wells, and twenty-three as gas wells. Two of the oil-well completions and nine gas-well completions were wildcat wells. These additions and some revisions brought the number of oil wells to thirty-nine and gas wells to 148. Most of the wells drilled, including sixty wildcat wells, and all wells successfully completed, are in northeastern British Columbia.

The West Coast Transmission Company pipe-line was operated for the full year. Gas production from sixty-nine wells amounted to 64,051,785,000 cubic feet, and oil production from twenty-eight wells amounted to 512,359 barrels. At Taylor, on the Peace River, the McMahon gas scrubbing plant and adjoining refinery and sulphur recovery plant produce dry sweet gas for transmission, having recovered liquid condensate and sulphur. Refining the condensate yields propane, butane, finished motor and aviation fuels, kerosene, and diesel oil.

Revenue to the Government from petroleum and natural gas amounted to \$9,472,200.74, including fees, rentals, and miscellaneous, \$4,326,288.54; tender bonuses, \$4,510,123.14; and royalties on gas, oil, and processed products, \$635,809.06.

The average number employed through 1958 in placer, lode, coal, industrial-minerals and structural-material mining was 11,201. Major expenditures by those branches of the industry included: Salaries and wages, \$45,035,287; fuel and electricity, \$7,922,163; process supplies (inclusive of explosives, chemicals, drill-steel, lubricants, etc.), \$13,215,371; Federal taxes, \$6,062,698; Provincial taxes, \$1,847,466; municipal and other taxes, \$1,925,952; levies for workmen's compensation (including silicosis), unemployment insurance, and other items, \$1,782,744. Dividends amounted to \$14,966,123. The lode-mining industry spent \$27,614,725 in freight and treatment charges on ores and concentrates.

The recorded expenditures of the petroleum and natural-gas industry amounted to \$39,980,479, of which \$31,507,890 was for exploration and included \$14,897,919 for exploratory drilling. The expenditures recorded included for salaries and wages, \$3,898,271; for fuel and electricity, \$158,876; and for process supplies, \$1,837,665. The total number reported employed on December 31st, 1958, was 846.

---

## Statistics

The statistics of the mineral industry are collected and compiled and the statistical tables for this Report are prepared by the Bureau of Economics and Statistics, Department of Industrial Development, Trade, and Commerce.

In the 1951 Report, extensive rearrangements of tables and of their order were made. The tables in the present Report closely parallel those presented in Reports for years preceding 1951, but additional details have been incorporated, and the present order is considered to make more apparent the relationship between summary tables and the tables giving the details summarized.

In the 1958 Report, adjustments have been made to bring lead and zinc production figures into line with the best information available. The changes are reflected in Tables I, II, III, VI, VIIA, VIIB, VIIIA, VIIIB, and in the gross-value figure in Table XIV. The gross-value figures have also been corrected to include early production of iron, mercury, and tungsten so that Table XIV now records the tonnage from all lode-mining operations year by year beginning with 1901 and also records the gross value of the principal metals; however, it does not record the value of by-product metals antimony, bismuth, cadmium, indium, and tin, contributing a minor part of value of the output of any mine.

### METHOD OF COMPUTING PRODUCTION

The tables of statistics recording the mineral production of the Province for each year are compiled from certified returns made by the operators, augmented by some data obtained from the Royal Canadian Mint and from the operators of customs smelters. The value of each mineral product, in Canadian funds, is calculated at the average price for the year (*see* p. A 13). The quantities of metals are net after making deductions for losses in smelting and refining.

### METALS

Prior to 1925 the average prices for gold and copper are true average prices, but, as a means of correcting for losses in smelting and refining, the prices of other metals were taken at the following percentages of the year's average price for the metal: Silver, 95 per cent; lead, 90 per cent; and zinc, 85 per cent. For 1925 and subsequent years the value has been calculated using the true average price and the net metal contents, in accordance with the procedures adopted by the Dominion Bureau of Statistics and the co-operating Provincial Departments of Mines.

Beginning with the Annual Report for 1948, production figures for individual lode-mining operations are the assay contents of the products shipped (ore, concentrates, or bullion), no deductions being made for losses in smelting and refining. In previous Annual Reports the production figures given for individual properties are net, after deductions for smelting and refining losses,

#### *Placer Gold*

The data on placer-gold production were very largely obtained from the Gold Commissioners, until 1925. The value of placer gold in dollars is now obtained from returns received annually from the operators. At the old standard price, \$20.67 per ounce of

fine gold, \$17 was regarded as a close approximation of the average value per ounce of crude placer gold produced in British Columbia. Dividing the production reported in dollars by 17 gave the equivalent in crude ounces. The average value \$17 per ounce is equivalent to a fineness of 822½. Beginning with 1932 the average value per crude ounce has been based on the same fineness, but has recognized the varying price of gold. The average price per ounce of crude placer gold for the year is listed on page A 13.

#### *Lode Metals, Gross and Net Contents*

The gross contents are the gold and silver contents of bullion and for ores and concentrates the total assay contents, obtained by multiplying the assay by the weight. The quantities for gold, silver, copper, lead, and zinc in Table XV and in "Notes on Metal Mines" are gross.

Calculations of the value of production are based on the total assay content for gold and on net content for the other principal metals. These are: In lead ores and concentrates and zinc concentrates, for silver 98 per cent, lead 95 per cent, and zinc 85 per cent of the total assay content; and in copper concentrates, 95 per cent of the silver and the total assay content of copper less 10 pounds per ton of concentrates. Quantities for silver, lead, zinc, and copper in Tables I to VIII, inclusive, are net.

#### *Average Metal Prices*

In the interests of uniformity the Statistical Bureaux of the Provinces and the Dominion Bureau of Statistics, use the same average metal prices in valuing mineral production. Up to and including the year 1939 the prices used in evaluating metal and mineral production were:-

Gold and silver: The average United States price for the year, as quoted in the Engineering and Mining Journal, converted into Canadian funds at the average exchange rate.

Copper, lead, and zinc: For lead and zinc, the average London Metal Market price for the year converted into Canadian funds at the average exchange rate; for copper, until 1932 the New York price for copper was used, thereafter the average London Metal Market price was used.

Suspension of trading on the London Metal Exchange in September, 1939, and the controls of metals during the war years necessitated changes from the procedures which had been followed.

The method of arriving at the price for gold continued unchanged, but the prices for the metals controlled were those set by the Canadian Metals Controller. In 1945 the controls were largely removed from sales but not from prices. Control of metal prices ended on June 6th, 1947. For 1945 and subsequent years the prices are those computed by the Dominion Bureau of Statistics, using information supplied by the principal Canadian refiners of silver and the base metals.

In the period 1945-47 the prices received for silver, lead, and zinc sold for use in Canada were substantially less than the prices received for these metals exported to the United States. The prices for silver in 1945 and 1946 and for copper, lead, and zinc in 1946 and 1947 are weighted averages, taking into consideration sales in Canada at the ceiling prices and sales abroad at New York prices converted into Canadian funds.

Prices are now arrived at by the methods as given in the footnotes to table of average prices on page A 13.

#### FUEL

##### Coal

In 1926 a change was made in computing coal and coke statistics. The practice in former years had been to list as coke production only the coke made in bee-hive ovens,

the coal used in making it not being listed; coke 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 both the coal and the coke production figures were incomplete. Starting with the 1926 Annual Report, the standard practice of the Bureau of Statistics, Ottawa, was 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 the data are of interest to the mining industry, Table X is included in the Report to show the total coke produced in the Province, together with by-products, and the values given by the producers. The pre-1926 data have now been reworked and brought into conformity with current practice. Table IXA lists the full mine output (gross) produced and its net value, and these figures are incorporated in Table I, in the total mine production for the Province. Table X gives the complete data for coke, gas, and by-products manufactured for the period 1895 to 1925, and for each year subsequent to 1925.

Up to and including the year 1947, production was recorded in long tons (2,240 pounds). Beginning in 1948, production is given in short tons (2,000 pounds). The quantity of coal produced in the preceding years has been recalculated in short tons.

The average price for coal, listed year by year (see p. A 13), is the total value divided by the quantity. Up to and including 1945, the quantity is the gross mine output; for 1946 and subsequent years, the quantity is the quantity sold and used. For 1946 and subsequent years, the value (Tables I, III, VIIA, IXA, IXB, and IXC) is the amount realized from sales of coal, at colliery loading points, plus the colliery valuation of coal used under companies' boilers and in making coke. For 1946 and subsequent years the quantity sold and used is shown in Table IXC. "Use" includes coal used under company stationary and locomotive boilers, and used in making coke. Washery loss and changes in stocks, year by year, are shown in the table "Collieries of British Columbia, Production and Distribution by Collieries and by Districts," page 135 of this Report.

### *Natural Gas*

Commercial production of natural gas began in 1954. The production shown in Tables I, III, VIIA, and VIIIA is the total dry and residue gas sold. The figures are compiled from the monthly disposition report and Crown royalty statement filed with the Department of Mines by the producer. The quantity is reported as thousands of cubic feet at standard conditions (14.4 pounds per square inch pressure, 60° F. temperature).

### *Petroleum*

Commercial production of petroleum began in 1956. The figures shown in Tables I, III, VIIA, and VIIIA are compiled from the monthly disposition report and Crown royalty statement filed with the Department of Mines by the producer. The quantity is reported in barrels (35 imperial gallons= 1 barrel).

AVERAGE PRICES USED IN VALUING PROVINCIAL PRODUCTION OF GOLD,  
SILVER, COPPER, LEAD, ZINC, AND COAL

Year	Gold. <sup>1</sup> Crude. Oz.	Gold. Fine. Oz.	Silver. Fine. Oz.	Copper. Lb.	Lead, Lb.	Zinc. Lb.	Coal, Short Ton
	\$	\$	Cents	Cents	Cents	Cents	\$
1901.....	17.00	20.67	56.002 N.Y.	16.11 N.Y.	2.577 N.Y.	.....	2.679
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 ..	.....	3.125
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 ..	4.464
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 ..	5.266 ..	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 ..	4.018
1932.....	19.30	23.47	31.671 ..	6.380 Lond.	2.113 ..	2.405 ..	3.795
1933.....	23.02	28.60	37.832 ..	7.454 ..	2.391 ..	3.210 ..	.....
1934.....	28.87	34.50	47.461 ..	7.419 ..	2.436 ..	3.044 ..	.....
1935.....	28.94	35.19	64.790 ..	7.795 ..	3.133 ..	3.099 ..	.....
1936.....	28.81	35.03	45.127 ..	9.477 ..	3.913 ..	3.315 ..	.....
1937.....	28.77	34.99	44.881 ..	13.078 ..	5.110 ..	4.902 ..	.....
1938.....	28.93	35.18	43.477 ..	9.972 ..	3.344 ..	3.073 ..	.....
1939.....	29.72	36.14	40.488 ..	10.092 ..	3.169 ..	3.069 ..	.....
1940.....	31.66	38.50	38.249 ..	10.086 ..	3.362 ..	3.411 ..	.....
1941.....	31.66	38.50	38.261 ..	10.086 ..	3.362 ..	3.411 ..	.....
1942.....	31.66	38.50	41.166 ..	10.086 ..	3.362 ..	3.411 ..	.....
1943.....	31.66	38.50	45.254 ..	11.75 ..	3.754 ..	4.000 ..	.....
1944.....	31.66	38.50	43.000 ..	12.000 ..	4.500 ..	4.300 ..	.....
1945.....	31.66	38.50	47.000 ..	12.550 ..	5.000 ..	6.440 ..	.....
1946.....	30.22	36.75	83.650 ..	12.80 ..	6.750 ..	7.810 ..	4.68
1947.....	28.78	35.00	72.000 ..	20.39 ..	13.670 ..	11.230 ..	5.12
1948.....	28.78	35.00	75.000 Mont.	22.35 U.S.	18.040 ..	13.930 ..	6.09
1949.....	29.60	36.00	74.250 U.S.	19.973 ..	15.800 U.S.	13.247 U.S.	6.51
1950.....	31.29	38.05	80.635 ..	23.428 ..	14.454 ..	15.075 ..	6.43
1951.....	30.30	36.85	94.55 ..	27.70 ..	18.4 ..	19.9 ..	6.46
1952.....	28.18	34.27	83.157 ..	31.079 ..	16.121 ..	16.874 ..	6.94
1953.....	28.31	34.42	83.774 ..	30.333 ..	13.265 ..	10.675 ..	6.88
1954.....	27.52	34.07	82.982 ..	29.112 ..	13.680 ..	10.417 ..	7.00
1955.....	28.39	34.52	87.851 ..	38.276 ..	14.928 ..	12.127 ..	6.74
1956.....	28.32	34.44	89.373 ..	39.787 ..	15.756 ..	13.278 ..	6.59
1957.....	27.59	33.55	87.057 ..	26.031 ..	14.051 ..	11.175 ..	6.76
1958.....	27.94	33.98	86.448 ..	23.419 ..	11.755 ..	10.009 ..	7.45

<sup>1</sup> Unrefined placer gold, average price per ounce, is taken as \$17 divided by \$20.67 times the price of an ounce of fine gold.

Prices for fine gold are the Canadian Mint buying prices. Prices for other metals are those of the markets indicated, converted into Canadian funds. The abbreviations are: Mont.=Montreal; N.Y.=New York; Lond.=London; E. St. L.=East St. Louis; and U.S.=United States.

Prior to 1925 the prices for gold and copper are true average prices, but the prices of other metals were taken at the following percentages of the year's average price for the metal: Silver, 95 per cent; lead, 90 per cent; and zinc, 85 per cent.

For coal see last paragraph under "Fuel," page A 12.

The bases for the prices listed are discussed in detail on pages A 11 and A 12.

TABLE I.—TOTAL MINERAL PRODUCTION FOR ALL YEARS UP TO AND INCLUDING 1958

	Total Quantity	Total Value	Quantity, 1958	Value, 1958
Gold—placer..... crude, oz.	5,205,946	\$96,113,030	5,650	\$157,871
„ lode..... fine, oz.	15,330,565	441,792,116	194,354	6,604,149
Silver..... oz.	410,144,046	246,148,046	7,040,416	6,086,299
Copper..... lb.	2,929,310,734	479,655,119	12,658,649	2,964,529
Lead..... lb.	12,577,660,683	911,051,022	294,573,159	34,627,075
Zinc..... lb.	10,259,550,396	816,745,894	432,002,790	43,234,839
Miscellaneous metals <sup>1</sup> .....	.....	140,475,311	.....	10,575,795
Industrial minerals <sup>2</sup> .....	.....	88,054,493	.....	11,763,473
Structural materials <sup>3</sup> .....	.....	268,696,444	.....	19,999,576
Coal <sup>4</sup> ..... tons	141,382,685	546,146,500	796,413	5,937,860
Natural gas..... M s.c.f.	72,744,107	4,326,924	64,051,785	3,915,239
Petroleum, crude <sup>5</sup> ..... bbls.	1,002,340	2,071,418	512,359	1,008,376
Totals.....	.....	\$4,041,276,317	.....	\$146,875,081

<sup>1</sup> For individual miscellaneous metals, see Tables III and VIIIc, pages A 15 and A 28.

<sup>2</sup> For individual industrial minerals, including sulphur, see Tables III and VIIIb, pages A 15 and A 30.

<sup>3</sup> For individual structural materials, see Tables III and VIIIc, pages A 15 and A 32.

<sup>4</sup> Total quantity is gross mine output; it includes material discarded in picking and washing. The quantity shown for 1958 is that sold and used (see also Table IXc.)

<sup>5</sup> Includes 582 barrels produced for test purposes in 1955, no value assigned.

TABLE II.—PRODUCTION FOR EACH YEAR FROM 1836 TO 1958, INCLUSIVE

1836-95 (incl.)	\$95,355,010	1928.....	\$65,372,583
1896.....	7,507,956	1929.....	68,791,020
1897.....	10,455,268	1930.....	55,769,578
1898.....	10,906,861	1931.....	35,247,837
1899.....	12,429,707	1932.....	28,803,214
1900.....	16,344,751	1933.....	32,652,542
1901.....	19,671,572	1934.....	42,481,319
1902.....	17,486,550	1935.....	48,886,303
1903.....	17,495,954	1936.....	54,179,442
1904.....	18,977,359	1937.....	74,475,902
1905.....	22,600,525	1938.....	64,485,551
1906.....	24,997,646	1939.....	65,707,398
1907.....	25,928,660	1940.....	75,121,424
1908.....	23,950,573	1941.....	77,514,446
1909.....	24,443,025	1942.....	76,699,878
1910.....	26,377,066	1943.....	67,204,417
1911.....	23,499,072	1944.....	54,740,844
1912.....	32,440,800	1945.....	62,070,548
1913.....	30,296,398	1946.....	72,453,745
1914.....	26,388,825	1947.....	112,582,204
1915.....	29,447,508	1948.....	145,517,874
1916.....	42,290,462	1949.....	132,956,254
1917.....	37,010,392	1950.....	139,837,689
1918.....	41,782,474	1951.....	176,330,205
1919.....	33,296,313	1952.....	171,309,429
1920.....	35,543,084	1953.....	153,193,544
1921.....	28,066,641	1954.....	153,383,860
1922.....	35,162,843	1955.....	174,710,606
1923.....	41,304,320	1956.....	190,084,302
1924.....	48,704,604	1957.....	172,264,617
1925.....	61,492,242	1958.....	146,875,081
1926.....	67,188,842		
1927.....	60,729,358	Total ..	\$4,041,276,317

NOTE.—For revisions to lead and zinc production see footnote 3, Table VI.

TABLE III.—QUANTITY AND VALUE OF MINERAL PRODUCTS FOR YEARS 1949 TO 1958

Description	1949		1950		1951		1952		1953		
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
<i>Principal Metals</i>											
Gold—placer, crude	oz.	17,886	\$ 529,524	19,134	\$ 598,717	23,691	\$ 717,911	17,554	\$ 494,756	14,245	\$ 403,230
"  lode, fine	oz.	288,396	10,382,256	283,983	10,805,553	261,274	9,627,947	251,393	8,615,238	253,553	8,727,294
Silver	oz.	7,636,053	5,669,769	9,507,225	7,666,151	8,215,884	7,768,118	8,796,720	7,315,088	8,376,953	7,017,709
Copper	lb.	54,856,808	10,956,550	42,212,133	9,889,458	43,249,658	11,980,155	42,005,512	13,054,893	49,021,013	14,869,544
Lead	lb.	365,378,899	41,929,866	284,024,522	41,052,905	273,456,604	50,316,015	284,949,396	45,936,692	297,634,712	39,481,244
Zinc	lb.	288,188,620	38,176,346	290,344,227	43,769,392	337,511,324	67,164,754	372,871,717	59,189,656	382,300,862	40,810,618
<b>Totals</b>			<b>107,644,311</b>		<b>113,782,176</b>		<b>147,574,900</b>		<b>134,606,323</b>		<b>111,309,639</b>
<i>Miscellaneous Metals</i>											
Antimony	lb.	158,288	61,020	643,540	216,229	1,310,836	622,647	2,333,239	1,028,025	1,551,043	570,474
Bismuth	lb.	102,913	210,972	162,616	369,138	191,471	451,872	142,246	312,941	71,298	157,569
Cadmium	lb.	665,449	1,364,170	650,540	1,535,274	1,164,933	3,122,021	726,172	1,561,270	787,158	1,550,701
Indium	oz.	689	1,550	4,952	12,132	582	1,368	404	889	6,752	14,922
Iron ore concentrates	tons	5,472	27,579	—	—	113,535	790,000	900,481	5,474,924	991,248	6,763,105
Platinum	oz.	99	7,468	111	9,239	22	2,085	2	176	—	—
Tin	lb.	619,117	633,047	796,403	828,259	346,718	495,807	212,113	250,293	1,092,228	581,746
Tungsten (WO <sub>3</sub> )	lb.	—	—	281,160	281,160	—	—	1,434,640	4,565,024	2,168,977	5,950,323
<b>Totals</b>			<b>2,305,806</b>		<b>3,251,431</b>		<b>5,485,800</b>		<b>13,193,542</b>		<b>15,588,840</b>
<i>Industrial Minerals</i>											
Asbestos	tons	—	—	—	—	—	—	20	23,000	3,102	988,716
Barite	tons	1,314	13,145	1,440	17,284	1,248	16,224	848	13,408	3,560	52,845
Diatomite	tons	36	963	4	108	8	223	12	240	—	—
Flux (quartz, limestone)	tons	108,531	213,773	144,325	268,411	144,235	292,100	55,588	141,478	37,358	110,698
Granules (quartz, limestone, granite)	tons	5,941	79,661	7,886	104,590	5,727	73,767	1,610	21,026	4,620	59,321
Gypsum and products	tons	98,977	616,490	92,882	620,108	124,729	263,072	91,112	235,453	172,665	387,655
Iron oxides	tons	2,752	23,301	—	—	—	—	—	—	—	—
Mica	lb.	578,000	5,675	456,000	5,533	606,000	7,462	314,000	3,001	604,000	11,338
Perlite	tons	—	—	—	—	—	—	—	—	1,112	11,120
Sodium carbonate	tons	47	517	—	—	—	—	—	—	—	—
Sulphur	tons	160,435	1,546,798	143,343	1,421,806	194,874	1,840,992	182,607	1,745,258	151,954	1,590,055
<b>Totals</b>			<b>2,500,323</b>		<b>2,437,840</b>		<b>2,493,840</b>		<b>2,182,864</b>		<b>3,211,748</b>
<i>Structural Materials</i>											
Brick—common	No.	3,220,000	95,075	3,980,500	117,770	1,353,000	41,820	830,815	28,248	1,382,883	51,381
"  face, paving, sewer	No.	509,560	24,793	974,380	52,823	3,127,888	153,575	2,566,540	121,254	4,307,894	226,459
"  firebrick, blocks		—	135,391	—	282,962	—	380,742	—	435,681	—	426,783
Clays	tons	6,500	22,339	6,706	32,264	14,786	60,255	11,483	51,797	5,226	31,990
Structural tile, hollow blocks		—	145,512	—	191,016	—	171,481	—	60,273	—	123,469
Drain-tile, sewer-pipe, flue-linings		—	265,098	—	428,418	—	410,206	—	468,110	—	627,097
Pottery—glazed or unglazed		—	5,176	—	5,860	—	4,695	—	6,536	—	30,012
Other clay products		—	9,676	—	11,335	—	10,393	—	11,296	—	19,267
Cement		—	3,209,425	—	3,088,296	—	3,311,439	—	3,603,273	—	5,071,260
Lime and limestone	tons	179,400	1,295,087	221,454	1,133,776	241,723	1,251,327	321,710	1,552,772	338,005	1,357,958
Rubble, riprap, crushed rock	tons	1,112,272	916,841	1,164,049	990,257	972,178	1,145,072	739,504	982,792	770,415	1,122,516
Sand and gravel		—	3,967,132	—	3,723,487	—	3,355,693	—	3,839,965	—	4,388,594
Stone	tons	2,287	44,345	26,758	188,675	4,837	309,350	122,308	434,964	2,611	78,252
<b>Totals</b>			<b>9,955,890</b>		<b>10,246,939</b>		<b>10,606,048</b>		<b>11,596,961</b>		<b>13,555,038</b>
<i>Fuel</i>											
Coal <sup>1</sup>	tons	1,621,268	10,549,924	1,574,006	10,119,303	1,573,572	10,169,617	1,402,347	9,729,739	1,384,138	9,528,279
<b>Provincial totals</b>			<b>132,956,254</b>		<b>139,837,689</b>		<b>176,330,205</b>		<b>171,309,429</b>		<b>153,193,544</b>

<sup>1</sup> The quantity of coal is that sold and used.

TABLE III.—QUANTITY AND VALUE OF MINERAL PRODUCTS FOR YEARS 1949 TO 1958—Continued

Description	1954		1955		1956		1957		1958		
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
<i>Principal Metals</i>											
Gold—placer, crude .....	oz.	8,684	\$ 238,967	7,666	217,614	3,863	109,450	2,936	\$ 80,990	5,650	\$ 157,871
" lode, fine .....	oz.	258,388	8,803,279	242,477	8,370,306	191,743	6,603,628	222,506	7,465,076	194,354	6,604,149
Silver .....	oz.	9,825,153	8,153,108	7,902,145	6,942,113	8,404,600	7,511,443	8,129,971	7,077,708	7,040,416	6,086,299
Copper .....	lb.	50,150,087	14,599,693	44,328,031	16,932,549	43,360,575	17,251,872	29,318,494	7,631,897	12,658,649	2,964,529
Lead .....	lb.	332,474,456	45,482,505	302,567,640	45,161,245	283,718,073	44,702,619	281,603,346	39,568,086	294,573,159	34,627,075
Zinc .....	lb.	334,124,560	34,805,755	429,198,565	52,048,909	443,853,004	58,934,801	449,448,607	50,225,881	432,002,790	43,234,839
Totals .....			112,083,307		129,672,736		135,113,813		112,049,638		93,674,762
<i>Miscellaneous Metals</i>											
Antimony .....	lb.	1,302,333	382,104	2,021,721	667,776	2,140,432	768,843	1,360,731	577,344	858,633	284,208
Bismuth .....	lb.	225,351	493,519	160,767	356,903	156,753	346,424	145,634	314,569	154,034	308,068
Cadmium .....	lb.	680,734	1,123,211	1,593,591	2,677,233	1,937,927	3,236,338	1,946,397	3,172,627	1,425,108	2,166,164
Indium .....	oz.	477	1,281	104,774	232,389	363,192	795,390	384,360	693,770	75,434	117,677
Iron ore concentrates .....	tons	535,746	3,733,891	610,930	3,228,756	369,955	2,190,847	357,342	2,200,637	630,271	4,193,442
Mercury .....	lb.			75	250					1,408,490	996,507
Nickel .....	lb.									4	260
Platinum .....	oz.	4	408								
Tin .....	lb.	587,528	280,437	391,228	311,613	756,934	637,792	709,102	555,936	795,496	625,260
Tungsten (WO <sub>3</sub> ) .....	lb.	2,206,443	5,851,558	1,914,000	5,460,967	2,264,775	6,351,376	1,921,483	5,240,479	690,976	1,884,209
Totals .....			11,866,409		12,935,887		14,327,010		12,755,362		10,575,795
<i>Industrial Minerals</i>											
Asbestos .....	tons	8,599	2,920,751	17,187	4,265,971	20,356	6,620,060	31,714	9,245,800	30,078	8,203,384
Barite .....	tons	5,056	115,337	9,465	238,825	11,436	287,626	20,072	433,200	16,144	341,700
Diatomite .....	tons			14	280	40	800	120	2,400	27	540
Flux (quartz, limestone) .....	tons	39,897	40,804	111,759	208,198	176,311	392,429	137,433	442,204	90,635	311,630 <sup>1</sup>
Granules (quartz, limestone, granite) .....	tons	4,541	65,507	6,355	73,858	13,220	173,214	17,295	221,864	22,674	284,300
Gypsum and products .....	tons	175,480	421,734	149,719	383,934	72,973	391,919	66,499	142,751	70,498	211,494
Mica .....	lb.	284,000	5,326	505,300	2,861	200,000	1,100	180,000	1,200		
Sulphur .....	tons	219,999	2,308,422	216,520	2,624,171	212,885	2,523,190	226,550	2,872,332	211,300	2,410,395
Totals .....			5,877,881		7,798,098		10,390,338		13,361,751		11,763,473
<i>Structural Materials</i>											
Brick—common .....	No.	1,289,911	35,550	4,853,940	232,139	2,248,447	75,767	663,828	24,345	427,550	15,125
" face, paving, sewer .....	No.	5,651,262	316,676	3,901,866	248,913	6,913,682	485,176	4,660,231	345,081	4,871,562	344,133
" firebrick, blocks .....	No.		372,528		578,578		600,753		658,873		405,485
Clays .....	tons	6,609	36,425	8,033	46,757	7,985	47,101	3,849	29,495	4,105	12,579
Structural tile, hollow blocks .....	tons		122,903		114,460		129,257		200,216		122,877
Drain-tile, sewer-pipe, flue-linings .....			753,297		801,019		696,385		697,611		639,173
Pottery—glazed or unglazed .....			31,081		38,035		38,385		47,612		68,387
Other clay products .....			32,697		55,314		69,659		38,868		32,416
Cement .....			4,935,298		5,474,875		6,339,071		7,078,108		6,755,619
Lime and limestone .....	tons	317,976	1,555,002	318,152	1,711,346	396,012	1,220,792	334,303	1,494,578	269,747	997,819
Rubble, riprap, crushed rock .....	tons	920,707	1,253,856	890,613	962,272	2,028,143	2,210,315	2,364,301	4,272,768	1,866,950	2,098,952
Sand and gravel .....	tons		4,850,469		4,886,890		8,535,348		10,503,274		8,442,676
Stone .....	tons	3,055	99,392	26,079	148,454	35,266	139,150	2,403	236,110	2,141	64,335
Totals .....			14,395,174		15,299,254		20,587,159		25,626,939		19,999,576
<i>Fuels</i>											
Coal <sup>2</sup> .....	tons	1,308,284	9,154,544	1,332,874	8,986,501	1,417,209	9,346,518	1,085,657	7,340,339	796,413	5,937,860
Natural gas .....	M s. c. f.	60,883	6,545	168,651	18,130	187,846	20,143	8,274,942	366,867	64,051,785	3,915,239
Petroleum, crude <sup>3</sup> .....	bbbls.					148,454	299,321	340,945	763,721	512,359	1,008,376
Totals .....			9,161,089		9,004,631		9,665,982		8,470,927		10,861,475
<i>Provincial totals</i> .....			153,383,860		174,710,606		190,084,302		172,264,617		146,875,081

<sup>1</sup> Includes 32 tons of fluorspar mined in 1958. value assigned.

<sup>2</sup> The quantity of coal is that sold and used.

<sup>3</sup> For test purposes, 582 barrels were produced in 1955, no commercial



TABLE IV.—MINERAL PRODUCTION VALUE, 1895-1958

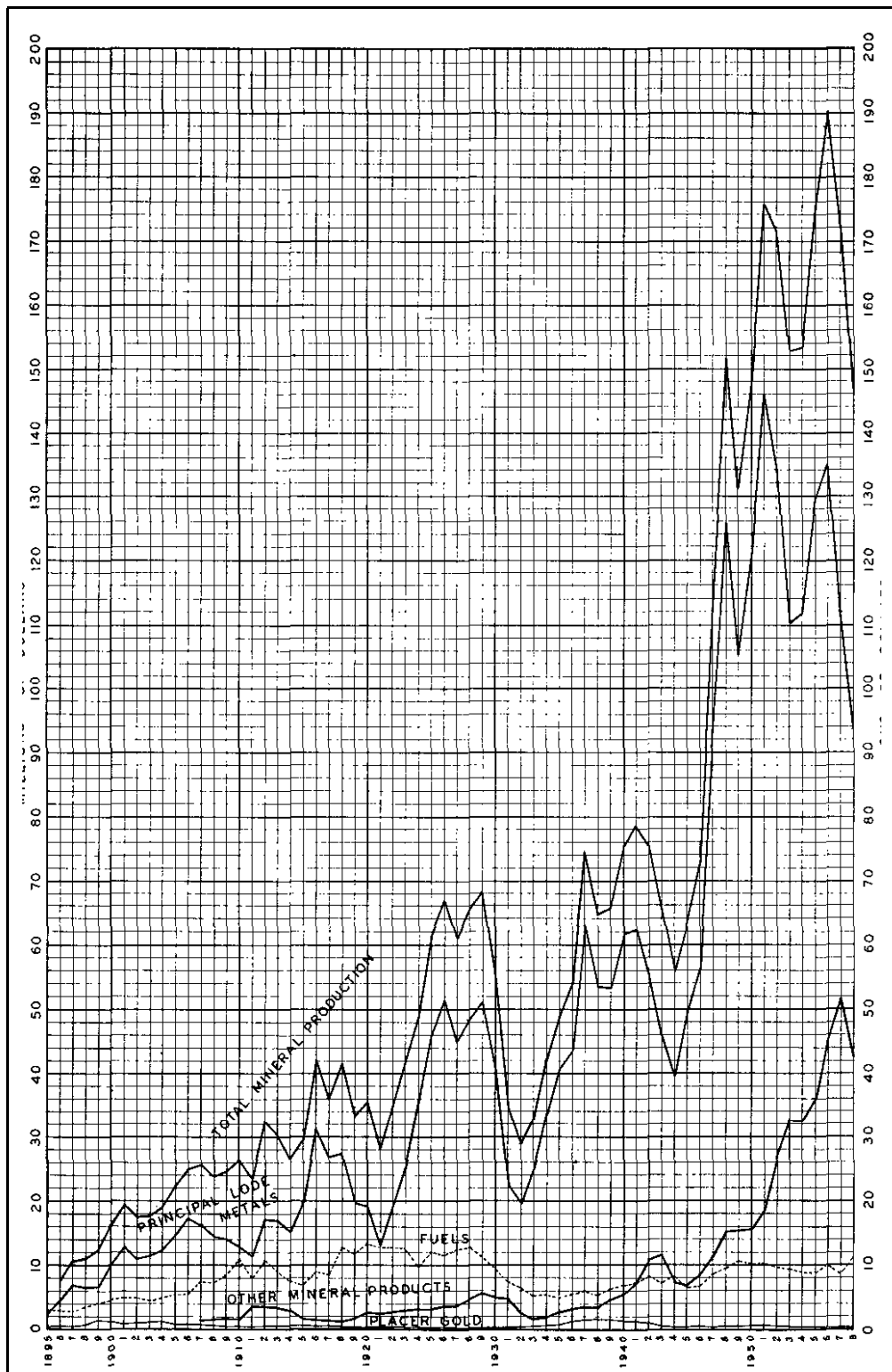


TABLE V.—PRINCIPAL LODE-METALS PRODUCTION, 1913-58

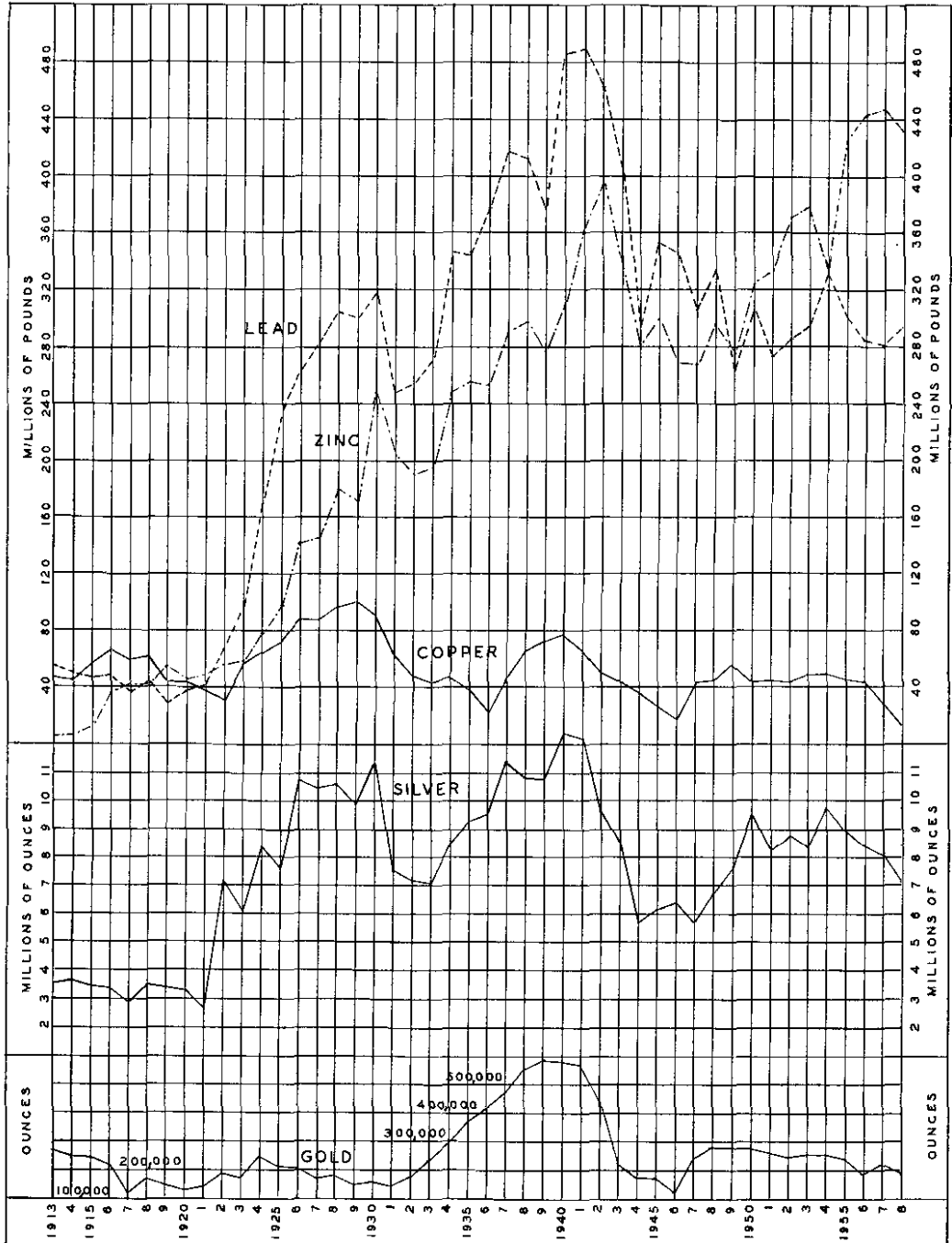


TABLE VI—PRODUCTION OF PRINCIPAL METALS, 1858-1958

	Quantity		Value		Quantity		Value		Quantity		Value		
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
	Oz.	\$	Oz.	\$	Oz.	\$	Lb.	\$	Lb.	\$	Lb.	\$	\$
1858-86, incl.	3,105,775	52,798,364											52,798,364
1887	40,810	693,709			17,690	17,331			204,800	9,216			720,256
1888	36,280	616,731			79,780	75,000			674,500	29,813			721,544
1889	34,640	588,923			53,192	47,873			165,100	6,498			643,294
1890	29,080	494,436			70,427	73,948							568,384
1891	25,280	429,811				4,500							433,811
1892	23,500	399,526			77,160	66,935			808,420	33,064			499,525
1893	20,950	356,131	1,170	23,404	227,000	195,000			2,135,023	78,996			653,531
1894	23,850	405,516	6,252	125,014	746,379	470,219	324,680	16,234	5,662,523	169,875			1,186,858
1895	28,330	481,683	39,270	785,400	1,496,522	977,229	952,840	47,642	16,475,464	532,255			2,824,209
1896	32,000	544,026	62,259	1,244,180	3,135,343	2,100,689	3,818,556	190,926	24,199,977	721,384			4,801,205
1897	30,210	513,520	106,141	2,122,820	5,472,971	3,272,836	5,325,180	266,258	38,841,135	1,390,517			7,565,951
1898	37,840	643,346	110,361	2,201,217	4,292,401	2,375,841	7,271,678	874,781	31,693,559	1,077,581			7,172,766
1899	79,110	1,344,900	138,315	2,857,573	2,939,413	1,663,708	7,722,591	1,351,453	21,862,436	878,870			8,096,504
1900	75,220	1,278,724	167,153	3,453,381	3,958,175	2,309,200	9,997,080	1,615,289	63,358,621	2,691,887			11,348,481
1901	57,060	970,100	210,384	4,348,605	4,396,447	2,462,008	27,603,746	4,446,963	51,582,906	2,010,260			14,237,936
1902	63,130	1,073,140	236,491	4,888,269	3,917,917	1,941,328	29,636,057	3,446,673	22,536,381	824,832			12,174,242
1903	62,380	1,060,420	232,331	4,812,616	2,996,204	1,521,472	34,359,921	4,547,535	18,089,283	689,744			12,631,787
1904	65,610	1,115,300	222,942	4,589,608	3,222,481	1,719,516	35,710,128	4,578,037	36,646,244	1,421,874			13,424,335
1905	57,020	969,300	238,560	4,933,102	3,439,417	1,971,818	37,692,251	5,876,222	56,580,703	2,399,022		139,200	16,288,664
1906	55,790	948,400	224,027	4,630,639	2,990,262	1,897,320	42,990,488	8,288,565	52,408,217	2,667,578			18,449,602
1907	48,710	828,000	196,179	4,055,020	2,745,448	1,703,825	40,832,720	8,166,544	47,738,703	2,291,458			17,090,947
1908	38,060	647,000	255,582	5,282,880	2,631,389	1,321,483	47,274,614	6,240,249	43,195,733	1,632,799			99,296
1909	28,060	477,000	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	14,668,141
1910	31,760	540,000	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	13,768,731
1911	25,060	426,000	228,517	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	11,880,063
1912	32,680	555,500	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	18,218,266
1913	30,000	510,000	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	17,700,838
1914	33,240	565,000	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	15,790,061
1915	45,290	770,000	250,021	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	20,762,149
1916	34,150	580,500	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	32,063,514
1917	29,180	496,000	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	27,284,474
1918	18,820	320,000	164,574	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	27,910,278
1919	16,850	286,500	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	20,036,998
1920	13,040	221,600	120,348	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	19,665,965
1921	13,720	233,200	135,563	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	13,153,598
1922	21,690	368,800	197,856	4,089,684	7,101,311	4,554,781	32,359,896	67,447,985	67,447,985	3,480,316	57,146,548	2,777,322	19,600,657
1923	24,710	420,000	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	25,767,062

STATISTICS

TABLE VI.—PRODUCTION OF PRINCIPAL METALS, 1858–1958—Continued

Year	Placer Gold		Gold		Silver		Copper		Lead <sup>3</sup>		Zinc <sup>3 4</sup>		Total Value
	Quantity <sup>1</sup>	Value	Quantity <sup>2</sup>	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
	Oz.	\$	Oz.	\$	Oz.	\$	Lb.	\$	Lb.	\$	Lb.	\$	
1924	24,750	420,750	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	35,958,997
1925	16,476	280,092	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	46,480,227
1926	20,912	355,503	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	51,863,534
1927	9,191	156,247	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	45,133,329
1928	8,284	143,208	188,087	3,888,097	10,627,167	6,182,461	97,908,316	14,265,242	305,140,722	13,961,412	181,763,147	9,984,613	48,425,033
1929	6,983	118,711	145,387	3,005,411	9,960,172	5,278,194	102,793,669	18,612,850	307,999,153	15,555,189	172,096,841	9,268,792	51,839,147
1930	8,955	152,235	160,853	3,325,126	11,328,263	4,322,185	92,362,240	11,990,466	321,803,725	12,638,198	250,479,310	9,017,005	41,445,215
1931	17,176	291,992	146,133	3,020,837	7,550,331	2,254,979	64,134,746	5,365,690	261,902,236	7,097,812	202,071,702	5,160,911	23,192,221
1932	20,400	395,542	181,651	4,263,349	7,150,655	2,264,729	50,608,036	3,228,892	252,007,574	5,326,432	192,120,091	4,621,641	20,100,585
1933	23,928	562,787	223,589	6,394,645	7,021,754	2,656,526	43,149,460	3,216,701	271,689,217	6,497,719	195,963,751	6,291,416	25,619,794
1934	25,181	714,431	297,216	10,253,952	8,613,977	4,088,280	49,651,733	3,683,662	347,366,967	8,461,859	249,152,403	7,584,199	34,786,383
1935	30,929	895,058	365,343	12,856,419	9,269,944	6,005,996	39,428,208	3,073,428	344,268,444	10,785,930	256,239,446	7,940,860	41,557,691
1936	43,389	1,249,940	404,578	14,172,367	9,547,124	4,308,330	21,671,711	2,053,828	377,971,618	14,790,029	254,581,393	8,439,373	45,013,867
1937	54,153	1,558,245	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	64,471,028
1938	57,759	1,671,015	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	55,548,348
1939	49,746	1,478,492	587,336	21,226,957	10,821,393	4,381,365	73,254,679	7,392,862	378,743,763	12,002,390	278,409,102	8,544,375	55,026,441
1940	39,067	1,236,928	583,416	22,461,516	12,327,944	4,715,315	77,980,223	7,865,085	466,849,112	15,695,467	312,020,671	10,643,025	62,617,336
1941	43,775	1,385,962	571,026	21,984,501	12,175,700	4,658,545	66,435,583	6,700,693	456,840,454	15,358,976	367,869,579	12,548,031	62,636,708
1942	32,904	1,041,772	444,518	17,113,943	9,677,881	4,080,775	50,097,716	5,052,856	507,199,704	17,052,054	387,236,469	13,208,636	57,550,036
1943	14,600	462,270	224,403	8,639,516	8,526,310	3,858,496	42,307,510	4,971,132	439,155,635	16,485,902	336,150,455	13,446,018	47,863,334
1944	11,433	361,977	186,632	7,185,332	5,705,334	2,453,293	36,300,589	4,356,070	292,922,888	13,181,530	278,063,373	11,956,725	39,494,927
1945	12,589	398,591	175,373	6,751,860	6,157,307	2,893,934	25,852,366	3,244,472	336,976,468	16,848,823	294,791,635	18,984,581	49,122,261
1946	15,729	475,361	117,612	4,322,241	6,365,761	5,324,959	17,500,538	2,240,070	345,862,680	23,345,731	274,269,956	21,420,484	57,128,846
1947	6,969	200,585	243,282	8,514,870	5,707,691	4,109,538	41,783,921	8,519,741	313,733,089	42,887,313	253,006,168	28,412,593	92,644,640
1948	20,332	585,200	286,230	10,018,050	6,718,122	5,038,592	43,025,388	9,616,174	320,037,525	57,734,770	270,310,195	37,654,210	120,646,996
1949	17,886	529,524	288,396	10,382,256	7,636,053	5,669,769	54,856,808	10,956,550	265,378,899	41,929,866	288,188,620	38,176,346	107,644,311
1950	19,134	598,717	283,983	10,805,553	9,507,225	7,666,151	42,212,133	9,889,458	284,024,522	41,052,905	290,344,227	43,769,392	113,782,176
1951	23,691	717,911	261,274	9,627,947	8,215,884	7,768,118	43,249,658	11,980,155	273,456,604	50,316,015	337,511,324	67,164,754	147,574,900
1952	17,554	494,756	251,393	8,615,238	8,796,720	7,315,088	42,005,512	13,054,893	284,949,396	45,936,692	372,871,717	59,189,656	134,606,323
1953	14,245	403,230	253,553	8,727,294	8,376,953	7,017,709	49,021,013	14,869,544	297,634,712	39,481,244	382,300,862	40,810,618	111,309,639
1954	8,684	238,967	258,388	8,803,279	9,825,153	8,153,108	50,150,087	14,599,693	332,474,456	45,482,505	334,124,560	34,805,755	112,083,307
1955	7,666	217,614	242,477	8,370,306	7,902,145	6,942,113	44,238,031	16,932,549	302,567,460	45,161,245	429,198,565	52,048,909	129,672,736
1956	3,865	109,450	191,743	6,603,628	8,404,600	7,511,443	43,360,575	17,251,872	283,718,073	44,702,619	443,853,004	58,934,801	135,113,813
1957	2,936	80,990	222,506	7,465,076	8,129,971	7,077,708	29,318,494	7,631,897	281,603,346	39,568,086	449,448,607	50,225,881	112,049,638
1958	5,650	157,871	194,354	6,604,149	7,040,416	6,086,299	12,658,449	2,964,529	294,573,159	34,627,075	432,002,790	43,234,839	93,674,762
Totals	5,205,946	96,113,030	15,330,565	441,792,116	410,144,046	246,148,046	2,929,310,734	479,655,119	12,577,660,683	911,051,022	10,259,550,396	816,745,894	2,991,505,227

<sup>1</sup> Ounces of crude gold.<sup>2</sup> Ounces of fine gold.<sup>3</sup> Revisions have been made in 1958 to some yearly totals for lead and zinc to bring them into agreement with the best records of recoveries of lead and zinc from slags treated at the Trail smelter.<sup>4</sup> For 1905–08, inclusive, records show shipments of a combined total of 18,847 tons of zinc ore and zinc concentrates of unstated zinc content.

TABLE VIIA.—PRODUCTION, 1957 AND 1958, BY MINING DIVISIONS—SUMMARY

Division	Year	Placer Gold		Principal Lode Metals	Miscellaneous Metals	Industrial Minerals	Structural Materials	Fuels						Division Totals
		Quantity <sup>1</sup>	Value					Coal		Petroleum		Natural Gas		
								Quantity	Value	Quantity	Value	Quantity	Value	
		Oz.	\$	\$	\$	\$	Tons	\$	Bbls.	\$	M.S.C.F.	\$	\$	
Alberni.....	1957			410			171,477							171,887
	1958	3	84	1,144			54,594							55,822
Atlin.....	1957	1,300	35,861	4,832,486	104,160		23,034							4,995,541
	1958	985	26,984				26,102							53,066
Cariboo.....	1957	1,360	37,516	1,804,318		3,600	396,333							1,741,765
	1958	4,189	117,048	950,953		540	536,095							1,604,636
Clinton.....	1957	21	579				14,500							15,079
	1958	9	251				15,433							15,734
Fort Steele.....	1957	2	55	48,577,717	555,936	842,580	594,873	895,118	5,310,835					55,881,996
	1958	20	559	48,889,971	625,450	663,861	153,770	639,557	4,241,619					54,575,230
Golden.....	1957			2,478,986	19,930	575,951	153,515							3,228,382
	1958			2,431,487	82,814	553,194	133,292							3,200,757
Greenwood.....	1957			1,115,868	5,307	23,126	12,100							1,156,401
	1958	5	140	936,360	6,553		12,400							955,453
Kamloops.....	1957	7	193				1,636,953							1,637,146
	1958	7	195				1,205,153							1,205,348
Liard.....	1957	6	165			9,245,800	241,980	2,758	28,421	340,945	763,721	8,274,942	366,867	10,646,954
	1958					8,203,384	206,174	3,194	28,738	512,359	1,008,376	64,051,785	3,915,239	13,361,911
Lillooet.....	1957	58	1,600	4,900,877			59,920							4,962,397
	1958	72	2,012	5,102,133			155,898							5,260,043
Nanaimo.....	1957				2,200,637	20,337	1,786,533	164,013	1,849,306					5,856,813
	1958 <sup>2</sup>			416,810	4,193,442	23,806	995,759	154,296	1,615,490					7,245,307
Nelson.....	1957	65	1,793	12,455,726	6,015,573		95,760							18,568,852
	1958	2	56	11,598,949	2,609,068		83,536							14,291,608
New Westminster.....	1957	52	1,434			129,419	6,933,381							7,064,234
	1958	14	391	160,916	996,507	143,945	4,175,832							5,477,591
Nicola.....	1957						20,523	1,081	11,615					32,138
	1958	4	112				62,870	543	5,919					68,589
Omineca.....	1957	37	1,021	1,543,272	36,929		648,068	4,991	47,414					2,276,704
	1958	71	1,984	327,290	17,839		537,292	4,677	44,972					929,377
Osyoos.....	1957			79,573		479,866	11,370							570,800
	1958			301,666		428,209	603							730,478
Revelstoke.....	1957	1	28	1,351,326	33,555		54,185							1,439,094
	1958			546,082			78,757							624,839
Similkameen.....	1957	27	745	1,932,983			118,250	17,606	92,748					2,144,726
	1958	30	838	16,845	260		82,950	146	1,122					102,015
Skeena.....	1957			1,669,039	4,742		1,890,868							3,064,649
	1958			1,811,278			278,797							1,690,073
Slocan.....	1957			9,997,915	219,198		58,574							10,275,687
	1958	2	56	8,055,865	183,395		60,967							8,300,283
Trail Creek.....	1957			97,745			132,808							230,553
	1958			22,662			127,461							150,123
Vancouver.....	1957			6,336,323	48,051	353,352	2,782,322							9,570,048
	1958			1,355,525	19,783	75,501	4,614,786							6,065,595
Vernon.....	1957						192,406							192,406
	1958	257	7,181				224,249							231,430
Victoria.....	1957			252,784			8,097,206							8,349,990
	1958			1,023,801			6,176,987							7,200,788
Not assigned.....	1957			12,991,302	3,511,344	1,687,720								18,190,366
	1958			10,067,156	1,840,684	1,671,033								13,578,873
Totals.....	1957	2,936	80,990	111,968,648	12,755,362	13,361,751	25,626,939	1,085,657	7,340,339	340,945	763,721	8,274,942	366,867	172,264,617
	1958	5,650	157,871	93,516,891	10,575,795	11,763,473	19,999,576	796,413	5,937,860	512,359	1,008,376	64,051,785	3,915,239	146,875,081

<sup>1</sup> Crude gold. total value, \$141,133.

<sup>2</sup> Nanaimo 1958 figures for gold, silver, copper, and total value include 1957 production as follows: Gold, 261 oz.; silver, 9,011 oz.; copper, 640,555 lb.;

TABLE VIII.—PRODUCTION, 1957 AND 1958, BY MINING DIVISIONS—PRINCIPAL LODE METALS

Division	Year	Lode Gold		Silver		Copper		Lead		Zinc	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
		Oz.	\$	Oz.	\$	Lb.	\$	Lb.	\$	Lb.	\$
Alberni.....	1957	12	403	8	7	.....	.....	.....	.....	.....	.....
	1958	33	1,121	27	23	.....	.....	.....	.....	.....	.....
Atlin.....	1957	15,426	517,542	584,969	509,257	3,870,199	1,007,451	4,857,885	682,581	18,932,040	2,115,655
	1958	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cariboo.....	1957	38,759	1,300,364	4,540	3,952	.....	.....	.....	.....	.....	.....
	1958	27,892	947,770	3,682	3,183	.....	.....	.....	.....	.....	.....
Clinton.....	1957	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1958	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Steele.....	1957	279	9,360	2,491,430	2,168,064	.....	.....	164,060,122	23,052,088	208,924,430	23,347,305
	1958	314	10,670	3,041,368	2,629,202	.....	.....	195,172,210	22,942,493	232,889,745	23,307,606
Golden.....	1957	5	168	106,333	92,614	72,354	18,834	6,909,862	970,905	12,496,334	1,396,465
	1958	60	2,039	138,194	119,466	151,688	35,524	6,134,534	721,115	15,521,013	1,553,343
Greenwood.....	1957	2,207	74,045	711,983	619,831	1,140,562	296,900	468,703	65,857	530,066	59,235
	1958	496	16,854	884,971	765,040	.....	.....	692,605	81,416	729,917	73,050
Kamloops.....	1957	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1958	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liard.....	1957	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1958	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lillooet.....	1957	145,289	4,874,446	30,360	26,431	.....	.....	.....	.....	.....	.....
	1958	149,347	5,074,811	31,596	27,314	.....	.....	.....	.....	.....	.....
Nanaimo.....	1957	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1958 <sup>2</sup>	1,564	53,145	19,523	16,877	1,480,797	348,788	.....	.....	.....	.....
Nelson.....	1957	118	3,959	127,667	111,143	32,909	8,567	24,488,582	3,440,891	79,563,010	8,891,166
	1958	105	3,568	151,680	131,124	.....	.....	31,368,216	3,687,334	77,707,063	7,776,923
New Westminster.....	1957	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1958	33	1,121	504	436	680,470	159,359	.....	.....	.....	.....
Nicola.....	1957	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1958	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Omineca.....	1957	1,131	37,945	795,172	692,253	44,868	11,680	3,767,228	529,333	2,434,551	272,061
	1958	273	9,277	178,855	154,617	17,605	4,123	534,394	62,818	963,780	96,455
Osoyoos.....	1957	2,367	79,413	184	160	.....	.....	.....	.....	.....	.....
	1958	8,762	297,733	4,370	3,778	.....	.....	.....	.....	.....	.....
Revelstoke.....	1957	2,210	74,145	275,617	239,944	43,699	11,375	3,909,848	549,373	4,263,885	476,489
	1958	1,136	38,601	141,017	121,906	.....	.....	1,813,785	213,210	1,722,268	172,365
Similkameen.....	1957	2,616	87,767	35,524	30,926	6,969,729	1,814,290	.....	.....	.....	.....
	1958	441	14,985	146	126	7,403	1,734	.....	.....	.....	.....
Skeena.....	1957	357	11,977	1,650,598	1,436,961	.....	.....	1,499,780	210,734	83,819	9,367
	1958	250	8,495	1,310,282	1,132,713	.....	.....	1,439,696	169,225	8,423	843
Slocan.....	1957	443	14,863	1,097,841	955,747	.....	.....	37,145,715	5,219,344	34,075,711	3,807,961
	1958	241	8,189	922,308	797,317	.....	.....	36,058,520	4,238,679	30,092,729	3,011,680
Trail Creek.....	1957	1,089	36,536	1,389	1,209	230,223	59,929	.....	.....	.....	.....
	1958	649	22,053	225	194	.....	.....	2,809	330	.....	.....
Vancouver.....	1957	10,005	335,668	94,614	82,368	14,448,884	3,761,189	2,005,673	281,817	17,228,467	1,925,281
	1958	2,585	87,838	18,406	15,912	4,016,258	940,567	85,842	10,091	3,008,766	301,117
Vernon.....	1957	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1958	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Victoria.....	1957	.....	.....	4,532	2,945	955,933	248,839	.....	.....	.....	.....
	1958	.....	.....	23,328	20,167	4,285,555	1,003,634	.....	.....	.....	.....
Not assigned <sup>1</sup> .....	1957	193	6,475	117,160	101,996	1,509,134	392,843	32,489,579	4,565,111	70,916,124	7,924,877
	1958	173	5,879	169,934	146,904	2,018,873	472,800	21,269,880	2,500,274	69,357,509	6,941,299
Totals.....	1957	222,506	7,465,076	8,129,971	7,077,708	29,318,494	7,631,897	281,608,346	39,568,086	449,448,607	50,225,861
	1958	194,354	6,604,149	7,040,416	6,086,299	12,858,649	2,964,529	294,573,159	34,827,075	432,002,780	43,234,839

<sup>1</sup> Gold, silver, copper, and some lead "not assigned" were recovered at the Tacoma smelter from dross shipped from the Trail smelter. The zinc and most of the lead were recovered at the Trail smelter by fuming current and reclaimed slag.

<sup>2</sup> See footnote 2 of Table VIIA.

TABLE VIII.—PRODUCTION, 1957 AND 1958, BY MINING DIVISIONS—MISCELLANEOUS METALS

Division	Year	Antimony <sup>1</sup>		Bismuth		Cadmium <sup>2</sup>		Indium		Iron Ore		Nickel		Tin		Tungsten (WO <sub>3</sub> )		Division Totals
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Atlin.....	1957	Lb.	\$	Lb.	\$	Lb.	\$	Oz.	\$	Tons	\$	Lb.	\$	Lb.	\$	Lb.	\$	\$
	1958					63,902	104,160											104,160
Fort Steele.....	1957													709,102	555,936			555,936
	1958					125	190							795,496	625,260			625,450
Golden.....	1957					12,227	19,930											19,930
	1958					54,483	82,814											82,814
Greenwood.....	1957					3,256	5,307											5,307
	1958					4,311	6,553											6,553
Lillooet.....	1957																	
	1958																	
Nanaimo.....	1957									357,342	2,200,637							2,200,637
	1958									630,271	4,193,442							4,193,442
Nelson.....	1957					469,116	783,424									1,921,483	5,240,479	6,015,573
	1958					476,881	724,859									690,976	1,884,209	2,609,068
New Westminster.....	1957																	
	1958											1,408,490	996,507					996,507
Omineca.....	1957					22,656	36,929											36,929
	1958					11,736	17,839											17,839
Revelstoke.....	1957					20,586	33,555											33,555
	1958																	
Similkameen.....	1957																	
	1958																	4260
Skene.....	1957					2,009	4,742											4,742
	1958																	
Slocan.....	1957					134,477	219,198											219,198
	1958					120,655	183,395											183,395
Vancouver.....	1957					29,479	48,051											48,051
	1958					13,015	19,783											19,783
Not assigned <sup>1 2 3</sup> .....	1957	1,360,731	577,344	145,634	314,569	1,181,387	1,925,661	384,360	693,770									3,511,344
	1958	858,633	284,208	154,034	308,068	743,902	1,130,731	75,434	117,677									1,840,684
Totals.....	1957	1,360,731	577,344	145,634	314,569	1,946,897	3,172,627	384,360	693,770	357,342	2,200,637			709,102	555,936	1,921,483	5,240,479	12,755,362
	1958	858,633	284,208	154,034	308,068	1,425,108	2,166,164	75,434	117,677	630,271	4,193,442	1,408,490	996,507	795,496	625,260	690,976	1,884,209	10,575,795

STATISTICS

<sup>1</sup> Antimony assigned to individual mining divisions is the reported content of concentrates exported to foreign smelters. Antimony "not assigned" is the antimony content of antimonial lead or of other antimony products recovered at the Trail smelter.

<sup>2</sup> Cadmium assigned to individual mining divisions is the reported content of customs shipments to the Trail smelter and to foreign smelters. Cadmium "not assigned" is the remainder of the reported estimated recovery at the Trail smelter from British Columbia concentrates.

<sup>3</sup> Bismuth and indium recovered at the Trail smelter are not assigned to mining divisions and may include some metal from sources outside British Columbia.

<sup>4</sup> Includes 4 ounces of platinum valued at \$260.

TABLE VIII.—PRODUCTION, 1957 AND 1958, BY MINING DIVISIONS—INDUSTRIAL MINERALS

Division	Year	Asbestos		Barite		Diatomite		Fluxes (Limestone and Quartz)		Granules (Quartz, Limestone, and Granite)		Gypsum and Products		Mica		Sulphur		Division Totals
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
		Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Lb.	\$	Tons	\$	\$
Cariboo.....	1957					120	2,400							180,000	1,200			3,600
	1958					27	540											540
Fort Steele.....	1957															36,401	842,580	842,580
	1958															35,845	663,861	663,861
Golden.....	1957			20,072	433,200							66,499	142,751					575,951
	1958			16,144	341,700							70,498	211,494					553,194
Greenwood.....	1957							23,126	23,126									23,126
	1958																	
Liard.....	1957	31,714	9,245,800 <sup>2</sup>															9,245,800
	1958	30,078	8,203,384 <sup>2</sup>															8,203,384
Nanaimo.....	1957							18,606	20,337									20,337
	1958							23,457	23,808									23,808
New Westminster.....	1957									10,495	129,419							129,419
	1958									11,623	143,945							143,945
Osoyoos.....	1957							95,701	398,741	6,130	81,125							479,866
	1958							67,178	287,824 <sup>3</sup>	11,051	140,385							428,209
Vancouver.....	1957									670	11,320					21,377	342,032	353,352
	1958															5,965	75,501	75,501
Not assigned.....	1957															168,772	1,687,720	1,687,720
	1958															166,490 <sup>4</sup>	1,671,039	1,671,039
Totals.....	1957	31,714	9,245,800	20,072	433,200	120	2,400	137,433	442,204	17,295	221,864	66,499	142,751	180,000	1,200	226,550	2,872,332	13,361,751
	1958	30,078	8,203,384	16,144	341,700	27	540	90,635	311,630	22,674	284,330	70,498	211,494			211,300	2,410,395	11,763,473

<sup>1</sup> Estimated.<sup>2</sup> Does not include value of containers.<sup>3</sup> Includes 32 tons of fluorspar, worth \$1,386.<sup>4</sup> Includes approximately 1,500 tons of elemental sulphur, worth \$20,813.



TABLE VIII.—PRODUCTION, 1957 AND 1958, BY MINING DIVISIONS—STRUCTURAL MATERIALS

Division	Year	Cement	Lime and Limestone	Building-stone	Rubble, Riprap, and Crushed Rock	Sand and Gravel	Brick (Common)	Face, Paving, and Sewer Brick	Fire-bricks, Blocks	Clays	Structural Tile (Hollow Blocks), Roof-tile, Floor-tile	Drain-tile and Sewer-pipe	Pottery (Glazed or Unglazed)	Other Clay Products	Division Totals	
		\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
Alberni.....	1957	.....	.....	.....	5,142	166,335	.....	.....	.....	.....	.....	.....	.....	.....	.....	171,477
	1958	.....	.....	.....	6,802	47,792	.....	.....	.....	.....	.....	.....	.....	.....	.....	54,594
Atlin.....	1957	.....	.....	.....	1,092	21,942	.....	.....	.....	.....	.....	.....	.....	.....	.....	23,034
	1958	.....	.....	.....	2,948	23,154	.....	.....	.....	.....	.....	.....	.....	.....	.....	26,102
Cariboo.....	1957	.....	.....	.....	720	395,613	.....	.....	.....	.....	.....	.....	.....	.....	.....	396,333
	1958	.....	.....	.....	165,326	370,769	.....	.....	.....	.....	.....	.....	.....	.....	.....	536,095
Clinton.....	1957	.....	.....	.....	.....	14,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	14,500
	1958	.....	.....	.....	.....	15,483	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,483
Fort Steele.....	1957	.....	.....	.....	437,348	157,525	.....	.....	.....	.....	.....	.....	.....	.....	.....	594,873
	1958	.....	.....	.....	28,155	125,615	.....	.....	.....	.....	.....	.....	.....	.....	.....	153,770
Golden.....	1957	.....	.....	.....	500	153,015	.....	.....	.....	.....	.....	.....	.....	.....	.....	153,515
	1958	.....	.....	.....	1,825	131,437	.....	.....	.....	.....	.....	.....	.....	.....	.....	133,262
Greenwood.....	1957	.....	.....	.....	7,100	5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	12,100
	1958	.....	.....	.....	7,400	5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	12,400
Kamloops.....	1957	.....	.....	.....	1,186,908	450,045	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,636,953
	1958	.....	.....	.....	822,714	382,439	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,205,153
Liard.....	1957	.....	.....	.....	2,166	239,814	.....	.....	.....	.....	.....	.....	.....	.....	.....	241,980
	1958	.....	.....	.....	85	206,089	.....	.....	.....	.....	.....	.....	.....	.....	.....	206,174
Lillooet.....	1957	.....	.....	.....	5,000	54,920	.....	.....	.....	.....	.....	.....	.....	.....	.....	59,920
	1958	.....	.....	.....	8,250	147,648	.....	.....	.....	.....	.....	.....	.....	.....	.....	155,898
Nanaimo.....	1957	.....	1,806,434	189,195	4,845	286,059	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,786,533
	1958	.....	849,702	.....	5,013	141,044	.....	.....	.....	.....	.....	.....	.....	.....	.....	995,759
Nelson.....	1957	.....	.....	.....	835	94,925	.....	.....	.....	.....	.....	.....	.....	.....	.....	95,760
	1958	.....	.....	.....	26,972	56,563	.....	.....	.....	.....	.....	.....	.....	.....	.....	83,535
New Westminster..	1957	.....	132,144	.....	2,366,125	2,630,953	14,581	309,307	595,003	29,495	154,769	637,084	35,000	28,920	.....	6,933,381
	1958	.....	109,667	.....	541,426	2,112,365	13,625	291,607	360,835	12,579	76,292	573,453	60,725	23,258	.....	4,175,832
Nicola.....	1957	.....	.....	.....	.....	20,523	.....	.....	.....	.....	.....	.....	.....	.....	.....	20,523
	1958	.....	.....	.....	3,000	59,670	.....	.....	.....	.....	.....	.....	.....	.....	.....	62,670
Omineca.....	1957	.....	.....	.....	150,484	497,584	.....	.....	.....	.....	.....	.....	.....	.....	.....	648,068
	1958	.....	.....	.....	162,367	374,925	.....	.....	.....	.....	.....	.....	.....	.....	.....	537,292
Osoyoos.....	1957	.....	.....	.....	10,000	1,370	.....	.....	.....	.....	.....	.....	.....	.....	.....	11,370
	1958	.....	.....	.....	.....	603	.....	.....	.....	.....	.....	.....	.....	.....	.....	603
Revelstoke.....	1957	.....	.....	.....	.....	54,185	.....	.....	.....	.....	.....	.....	.....	.....	.....	54,185
	1958	.....	.....	.....	23,395	55,362	.....	.....	.....	.....	.....	.....	.....	.....	.....	78,757
Similkameen.....	1957	.....	.....	.....	25,000	93,250	.....	.....	.....	.....	.....	.....	.....	.....	.....	118,250
	1958	.....	.....	.....	.....	82,950	.....	.....	.....	.....	.....	.....	.....	.....	.....	82,950
Skeena.....	1957	.....	44,400	.....	32,345	1,314,123	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,390,868
	1958	.....	25,900	.....	97,871	155,026	.....	.....	.....	.....	.....	.....	.....	.....	.....	278,797
Slocan.....	1957	.....	.....	.....	.....	58,574	.....	.....	.....	.....	.....	.....	.....	.....	.....	58,574
	1958	.....	.....	.....	.....	60,987	.....	.....	.....	.....	.....	.....	.....	.....	.....	60,987
Trail Creek.....	1957	.....	.....	1,650	12,000	119,158	.....	.....	.....	.....	.....	.....	.....	.....	.....	132,808
	1958	.....	.....	3,500	12,500	111,461	.....	.....	.....	.....	.....	.....	.....	.....	.....	127,461
Vancouver.....	1957	.....	.....	45,265	14,367	2,615,045	8,236	35,774	53,687	.....	.....	.....	.....	9,948	.....	2,782,322
	1958	1,560,000	.....	60,835	155,967	2,741,294	.....	52,526	35,006	.....	.....	.....	.....	9,158	.....	4,614,786
Vernon.....	1957	.....	11,600	.....	5,000	187,408	.....	.....	.....	.....	.....	.....	.....	.....	.....	192,406
	1958	.....	.....	.....	3,780	220,469	.....	.....	.....	.....	.....	.....	.....	.....	.....	224,249
Victoria.....	1957	7,078,108	.....	.....	3,791	871,410	1,528	.....	10,183	.....	45,447	60,527	12,612	.....	.....	8,097,206
	1958	5,195,619	12,550	.....	23,156	814,551	1,500	.....	9,844	.....	46,585	65,720	7,662	.....	.....	6,176,887
Totals.....	1957	7,078,108	1,494,578	236,110	4,272,768	10,503,274	24,345	345,081	658,873	29,495	200,216	697,611	47,612	38,868	.....	25,626,939
	1958	6,755,619	997,819	64,335	2,098,952	8,442,676	15,125	344,133	405,485	12,579	122,877	639,173	68,387	32,416	.....	19,999,576

STATISTICS

A 25

TABLE VIII A.—PRODUCTION TO DATE BY MINING DIVISIONS—SUMMARY

Division	Placer Gold <sup>1</sup>		Principal Lode Metals	Miscellaneous Metals	Industrial Minerals	Structural Materials	Fuels						Division Totals
	Quantity	Value					Coal		Petroleum <sup>2</sup>		Natural Gas		
							Quantity	Value	Quantity	Value	Quantity	Value	
	Oz.	\$	\$	\$	\$	\$	Tons	\$	Bbls.	\$	M.S.C.F.	\$	\$
Alberni.....	1,613	33,136	11,658,636		9,398	944,904							12,646,074
Atlin.....	729,122	17,197,198	37,482,188	387,814	20,325	214,122							55,301,647
Cariboo.....	2,594,321	53,705,745	37,641,149	23,730	163,220	3,478,688	290	1,100					95,013,632
Clinton.....	10,093	240,834	847,454	900	162,867	110,928							1,362,983
Fort Steele.....	20,445	465,922	1,437,747,113	8,839,536	3,381,482	4,183,581	53,415,431	216,499,468					1,671,117,102
Golden.....	469	11,268	35,514,559	364,687	2,856,256	1,308,563							40,055,333
Greenwood.....	5,056	115,136	115,626,046	54,946	2,323,897	739,841							118,859,866
Kamloops.....	27,526	602,789	3,044,836	65,678	6,528,308	7,051,096	14,995	59,765					17,352,472
Liard.....	50,082	1,245,186	6,312	79	32,267,682	1,149,209	89,837	606,290	1,002,340	2,071,418	72,744,107	4,326,924	41,673,100
Lillooet.....	91,723	1,888,849	113,312,084	48,350	5,129	1,080,616							116,335,028
Nanaimo.....	866	19,300	6,297,743	28,752,522	687,010	28,498,462	79,867,359	295,835,663					360,090,700
Nelson.....	3,575	88,705	139,021,684	37,293,219	64,126	2,576,972							179,044,706
New Westminster.....	11,545	241,845	288,150	1,084,231	445,245	55,095,306							57,154,777
Nicola.....	234	4,764	571,128		9,610	401,781	2,928,915	11,071,191					12,058,474
Omineca.....	52,439	1,388,539	17,276,774	15,329,133	11,460	2,604,253	411,757	2,535,143					39,145,302
Osoyoos.....	190	4,142	50,446,121	1,020	2,637,076	971,997	1,122	5,008					54,065,364
Revelstoke.....	7,574	164,251	10,775,731	159,853		1,170,423							12,270,258
Similkameen.....	12,136	287,876	120,020,611	128,661	18,558	2,175,342	4,652,979	19,532,872					142,163,920
Skeena.....	4,603	105,569	208,963,667	274,317	1,240,215	6,481,541							217,065,309
Slocan.....	364	9,342	165,686,544	1,265,274		715,555							167,676,715
Trail Creek.....	848	24,176	82,703,415	35,564		1,561,354							84,324,509
Vancouver.....	182	5,306	194,052,953	535,028	5,942,484	33,378,675							233,914,446
Vernon.....	2,651	70,769	188,310		3,978	2,197,004							2,460,061
Victoria.....	628	15,680	6,616,865	24,508	190,451	99,341,980							106,189,484
Not assigned <sup>3</sup> .....	1,577,661	18,176,703	99,061,823	45,806,261	29,258,318	11,264,251							203,567,356
Totals.....	5,205,946	96,113,030	2,894,851,896	140,475,311	88,227,095	268,696,444	141,382,685	546,146,500	1,002,340	2,071,418	72,744,107	4,326,924	4,040,908,618

<sup>1</sup> Quantity of placer gold is given in ounces of crude gold. The year of first recorded production for the major placer-producing mining divisions was: Atlin, 1898; Cariboo, 1858; Lillooet, 1874; Quesnel, 1858.

<sup>2</sup> Includes 582 barrels produced for test purposes in 1955, no value assigned.

<sup>3</sup> Re "not assigned," see footnotes under Tables VIII B and VIII C.

NOTE.—Full details for placer gold are given in this table. The columns headed "Principal Lode Metals," "Miscellaneous Metals," "Industrial Minerals," and "Structural Materials" give the total value only, details being set forth in Tables VIII B, VIII C, VIII D, and VIII E. The quantity of coal is gross output; see footnotes to Tables IX A, IX B, and IX C.

TABLE VIII B.—PRODUCTION TO DATE BY MINING DIVISIONS—PRINCIPAL LODE METALS

Division	Lode Gold		Silver		Copper		Lead <sup>1</sup>		Zinc <sup>1</sup>		Division Totals
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
	Oz.	\$	Oz.	\$	Lb.	\$	Lb.	\$	Lb.	\$	\$
Alberni.....	300,136	11,233,123	161,254	77,522	2,290,699	343,518	112,894	4,473			11,658,636
Atlin.....	344,163	12,125,578	3,375,330	2,893,940	24,777,597	8,160,266	23,765,211	3,437,907	91,067,749	10,864,497	37,482,188
Cariboo.....	1,043,637	37,561,963	117,771	74,523	2,352	920	24,560	3,724	505	19	37,641,149
Clinton.....	23,390	827,328	31,564	14,214	57,548	5,905	193	7			847,454
Fort Steele.....	4,239	115,267	194,306,280	108,484,179	28,592	6,193	10,815,325,736	757,945,950	7,734,969,871	570,895,524	1,437,747,113
Golden.....	165	4,710	2,761,673	1,998,139	779,693	253,709	196,227,874	18,116,430	202,060,413	15,141,571	35,514,559
Greenwood.....	1,136,115	24,473,744	31,120,844	18,305,985	442,394,706	70,810,683	14,019,289	1,043,830	14,707,236	991,804	115,626,046
Kamloops.....	47,868	1,608,328	304,512	181,984	6,411,583	1,179,668	538,097	45,030	438,023	29,826	3,044,836
Liard.....	114	4,120	540	446	56	22	10,102	1,724			6,312
Lillooet.....	3,231,133	112,832,497	793,402	476,996	400	41	62,513	2,548	15	2	113,312,084
Nanaimo.....	85,573	1,973,143	589,848	353,158	23,616,232	3,971,442					6,297,743
Nelson.....	1,328,892	41,555,120	7,765,745	4,607,993	14,798,370	1,682,270	233,592,849	28,304,889	501,982,548	62,871,412	139,021,684
New Westminster.....	4,449	113,528	13,884	6,616	708,637	166,406	28,425	1,119	12,755	481	288,150
Nicola.....	8,525	234,914	267,419	126,588	555,712	108,513	2,235,428	90,516	320,683	10,597	571,128
Omineca.....	25,038	772,610	9,518,667	7,558,863	6,750,202	1,545,334	27,697,350	3,516,230	31,357,063	3,883,737	17,276,774
Osoyoos.....	1,630,723	49,652,895	588,768	387,403	2,783,966	399,900	125,982	5,454	7,773	469	50,446,121
Revelstoke.....	36,742	1,068,988	4,104,635	2,763,861	153,740	51,037	36,250,885	3,843,129	25,087,535	3,048,716	10,775,731
Similkameen.....	183,456	6,308,351	4,218,739	2,581,651	601,110,859	111,113,285	382,544	13,360	72,275	3,964	120,020,611
Skeena.....	2,393,205	60,231,837	67,514,033	42,910,342	687,106,270	98,025,648	58,893,974	5,307,636	16,798,460	2,488,204	208,963,667
Slocan.....	15,435	443,239	68,876,641	43,832,242	229,696	43,512	804,037,434	63,767,246	611,014,309	57,600,305	165,686,544
Trail Creek.....	2,949,445	62,577,502	3,620,966	2,066,235	121,141,623	18,034,726	132,723	10,650	119,048	14,302	82,703,415
Vancouver.....	439,932	14,008,395	4,731,781	2,868,101	922,305,508	150,146,772	17,820,294	1,791,557	194,287,477	25,238,128	194,052,953
Vernon.....	5,223	176,048	12,823	8,084	654	100	24,914	2,932	10,816	1,146	188,310
Victoria.....	37,663	812,730	838,926	473,470	28,476,845	5,026,894	210,097	19,848	3,568,709	283,923	6,616,865
Not assigned <sup>2</sup> .....	55,204	1,069,683	4,508,001	3,095,511	42,824,194	8,578,355	321,622,907	22,953,075	831,606,894	63,365,199	99,061,823
Totals.....	15,330,465	441,785,641	410,144,046	246,148,046	2,929,305,734	479,655,119	12,553,142,365	910,229,264	10,259,489,937	816,733,826	2,894,851,896

<sup>1</sup> See footnote 3 to Table VI.

<sup>2</sup> Includes zinc and lead recovered at the Trail smelter from current and reclaimed slags and also metals recovered at the Tacoma smelter from dross shipped by the Trail smelter.

TABLE VIII.C.—PRODUCTION TO DATE BY MINING DIVISIONS—MISCELLANEOUS METALS

Division	Antimony		Bismuth		Cadmium		Chromite		Cobalt		Indium		Iron Ore		Magnesium		Manganese	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	Lb.	\$	Lb.	\$	Lb.	\$	Tons	\$	Lb.	\$	Oz.	\$	Tons	\$	Lb.	\$	Tons	\$
Atlin					233,875	387,454												
Cariboo																		
Clinton							126	900										
Fort Steele					2,543	5,345												
Golden	40,062	14,906			161,805	261,597									204,632	88,184		
Greenwood					14,584	23,551	670	31,395										
Kamloops													17,109	59,883				
Liard																		
Lillooet	13,466	4,321																
Nanaimo													4,565,426	28,752,522				
Nelson					1,975,206	3,275,144												
New Westminster																		
Omineca	104,489	15,217			127,417	213,533			1,730	420								
Osoyoos																		16 <sup>1</sup>
Revelstoke	9,394	3,455			88,092	150,711												
Similkameen																		
Skeena					123,258	253,577							1,200	6,000				
Slocan	31,865	8,133			722,700	1,248,981												541
Trail Creek													550	1,925				8,160
Vancouver					256,968	535,028												
Victoria																		1,167
Not assigned <sup>2 3 4</sup>	35,920,159	8,879,374	4,732,134	7,807,222	19,477,627	27,242,410					942,087	1,877,255						24,508
Totals	36,119,435	8,925,406	4,732,134	7,807,222	23,184,075	33,597,331	796	32,295	1,730	420	942,087	1,877,255	4,584,087	28,820,330	204,632	88,184	1,724	32,668

<sup>1</sup> Estimated manganese content of about 40 tons of ore shipped for testing purposes by Olalla Mines Ltd. in 1956.

<sup>2</sup> Antimony assigned to individual mining divisions is the reported content of concentrates exported to foreign smelters. Antimony "not assigned" is the antimony content of antimonic lead or of other antimony products recovered at the Trail smelter.

<sup>3</sup> Cadmium assigned to individual mining divisions is the reported content of custom shipments to the Trail smelter and to foreign smelters. Cadmium "not assigned" is the remainder of the reported estimated recovery at the Trail smelter from British Columbia concentrates.

<sup>4</sup> Bismuth and indium recovered at the Trail smelter are not assigned to mining divisions and may include some metal from sources outside British Columbia.

Year of first recorded production: Antimony, 1907; bismuth, 1929; chromite, 1918; indium, 1942; iron ore, 1885; magnesium, 1941; manganese, 1918.

TABLE VIIc.—PRODUCTION TO DATE BY MINING DIVISIONS—MISCELLANEOUS METALS—Continued

Division	Mercury		Molybdenite		Nickel		Palladium		Platinum		Selenium		Tin		Tungsten (WO <sub>3</sub> )		Division Totals
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
	Lb.	\$	Lb.	\$	Lb.	\$	Oz.	\$	Oz.	\$	Lb.	\$	Lb.	\$	Lb.	\$	\$
Atlin															273	360	387,814
Cariboo									59	2,299					27,698	21,431	23,730
Clinton																	900
Fort Steele													11,330,022	8,834,191			8,839,536
Golden																	364,687
Greenwood																	54,946
Kamloops	10,987	5,795															65,678
Liard									2	79							79
Lillooet	1,783	3,555	2,448	2,440					3	113					32,353	37,921	48,350
Nanaimo																	28,752,522
Nelson			25,058	18,378											13,774,219	33,999,697	37,293,219
New Westminster					1,689,943	1,084,231											1,084,231
Omineca	4,150,892	10,400,259	1,600	1,840					3	154					2,210,892	4,697,710	15,329,133
Osoyoos				1,020													1,020
Revelstoke															7,784	5,687	159,853
Similkameen									1,280	128,661							128,661
Skeena			13,022	13,020							731	1,389			366	331	274,317
Slocan																	1,265,274
Trail Creek							749	30,462	53	3,177							35,564
Vancouver																	535,028
Victoria																	24,508
Not assigned																	45,806,261
Totals	4,163,662	10,409,609	43,148	36,698	1,689,943	1,084,231	749	30,462	1,400	134,483	731	1,389	11,330,022	8,834,191	16,053,585	38,763,137	140,475,311

Year of first recorded production: Mercury, 1895; molybdenite, 1914; nickel, 1936; palladium, 1928; platinum, 1887; selenium, 1931; tin, 1941; tungsten, 1937.

TABLE VIII.—PRODUCTION TO DATE BY MINING DIVISIONS—INDUSTRIAL MINERALS

Division	Arsenious Oxide		Asbestos		Barite		Bentonite		Diatomite		Fluorspar		Flux (Quartz and Limestone)		Granules (Quartz, Limestone, and Granite)		Gypsum and Gypsite		Hydro-magnesite	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	Lb.	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$
Alberni																				
Atlin																			1,450	20,325
Cariboo									1,570	35,035					48	168				
Clinton																	983	6,676	803	7,211
Fort Steele					8	80											112,827	298,824		
Golden					125,415	1,718,406											371,840	1,136,584		
Greenwood											40,165	783,578	1,790,502	1,540,319						
Kamloops																	1,246,918	6,323,178		
Liard			111,055	32,267,682																
Lillooet																				
Nanaimo													640,647	687,010						
Nelson													7,601	8,174	2	51				
New Westminster															37,381	445,245				
Nicola																	2,297	9,610		
Omineca	16,997	340																		
Osoyoos	22,002,423	272,861																		
Similkameen								791	16,858											
Skeena														601,019	1,050,722					
Vancouver																	29,538	422,645		
Vernon																				
Victoria														50	760	9,702	159,471			
Totals	22,019,420	273,201	111,055	32,267,682	125,423	1,718,486	791	16,858	1,570	35,035	40,197	784,964	3,453,379	5,233,414	105,375	1,396,742	1,735,115	7,776,572	2,253	27,536

<sup>1</sup> Includes 30 tons of volcanic ash, worth \$300.

Year of first recorded production: Arsenious oxide, 1917; asbestos, 1952; barite, 1940; bentonite, 1926; diatomite, 1928; fluorspar, 1918; flux, 1911; granules, 1930; gypsum and gypsite, 1911; hydromagnesite, 1904.

TABLE VIII D.—PRODUCTION TO DATE BY MINING DIVISIONS—INDUSTRIAL MINERALS—Continued

Division	Iron Oxide and Ochre		Magnesium Sulphate		Mica		Natro-alunite		Perlite		Phosphate Rock		Sodium Carbonate		Sulphur		Talc		Division Totals
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
	Tons	\$	Tons	\$	Lb.	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	\$
Alberni							522	9,398											9,398
Atlin																			20,325
Cariboo					9,643,800	128,017													163,220 <sup>1</sup>
Clinton			1,923	39,085									9,524	109,895					162,867
Fort Steele												3,842	16,894			168,236 <sup>2</sup>	3,065,684		3,381,482
Golden	27	920															5	346	2,856,256
Greenwood																			2,323,897
Kamloops			8,742	193,967	424,700	2,075							968	9,088					6,528,308
Liard																			32,267,682
Lillooet																	296	5,129	5,129
Nanaimo																			687,010
Nelson	7,292	55,901																	64,126
New Westminster																			445,245
Nicola																			9,610
Omineca									1,112	11,120									11,460
Osoyoos			3,229	21,300	1,588,800	25,938													2,637,076
Similkameen																			18,558
Skeena					634,250	10,815										41,624	178,678		1,240,215
Vancouver	10,669	97,389														593,516	5,422,450		5,942,484
Vernon					160,500	3,978													3,978
Victoria	120	840																1,504	29,380
Not assigned																2,940,188	29,258,318		29,258,318
Totals	18,108	155,050	13,894	254,352	12,452,050	170,823	522	9,398	1,112	11,120	3,842	16,894	10,492	118,983	3,743,564	37,925,130	1,805	34,855	88,227,095

<sup>1</sup> Includes 30 tons of volcanic ash, worth \$300.

<sup>2</sup> Recovery in 1953 and subsequent years.

Year of first recorded production: Iron oxide and ochre, 1918; magnesium sulphate, 1915; mica, 1932; natro-alunite, 1912; perlite, 1953; phosphate rock, 1927; sodium carbonate, 1921; sulphur, 1916; talc, 1916.

TABLE VIII.—PRODUCTION TO DATE BY MINING DIVISIONS—STRUCTURAL MATERIALS

Division	Cement	Lime and Limestone	Building-stone	Rubble, Riprap, and Crushed Rock	Sand and Gravel	Brick (Common)	Face, Paving, and Sewer Brick	Fire-bricks, Blocks	Clays	Structural Tile (Hollow Blocks), Roof-tile, Floor-tile	Drain-tile and Sewer-pipe	Pottery (Glazed or Unglazed)	Other Clay Products	Division Totals
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Alberni				51,867	893,037									944,904
Atlin		1,108		68,391	144,623									214,122
Cariboo		7,500		487,575	2,952,536	1,193	184	4,651	15,807				9,242	3,478,688
Clinton				1,606	109,322									110,928
Fort Steele		5,350	71,941	924,822	3,173,668	7,800								4,183,581
Golden		1,000	24,000	86,506	1,197,057									1,308,563
Greenwood		102,442	30,500	143,540	342,076	114,361			6,922					739,841
Kamloops		12,000	18,000	3,616,910	3,331,807	72,379								7,051,096
Liard				26,310	1,122,899									1,149,209
Lillooet		100	2,000	289,361	789,155									1,080,616
Nanaimo		22,213,273	3,184,532	62,740	1,858,925	1,104,295	38,939		35,758					28,498,462
Nelson		34,543	356,679	283,666	1,880,110	19,110	2,864							2,576,972
New Westminster		883,104		7,745,088	18,374,536	1,416,337	3,982,450	9,841,559	795,363	2,545,578	9,056,189	197,233	257,869	55,095,306
Nicola			8,000	77,061	316,720									401,781
Omineca		3,077		543,215	2,052,687	5,274								2,604,253
Osoyoos		32,070	14,850	145,557	779,520									971,997
Revelstoke		1,000	5,575	313,773	850,075									1,170,423
Similkameen	10,500	11,571	24,000	509,044	1,606,872				1,363				11,992	2,175,342
Skeena		1,302,244	144,000	1,108,241	3,913,807				4,925				8,324	6,481,541
Slocan		1,000	115,143	70,014	529,398									715,555
Trail Creek		28,000	50,050	202,042	1,281,262									1,561,354
Vancouver	1,895,718	40,885	3,756,726	7,549,564	19,146,612	132,194	175,636	520,702	17,633			54,701	88,304	33,378,675
Vernon		46,499	81,052	178,389	1,729,810	131,467	6,202	1,011	5	18,224	4,325		20	2,197,004
Victoria	84,173,064	752,747		439,192	10,463,400	1,806,487	23,052	28,833		691,995	824,502	127,705	11,003	99,341,980
Not assigned		315,498	505,018	282,455										11,264,251 <sup>1</sup>
Totals	86,079,282	25,795,011	8,392,066	25,206,929	78,839,914	4,810,897	4,229,327	10,396,756	877,776	3,255,797	9,885,016	379,639	386,754	268,696,444 <sup>2</sup>

<sup>1</sup> Structural materials that so far cannot be assigned to mining divisions include the three items shown, an amount of \$3,150,828 for clay products, and a further \$7,010,452 that cannot be allotted to a particular class of material.

<sup>2</sup> Includes items noted in footnote 1.



TABLE IXA.—QUANTITY (GROSS<sup>1</sup>) AND VALUE OF COAL PER YEAR TO DATE

Year	Tons (2,000 Lb.)	Value	Year	Tons (2,000 Lb.)	Value
1836-59	41,871	\$149,548	1910	3,515,944	\$11,108,335
1860	15,956	56,988	1911	2,573,444	8,071,747
1861	15,427	55,096	1912	3,388,795	10,786,812
1862	20,292	72,472	1913	2,879,251	9,197,460
1863	23,906	85,380	1914	2,426,399	7,745,847
1864	32,068	115,528	1915	2,209,290	7,114,178
1865	36,757	131,276	1916	2,783,849	8,900,675
1866	28,129	100,460	1917	2,686,561	8,484,343
1867	34,988	124,956	1918	2,888,170	12,833,994
1868	49,286	176,020	1919	2,698,022	11,975,671
1869	40,098	143,208	1920	3,020,387	13,450,169
1870	33,424	119,372	1921	2,877,995	12,836,013
1871	55,458 <sup>2</sup>	164,612	1922	2,890,625	12,880,060
1872	55,458 <sup>2</sup>	164,612	1923	2,848,146	12,678,548
1873	55,459 <sup>2</sup>	164,612	1924	2,226,037	9,911,935
1874	91,334	244,641	1925	2,737,607	12,168,905
1875	123,362	330,435	1926	2,609,640	11,650,180
1876	155,895	417,576	1927	2,748,286	12,269,135
1877	172,540	462,156	1928	2,829,906	12,633,510
1878	191,348	522,538	1929	2,521,402	11,256,260
1879	270,257	723,903	1930	2,113,586	9,435,650
1880	299,708	802,785	1931	1,912,501	7,684,155
1881	255,760	685,171	1932	1,719,172	6,523,644
1882	315,997	846,417	1933	1,416,516	5,375,171
1883	238,895	639,897	1934	1,508,741	5,725,133
1884	441,358	1,182,210	1935	1,330,524	5,048,864
1885	409,468	1,096,788	1936	1,508,048	5,722,502
1886	365,832	979,908	1937	1,618,051	6,139,920
1887	462,964	1,240,080	1938	1,466,559	5,565,069
1888	548,017	1,467,903	1939	1,655,217	6,280,956
1889	649,411	1,739,490	1940	1,867,966	7,088,265
1890	759,518	2,034,420	1941	2,018,635	7,660,000
1891	1,152,590	3,087,291	1942	2,170,737	8,237,172
1892	925,495	2,479,005	1943	2,040,253	7,742,030
1893	1,095,690	2,934,882	1944	2,165,676	8,217,966
1894	1,134,509	3,038,859	1945	1,700,914	6,454,360
1895	1,052,412	2,824,687	1946	1,639,277	6,732,470
1896	1,002,268	2,693,961	1947	1,923,573	8,680,440
1897	999,372	2,734,522	1948	1,809,018	9,765,395
1898	1,263,272	3,582,595	1949	1,917,296	10,549,924
1899	1,435,314	4,126,803	1950	1,756,667	10,119,303
1900	1,781,000	4,744,530	1951	1,824,384	10,169,617
1901	1,894,544	5,016,398	1952	1,650,619	9,729,739
1902	1,838,621	4,832,257	1953	1,576,105	9,528,279
1903	1,624,742	4,332,297	1954	1,447,608	9,154,544
1904	1,887,981	4,953,024	1955	1,484,066	8,986,501
1905	2,044,931	5,511,861	1956	1,589,398	9,346,518
1906	2,126,965	5,548,044	1957	1,221,766	7,340,339
1907	2,485,961	7,637,713	1958	882,962	5,937,860
1908	2,362,514	7,356,866			
1909	2,688,672	8,574,884			
			Totals	141,382,685	\$546,146,500

TABLE IXB.—COAL PRODUCTION (GROSS<sup>1</sup>) BY DISTRICTS AND MINING DIVISIONS

District and Mining Division	Total to Date			1957		1958	
	Period	Quantity	Value	Quantity	Value	Quantity	Value
<i>Vancouver Island District</i>		Tons	\$	Tons	\$	Tons	\$
Nanaimo Mining Division	1836-1958	79,867,359	295,835,663	200,205	1,849,306	182,304	1,615,490
<i>Nicola-Princeton District</i>							
Kamloops Mining Division	1893-1945	14,995	59,765				
Nicola Mining Division	1907-1958	2,928,915	11,071,191	1,081	11,615	543	5,919
Osoyoos Mining Division	1926-1927	1,122	5,008				
Similkameen Mining Division	1909-1958	4,652,979	19,532,872	17,696	92,748	146	1,122
District totals	1893-1958	7,598,011	30,668,836	18,777	104,363	689	7,041
<i>Northern District</i>							
Cariboo Mining Division	1942-1944	290	1,100				
Liard Mining Division	1923-1958	89,837	606,290	3,158	28,421	3,094	28,738
Omineca Mining Division	1918-1958	411,757	2,535,143	4,991	47,414	5,233	44,972
District totals	1918-1958	501,884	3,142,533	8,149	75,835	8,327	73,710
<i>East Kootenay District</i>							
Fort Steele Mining Division	1898-1958	53,415,431	216,499,468	994,635	5,310,835	691,642	4,241,619
Provincial totals	1836-1958	141,382,685	546,146,500	1,221,766	7,340,339	882,962	5,937,860

<sup>1</sup> Gross mine output, including washery loss and coal used in making coke (see Table X and discussion under "Fuel," page A 12).

<sup>2</sup> A combined total for 1871, 1872, and 1873 has previously been noted in Annual Reports and the above breakdown is estimated.

TABLE IXc.—QUANTITY<sup>1</sup> AND VALUE OF COAL SOLD AND USED,<sup>2</sup> 1948-58

Year	District and Mining Division	Total Sales <sup>2*</sup>	Used under Companies' Boilers <sup>2†</sup>	Used in Making Coke <sup>2‡</sup>	Total Sold and Used <sup>2</sup>		District Totals, 1958	
		Tons	Tons	Tons	Tons	\$	Tons	\$
1948	Vancouver Island						154,296	1,615,490
1949	Nanaimo	365,328	2,801	.....	368,129	3,219,868		
1950	"	451,074	3,925	.....	454,999	4,055,572		
1951	"	472,690	4,329	.....	477,019	4,060,337		
1952	"	391,687	3,425	.....	395,112	3,486,615		
1953	"	267,346	2,988	.....	270,332	2,449,208		
1954	"	204,931	1,798	.....	206,729	2,059,828		
1955	"	181,534	536	.....	182,070	2,029,099		
1956	"	173,861	465	.....	174,326	1,769,682		
1957	"	172,140	389	.....	172,529	1,629,168		
1958	"	163,574	439	.....	164,013	1,849,306		
		<b>153,892</b>	<b>404</b>		<b>154,296</b>	<b>1,615,490</b>		
	Nicola-Princeton						689	7,041
1948	Nicola	1,777	.....	.....	1,777	16,931		
1949	"	1,672	.....	.....	1,672	14,809		
1950	"	1,125	.....	.....	1,125	9,926		
1951	"	899	.....	.....	899	8,640		
1952	"	1,139	.....	.....	1,139	11,493		
1953	"	1,040	.....	.....	1,040	10,400		
1954	"	1,256	.....	.....	1,256	12,769		
1955	"	1,259	.....	.....	1,259	12,604		
1956	"	1,170	.....	.....	1,170	12,092		
1957	"	1,081	.....	.....	1,081	11,615		
1958	"	<b>543</b>	.....	.....	<b>543</b>	<b>5,919</b>		
1948	Similkameen	49,859	.....	.....	49,859	299,337		
1949	"	49,906	.....	.....	49,906	298,293		
1950	"	16,784	.....	.....	16,784	87,453		
1951	"	3,941	.....	.....	3,941	28,094		
1952	"	6,306	.....	.....	6,306	48,760		
1953	"	7,047	.....	.....	7,047	51,012		
1954	"	29,713	.....	.....	29,713	138,080		
1955	"	73,475	.....	.....	73,475	379,511		
1956	"	72,102	.....	.....	72,102	366,820		
1957	"	17,696	.....	.....	17,696	92,748		
1958	"	<b>146</b>	.....	.....	<b>146</b>	<b>1,122</b>		
1948	Northern Liard	8,570	60	.....	8,630	52,721	7,871	73,710
1949	"	12,364	.....	.....	12,364	76,697		
1950	"	12,250	.....	.....	12,250	82,258		
1951	"	3,199	.....	.....	3,199	26,095		
1952	"	3,854	.....	.....	3,854	42,606		
1953	"	4,815	20	.....	4,835	50,895		
1954	"	4,359	.....	.....	4,359	33,079		
1955	"	3,650	.....	.....	3,650	32,850		
1956	"	4,642	.....	.....	4,642	38,211		
1957	"	2,758	.....	.....	2,758	28,421		
1958	"	<b>3,194</b>	.....	.....	<b>3,194</b>	<b>28,738</b>		
1948	Omineca	10,920	66	.....	10,986	85,981		
1949	"	11,468	63	.....	11,531	92,865		
1950	"	13,037	62	.....	13,099	104,790		
1951	"	27,904	.....	.....	27,904	206,799		
1952	"	37,270	.....	.....	37,270	285,732		
1953	"	42,079	.....	.....	42,079	324,986		
1954	"	36,572	.....	.....	36,572	292,862		
1955	"	30,915	.....	.....	30,915	227,010		
1956	"	8,553	.....	.....	8,553	71,234		
1957	"	4,991	.....	.....	4,991	47,414		
1958	"	<b>4,677</b>	.....	.....	<b>4,677</b>	<b>44,972</b>		
1948	East Kootenay						633,557	4,241,619
1949	Fort Steele	990,530	20,227	154,342	1,165,099	6,092,157		
1950	"	842,979	19,025	228,792	1,090,796	6,011,688		
1951	"	825,315	15,196	213,218	1,053,729	5,774,509		
1952	"	889,669	15,977	236,871	1,142,517	6,413,374		
1953	"	822,071	15,813	245,528	1,083,412	6,591,942		
1954	"	878,865	12,729	230,814	1,122,408	7,031,158		
1955	"	820,081	15,310	218,923	1,054,314	6,648,655		
1956	"	803,125	16,560	230,464	1,050,149	6,564,544		
1957	"	890,100	19,518	248,595	1,158,213	7,228,993		
1958	"	677,534	17,850	199,754	895,138	5,310,835		
		<b>401,875</b>	<b>7,274</b>	<b>224,408</b>	<b>633,557</b>	<b>4,241,619</b>		
1948	Provincial totals	1,426,984	23,154	154,342	1,604,480	9,785,395		
1949	"	1,369,463	23,013	228,792	1,621,268	10,549,924		
1950	"	1,341,201	19,587	213,218	1,574,006	10,119,303		
1951	"	1,317,299	19,402	236,871	1,573,572	10,169,617		
1952	"	1,137,986	18,799	245,528	1,402,313	9,729,739		
1953	"	1,138,777	14,547	230,814	1,384,138	9,528,279		
1954	"	1,073,515	15,846	218,923	1,308,284	9,154,544		
1955	"	1,085,385	17,025	230,464	1,332,874	8,986,501		
1956	"	1,148,707	19,907	248,595	1,417,209	9,346,518		
1957	"	867,634	18,269	199,754	1,085,657	7,340,339		
1958	"	<b>564,327</b>	<b>7,678</b>	<b>224,408</b>	<b>796,413</b>	<b>5,937,860</b>	<b>796,413</b>	<b>5,937,860</b>

<sup>1</sup> For differences between gross mine output and coal sold refer to table "Production and Distribution by Collieries and by Districts" in section headed "Coal" or "Coal-mining" in Annual Reports of the Minister of Mines.

<sup>2</sup> The totals "sold and used" include:—

\* Sales to retail and wholesale dealers, industrial users, and company employees.

† Coal used in company boilers, including steam locomotives.

‡ Coal used in making coke.

See also discussion under "Fuel," page A 12.

TABLE X.—COKE AND BY-PRODUCTS PRODUCTION FOR YEARS 1895 TO 1925 AND 1926 TO 1958

Year	Coal Used in Making Coke		Coke Made in Bee-hive Ovens		Coke Made in By-product Ovens		Coke Made in Gas Plants		Total Coke Made		Gas Sold and Used	Tar Produced	Other By-products <sup>1</sup>	Total Production Value of Coke Industry
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value				
1895-1925	Tons	\$	Tons	\$	Tons	\$	Tons	\$	Tons	\$	\$	\$	\$	\$
1895-1925	7,955,795	25,673,600	4,920,457	25,673,600	42,209	244,469	42,468	221,600	4,920,457	25,673,600	1,009,613	50,035	45,772	25,673,600
1926	299,839	1,338,565	105,227	795,841	35,900	327,215	39,464	178,682	189,904	1,261,910	1,009,613	50,035	45,772	2,367,330
1927	269,482	1,290,760	95,281	595,504	32,322	263,781	41,711	187,882	170,645	1,101,401	1,222,379	44,402	18,080	2,386,262
1928	210,207	940,668	68,734	429,590	33,339	308,867	46,573	214,732	142,767	881,253	1,313,407	45,313	14,036	2,254,009
1929	226,363	950,243	75,426	574,279	31,904	298,004	45,751	232,917	155,338	1,097,878	1,461,445	61,084	39,203	2,659,610
1930	225,325	1,002,684	73,708	558,801	27,717	236,537	41,836	210,470	151,363	1,089,722	1,547,092	65,770	11,935	2,714,519
1931	211,334	924,279	73,248	548,550	25,436	217,221	44,645	237,174	142,801	995,557	1,541,454	66,506	32,603	2,636,120
1932	151,750	710,432	33,090	247,615	24,263	213,750	34,156	214,454	103,171	702,010	1,589,656	54,771	14,109	2,360,546
1933	107,400	554,152	6,097	44,813	23,512	213,653	51,184	198,217	64,516	473,017	1,473,433	45,610	3,666	1,995,726
1934	141,384	571,167	24,840	154,105	14,911	109,684	46,111	160,694	99,536	565,975	1,439,287	43,939	4,756	2,053,957
1935	127,776	494,492	27,066	160,565	7,196	37,015	48,859	138,787	88,088	430,943	1,430,057	44,876	3,081	1,908,957
1936	125,810	436,595	34,009	191,843	29,124	151,931	48,859	138,787	82,868	330,630	1,422,783	38,872	---	1,792,285
1937	166,124	570,250	48,393	277,726	86,656	467,440	59,141	330,821	48,859	330,630	1,746,047	46,698	---	2,401,292
1938	176,877	623,649	54,602	315,294	55,395	325,435	58,643	345,790	58,643	345,790	1,770,839	44,324	---	2,476,247
1939	171,242	569,945	50,153	286,491	55,395	325,435	55,395	325,435	112,744	648,941	1,768,977	44,108	---	2,462,026
1940	184,160	577,706	37,845	220,211	60,726	303,421	60,726	303,421	127,695	675,563	1,810,083	54,379	3,060	2,543,085
1941	235,809	717,584	64,707	392,473	86,656	467,440	8,378	43,758	159,741	903,671	1,925,270	63,569	1,716	2,894,226
1942	255,862	866,795	66,824	439,464	96,428	608,521	6,528	54,307	169,780	1,102,292	2,165,888	86,113	22,028	3,376,321
1943	260,334	983,910	42,766	291,843	43,895	274,402	93,714	647,482	180,375	1,213,727	2,453,592	96,249	18,321	3,781,889
1944	212,883	1,439,891	36,966	301,201	47,401	347,245	88,430	565,393	172,797	1,213,839	2,562,610	56,476	19,046	3,851,971
1945	230,868	1,211,584	13,464	117,369	59,098	434,876	91,682	577,479	164,244	1,129,724	2,721,690	83,828	20,756	3,955,998
1946	251,954	1,441,415	20,542	178,556	53,525	423,025	101,094	648,297	175,161	1,249,878	3,079,009	88,947	53,097	4,470,931
1947	284,049	1,682,602	44,517	427,330	59,638	531,114	91,755	579,635	195,910	1,538,079	3,390,713	124,885	25,780	5,079,457
1948	235,297	1,440,415	47,461	559,735	57,112	630,390	57,678	455,096	162,251	1,645,221	4,520,886	153,130	19,489	6,338,726
1949	323,899	1,979,138	66,407	690,045	89,268	1,018,288	67,449	496,933	223,124	2,205,266	4,148,124	194,728	27,406	6,575,524
1950	333,955	2,027,470	23,703	269,728	127,477	997,200	92,704	686,871	243,884	1,953,799	4,298,161	277,138	27,944	6,557,042
1951	332,416	1,949,117	32,598	387,796	138,051	1,552,764	72,215	571,161	242,864	2,511,721	4,263,754	277,786	22,132	7,075,393
1952	323,922	1,972,918	35,110	440,756	142,156	1,729,924	64,906	525,384	242,172	2,696,064	4,625,747	252,070	25,639	7,599,520
1953	310,431	2,005,551	---	---	177,790	2,090,147	60,407	525,411	238,197	2,615,558	4,857,116	238,771	21,046	7,732,491
1954	302,052	2,052,641	---	---	168,982	2,032,902	67,108	566,660	236,090	2,599,562	5,113,334	226,824	20,586	7,960,306
1955	314,994	2,122,303	---	---	177,031	2,180,516	70,387	594,482	247,418	2,774,998	5,407,842	292,984	18,369	8,494,193
1956	328,805	2,277,402	---	---	180,263	2,270,167	78,185	738,292	258,448	3,008,459	5,145,851	287,437	20,961	8,462,708
1957	199,654	1,284,833	---	---	153,493	2,005,570	---	---	153,493	2,005,570	14,600	121,849	---	2,142,019
1958	224,158	1,420,328	---	---	173,920	2,253,102	---	---	173,920	2,253,102	14,600	97,803	---	2,365,505
Totals	15,712,210	64,105,084	6,223,241	35,571,124	2,360,017	24,469,720	1,829,283	11,777,717	10,411,638	71,818,561	83,255,339	3,771,274	554,617	159,399,791

<sup>1</sup> "Other by-products" total includes ammonium sulphate, \$52,492; ammonia liquor, \$103,850; light oils, \$16,571; motor fuel, \$7,009; naphthalene, \$4,077; creosote, \$34; benzol (thinning), \$312; solvent naphtha, \$644; cinders, \$344,682; pitch, \$5,131; sulphuric acid, \$6,658; tar-paint, \$2,330; and miscellaneous, \$10,827.

STATISTICS

A 35

TABLE XI.—DIVIDENDS PAID BY MINING COMPANIES, 1897-1958

***Dividends Paid during 1957 and 1958***

	1957	1958
Bralorne Mines Ltd .....	\$374,100	\$374,100
Canadian Collieries Resources Ltd. ....	176,666	
Cassiar Asbestos Corporation Ltd. ....	-----	760,000
Consolidated Mining and Smelting Co. of Canada, Ltd. ....	22,113,425	13,104,257
Crow's Nest Pass Coal Co. Ltd .....	372,708	372,708
Highland-Bell Ltd. ....	78,293	78,293
Pioneer Gold Mines of B. C. Ltd. ....	218,968	-----
Reeves MacDonald Mines Ltd. ....	292,250	292,250
Others .....	621,010	14,515
<b>Totals .....</b>	<b>\$24,247,420</b>	<b>\$14,996,123</b>

***Dividends Paid Yearly, 1917 to 1958, Inclusive***

Year	Amount Paid	Year	Amount Paid
1917.....	\$3,269,494	1939.....	\$11,865,698
1918.....	2,704,469	1940.....	14,595,530
1919.....	2,494,283	1941.....	16,598,110
1920.....	1,870,296	1942.....	13,627,104
1921.....	736,629	1943.....	11,860,159
1922.....	3,174,756	1944.....	11,367,732
1923.....	2,983,570	1945.....	10,487,395
1924.....	2,977,276	1946.....	15,566,047
1925.....	5,853,419	1947.....	27,940,213
1926.....	8,011,137	1948.....	37,672,319
1927.....	8,816,681	1949.....	33,651,096
1928.....	9,572,536	1950.....	34,399,330
1929.....	11,263,118	1951.....	40,921,238
1930.....	10,543,500	1952.....	32,603,956
1931.....	4,650,857	1953.....	22,323,089
1932.....	2,786,958	1954.....	25,368,262
1933.....	2,471,735	1955.....	35,071,583
1934.....	4,745,905	1956.....	36,262,682
1935.....	7,386,070	1957.....	24,247,420
1936.....	10,513,705	1958.....	14,996,123
1937.....	15,085,293		
1938.....	12,068,875	<b>Total.....</b>	<b>\$605,405,648</b>

TABLE XI.—DIVIDENDS PAID BY MINING COMPANIES, 1897-1958—Continued

Lode-gold Mines<sup>1</sup>

Company or Mine	Locality	Class	Amount Paid
Arlington	Erie	Gold	\$94,872
Athabasca	Nelson	Gold	25,000
Bayonne	Tye Siding	Gold	25,000
Bralorne Mines Ltd.	Bridge River	Gold	17,760,125
Belmont-Surf Inlet	Princess Royal Island	Gold	1,437,500
Cariboo Gold Quartz Mining Co. Ltd.	Wells	Gold	1,679,976
Cariboo-McKinney Con. M. & M. Co.	Camp McKinney	Gold	565,588
Canadian Pacific Exploration (Porto Rico)	Nelson	Gold	37,500
Centre Star	Rossland	Gold-copper	472,255
Fairview Amalgamated	Oliver	Gold	5,254
Fern Gold Mining & Milling Co. Ltd.	Nelson	Gold	9,375
Gold Belt Mining Co. Ltd.	Sheep Creek	Gold	668,595 <sup>2</sup>
Goodenough (leasers)	Ymir	Gold	13,731
Hedley Mascot Gold Mines Ltd.	Hedley	Gold	1,290,553
Island Mountain Mines Ltd.	Wells	Gold	2,491,236 <sup>2</sup>
I.X.L.	Rossland	Gold	134,025
Jewel Denero	Greenwood	Gold	11,751
Kelowna Exploration Co. Ltd. (Nickel Plate)	Hedley	Gold	2,040,000
Kelowna Mines Hedley Ltd.	Hedley	Gold	780,000 <sup>3</sup>
Kootenay Belle Gold Mines Ltd.	Sheep Creek	Gold	357,856
Le Roi Mining Co.	Rossland	Gold-copper	1,475,000
Le Roi No. 2 Ltd.	Rossland	Gold-copper	1,574,640
Lorne (later Bralorne)	Bridge River	Gold	20,450
Motherlode	Sheep Creek	Gold	163,500
Mount Zeballos Gold Mines Ltd.	Zeballos	Gold	165,000
Nickel Plate (Hedley Gold Mining Co. Ltd.)	Hedley	Gold	3,423,191
Pioneer Gold Mines of B.C. Ltd.	Bridge River	Gold	10,048,914
Poorman	Nelson	Gold	25,000
Premier Gold Mining Co. Ltd.	Premier	Gold	18,858,075 <sup>4</sup>
Privateer Minc Ltd.	Zeballos	Gold	1,914,183
Queen (prior to Sheep Creek Gold Mines Ltd.)	Sheep Creek	Gold	98,674
Relief Arlington Mines Ltd. (Second Relief)	Erie	Gold	308,000 <sup>2</sup>
Reno Gold Mines Ltd.	Sheep Creek	Gold	1,433,640 <sup>2</sup>
Sheep Creek Gold Mines Ltd. <sup>5</sup>	Sheep Creek	Gold	3,609,375 <sup>6</sup>
Silbak Premier Mines Ltd.	Premier	Gold	2,425,000 <sup>4</sup>
Spud Valley Gold Mines Ltd.	Zeballos	Gold	168,000
Sunset No. 2	Rossland	Gold-copper	115,007
Surf Inlet Consolidated Gold Mines Ltd.	Surf Inlet	Gold	120,279
War Eagle	Rossland	Gold-copper	1,245,250
Ymir Gold	Ymir	Gold	300,000
Ymir Yankee Girl	Ymir	Gold	415,002 <sup>2</sup>
Miscellaneous mines		Gold	108,623
Total, lode-gold mines			\$77,674,997

<sup>1</sup> The gold-copper properties of Rossland are included in this table.<sup>2</sup> Includes "return of capital" and "liquidating" payments.<sup>3</sup> Former Kelowna Exploration Company Limited; changed in January, 1951.<sup>4</sup> Up to and including 1936, dividends paid by Premier Gold Mining Company Limited were derived from operations of the company in British Columbia. Subsequent dividends paid by Premier Gold Mining Company Limited have been derived from the operations of subsidiary companies in British Columbia and elsewhere and are not included in the figure given. In 1936, Silbak Premier, a subsidiary of Premier Gold Mining Company, took over the former gold operations of that company in British Columbia. Dividends paid by Silbak Premier are given above.<sup>5</sup> In several years, preceding 1953, company revenue has included profits from operations of the Lucky Jim zinc-lead mine.<sup>6</sup> Since March, 1956, company name is Sheep Creek Mines Ltd.

TABLE XL-DIVIDENDS PAID BY MINING COMPANIES, 1897-1958—Continued

## Silver-Lead-Zinc Mines

Company or Mine	Locality	Class	Amount Paid
Antoine	Rambler	Silver-lead-zinc	\$10,000
Base Metals Mining Corporation Ltd. (Monarch and Kicking Horse)	Field	Silver lead-zinc	586,143 <sup>1</sup>
Beaverdell-Wellington	Beaverdell	Silver lead-zinc	97,200
Beaver Silver Mines Ltd.	Greenwood	Silver lead-zinc	48,000
Bell	Beaverdell	Silver lead-zinc	388,297
Bosun (Rosebery-Surprise)	New Denver	Silver lead-zinc	25,000
Canadian Exploration Ltd.	Salmo	Silver lead-zinc	11,175,400
Capella	New Denver	Silver lead-zinc	5,500
Consolidated Mining and Smelting Co. of Canada, Ltd.	Trail	Silver lead-zinc	468,796,379 <sup>2</sup>
Couvragee	Field	Silver lead-zinc	5,203
Duthie Mines Ltd.	Smithers	Silver lead-zinc	50,000
Florence Silver	Ainsworth	Silver lead-zinc	35,393
Giant Mascot Mines Ltd.	Spillimacheen	Silver lead-zinc	179,263
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	1,554,611
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	213,000
Lone Bachelor	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	70,500
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	497,901
No. One	Sandon	Silver lead-zinc	6,754
Ottawa	Slocan City	Silver lead-zinc	110,429
Payne	Sandon	Silver lead-zinc	1,438,000
Providence	Greenwood	Silver lead-zinc	142,238 <sup>3</sup>
Queen Bess	Alamo	Silver lead-zinc	25,000
Rambler-Cariboo	Rambler	Silver lead-zinc	467,250
Reeves MacDonald Mines Ltd.	Remac	Silver lead-zinc	2,338,000
Reco	Cody	Silver lead-zinc	334,992
Ruth Mines Ltd.	Sandon	Silver lead-zinc	125,490
St. Eugene	Moyle	Silver lead-zinc	566,000
Sheep Creek Mines Ltd.	Invermere	Silver lead-zinc	93,750
Silversmith and Slocan Star <sup>4</sup>	Sandon	Silver lead-zinc	1,267,600
Silver Standard Mines Ltd.	Hazelton	Silver lead-zinc	1,715,333
Spokane-Trinket	Ainsworth	Silver lead-zinc	10,365
Standaru Silver Lead	Silverton	Silver lead-zinc	2,734,688
Sunset and Trade Dollar	Retallack	Silver lead-zinc	88,000
Sunshine Lardeau Mines Ltd.	Beaton	Silver lead-zinc	164,000
Torbrit Silver Mines Ltd.	Alice Arm	Silver lead-zinc	390,000
Utica	Kaslo	Silver lead-zinc	64,000
Violamac Mines (B.C.) Ltd.	New Denver	Silver lead-zinc	850,000
Wallace Mines Ltd. (Sally)	Beaverdell	Silver lead-zinc	135,000
Washington	Rambler Station	Silver lead-zinc	20,000
Western Exploration Co. Ltd.	Silverton	Silver lead-zinc	30,867
Whitewater	Retallack	Silver lead-zinc	592,515
Yale Lead and Zinc Mines Ltd.	Ainsworth	Silver lead-zinc	278,620
Miscellaneous mines			70,239
Total, silver-lead-zinc mines			\$498,765,637

<sup>1</sup> Includes \$466,143 "return of capital" distribution prior to 1949.<sup>2</sup> Earnings of several company mines, and customs smelter at Trail.<sup>3</sup> Includes \$10,504 paid in 1944 but not included in the yearly figure.<sup>4</sup> These two properties were amalgamated as Silversmith Mines Limited in August, 1939.

TABLE XI.—DIVIDENDS PAID BY MINING COMPANIES, 1897-1958—Continued

**Copper Mines**

Company or Mine	Locality	Class	Amount Paid
Britannia M. & S. Co. <sup>1</sup>	Britannia Beach	Copper	\$18,803,772
Canada Copper Corporation	Greenwood	Copper	615,399
Cornell	Texada Island	Copper	8,500
Granby Cons. M.S. & P. Co. <sup>2</sup>	Copper Mountain	Copper	29,873,226
Marble Bay	Texada Island	Copper	175,000
Hall Mines	Nelson	Copper	233,280
Miscellaneous mines		Copper	261,470
Total, copper mines			\$49,970,647

<sup>1</sup> The Britannia Mining and Smelting Co. Limited, a wholly owned subsidiary of the Howe Sound Company (Maine), paid the dividends shown to its parent company. On June 30th, 1958, consolidation between the Howe Sound Company (Maine) and Haile Mines Inc. became effective, bringing into existence Howe Sound Company (Delaware). The Britannia mine became a division of the new Howe Sound Company, and in August Britannia Mining and Smelting Co. was liquidated voluntarily.

<sup>2</sup> The Granby Consolidated Mining Smelting and Power Company dividends commenced in 1904 and cover all company activities in British Columbia to date. The figure includes all dividends, capital distributions, and interim liquidating payments, the latter being \$4,500,000, paid, in 1936, prior to reorganization.

**Coal Mines**

Company or Mine	Locality	Class	Amount Paid
Wellington Collieries Ltd.	Nanaimo	Coal	\$16,000,000
Bulkley Valley Collieries Ltd.	Telkwa	Coal	24,000
Crow's Nest Pass Coal Co. Ltd.	Fernie	Coal	16,719,198
Canadian Collieries Resources Ltd.	Nanaimo	Coal	828,271
Total, coal mines			\$33,571,469

**Aggregate of All Classes**

Lode-gold mining	\$77,674,997
Silver-lead-zinc mining and smelting	498,765,637
Copper-mining	49,970,647
Coal-mining	33,571,469
Miscellaneous, structural, and placer gold	7,675,670
<b>Total</b>	<b>\$667,658,420</b>

NOTE.—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.

**TABLE XII-PRINCIPAL ITEMS OF EXPENDITURE, REPORTED FOR  
OPERATIONS OF ALL CLASSES**

Class	Salaries and Wages	Fuel and Electricity	Process Supplies
Lode-mining .....	\$32,284,917	\$4,485,205	\$10,553,781
Placer-mining .....	9,887	554	2,100
Fuels—coal, coke and gas plants, petroleum and natural gas .....	7,502,307	623,826	2,414,734
Miscellaneous metals and industrial minerals .....	4,276,071	851,038	934,417
Structural materials industry .....	4,770,378	2,119,766	1,148,004
<b>Totals, 1958 .....</b>	<b>\$48,933,560</b>	<b>\$8,080,989</b>	<b>\$15,053,036</b>
Totals, 1957 .....	56,400,056	8,937,567	24,257,177
1956 .....	57,266,026	9,762,777	22,036,839
1955 .....	51,890,246	9,144,034	21,131,572
1954 .....	48,702,746	7,128,669	19,864,724
1953 .....	55,543,490	8,668,099	20,979,411
1952 .....	62,256,631	8,557,845	27,024,500
1951 .....	52,607,171	7,283,051	24,724,101
1950 .....	42,738,035	6,775,998	17,500,668
1949 .....	41,023,786	7,206,637	17,884,408
1948 .....	38,813,506	6,139,470	11,532,121
1947 .....	32,160,338	5,319,470	13,068,948
1946 .....	26,190,200	5,427,458	8,367,705
1945 .....	22,620,975	7,239,726	5,756,628
1944 .....	23,131,874	5,738,671	6,138,034
1943 .....	26,051,467	7,432,585	6,572,317
1942 .....	26,913,160	7,066,109	6,863,398
1941 .....	26,050,491	3,776,747	7,260,441
1940 .....	23,391,330	3,474,721	6,962,162
1939 .....	22,357,035	3,266,000	6,714,347
1938 .....	22,765,711	3,396,106	6,544,500
1937 .....	21,349,690	3,066,311	6,545,330
1936 .....	17,887,619	2,724,144	4,434,501
1935 .....	16,753,367	2,619,639	4,552,730
<b>Grand totals, 1935-58 .....</b>	<b>\$863,807,510</b>	<b>\$148,282,527</b>	<b>\$311,859,643</b>

NOTE.—“Process Supplies” include explosives, chemicals, drill-steel, lubricants, etc.



TABLE XIII.-AVERAGE NUMBER EMPLOYED IN THE MINING INDUSTRY, 1901-58

Year	Placer-mining	Lode-mining			In Concentrators	In Smelters	Coal-mining			Structural Materials		Miscellaneous	Total <sup>1</sup>
		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				7,856
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.....		2,384	1,070	3,254			4,713	1,705	6,418				9,872
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.....		2,620	1,764	4,380			3,658	1,769	5,247				9,637
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	3,767	1,665	5,322	493	324	124	14,172
1927.....	415	2,071	1,916	4,587	854	2,642	3,040	1,579	5,225	047	100	122	14,000
1928.....	355	2,707	2,469	5,176	911	2,748	3,314	1,520	5,334	412	368	120	15,424
1929.....	341	2,926	2,052	4,978	966	2,943	3,675	1,353	5,028	492	544	268	15,555
1930.....	425	2,316	1,260	3,576	832	3,197	3,389	1,236	4,645	843	344	170	14,032
1931.....	688	1,463	834	2,297	531	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	553	3,094	376	269	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	2,514	931	288	825	14,179
1937.....	1,371	3,603	1,318	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	2,662	900	295	369	16,021
1939.....	1,252	3,305	2,050	5,955	996	3,187	2,167	809	2,976	652	311	561	15,890
1940.....	1,004	3,323	2,104	6,027	1,048	2,944	2,175	699	2,874	827	334	647	15,705
1941.....	939	3,901	1,823	5,724	1,025	3,072	2,229	494	2,723	766	413	422	15,084
1942.....	489	2,920	1,504	4,424	960	3,555	1,892	468	2,360	842	378	262	13,270
1943.....	212	2,394	1,699	4,093	891	2,835	2,240	611	2,851	673	326	567	12,448
1944.....	255	1,896	1,825	3,721	849	2,931	2,150	689	2,839	690	351	628	12,314
1945.....	209	1,933	1,750	3,683	822	2,834	1,927	503	2,430	921	335	586	11,820
1946.....	347	1,918	1,817	3,735	672	2,813	1,773	532	2,305	827	555	679	11,933
1947.....	360	3,024	2,238	5,262	960	3,461	1,694	731	2,425	977	585	869	14,899
1948.....	348	3,143	2,429	5,572	1,126	3,884	1,594	872	2,466	1,591	656	754	16,397
1949.....	303	3,034	2,724	5,758	1,203	3,763	1,761	545	2,306	2,120	542	626	16,621
1950.....	327	3,309	2,415	5,814	1,259	3,759	1,745	516	2,261	1,916	616	660	16,612
1951.....	205	3,785	3,695	7,480	1,307	4,044	1,462	463	1,925	1,783	628	491	17,863
1952.....	230	4,171	3,023	8,094	1,516	4,120	1,280	401	1,681	1,530	557	529	18,257
1953.....	132	3,145	2,589	5,734	1,371	3,901	1,154	396	1,550	1,909	559	634	15,790
1954.....	199	2,644	2,520	5,164	1,129	3,119	1,076	358	1,434	1,361	638	584	14,128
1955.....	103	2,564	2,553	5,117	1,091	3,304	1,100	378	1,478	1,646	641	722	14,102
1956.....	105	2,637	2,827	5,464	1,043	3,339	968	398	1,366	1,598	770	854	14,539
1957.....	67	2,393	2,447	4,840	838	3,328	1,020	360	1,380	1,705	625	474	13,257
1958.....	75	1,919	1,809	3,728	625	3,081	826	260	1,086	1,483	677	446	11,201

<sup>1</sup> The average number employed in the industry is the sum of the averages for individual companies. The average for each company is obtained by taking the sum of the numbers employed each month and dividing by 12, regardless of the number of months worked.

TABLE XIV.—LODE-METAL MINES—TONNAGE, NUMBER OF MINES,  
NET AND GROSS VALUE OF PRINCIPAL METALS,<sup>4</sup> 1901–58

Year	Tonnage <sup>1</sup>	Number of Shipping Mines	Number of Mines Shipping over 100 Tons	Gross Value as Reported by Shipper <sup>2</sup>	Freight and Treatment <sup>3</sup>	Net Value to Shipper <sup>3</sup>	Gross Value of Lode Metals Produced <sup>4</sup>
1901.....	926,162	119	78	.....	.....	.....	13,287,947
1902.....	1,009,016	124	75	.....	.....	.....	11,136,162
1903.....	1,288,466	125	74	.....	.....	.....	11,579,382
1904.....	1,461,609	142	76	.....	.....	.....	12,309,035
1905.....	1,706,670	146	79	.....	.....	.....	15,180,164
1906.....	1,963,872	154	77	.....	.....	.....	17,484,102
1907.....	1,805,614	147	72	.....	.....	.....	16,222,097
1908.....	2,083,606	108	59	.....	.....	.....	14,477,411
1909.....	2,057,713	89	52	.....	.....	.....	14,191,141
1910.....	2,216,428	83	50	.....	.....	.....	13,228,731
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.....	2,720,669	132	59	.....	.....	.....	19,992,149
1916.....	3,229,942	169	81	.....	.....	.....	31,483,014
1917.....	2,797,368	193	87	.....	.....	.....	26,788,474
1918.....	2,912,516	175	80	.....	.....	.....	27,595,278
1919.....	2,146,920	144	74	.....	.....	.....	19,756,648
1920.....	2,215,445	121	60	.....	.....	.....	19,451,725
1921.....	1,586,428	80	35	.....	.....	.....	12,925,448
1922.....	1,592,163	98	33	.....	.....	.....	19,228,257
1923.....	2,447,672	77	28	.....	.....	.....	25,348,399
1924.....	3,413,912	86	37	.....	.....	.....	35,538,247
1925.....	3,849,269	102	40	.....	.....	.....	46,200,135
1926.....	4,775,327	138	55	.....	.....	\$38,558,613	51,508,081
1927.....	5,416,411	132	52	.....	.....	27,750,364	44,977,082
1928.....	6,241,672	110	49	.....	.....	20,070,075	48,281,825
1929.....	6,977,903	106	48	.....	.....	34,713,887	51,720,486
1930.....	6,804,276	68	32	.....	.....	21,977,688	41,292,980
1931.....	5,549,622	44	22	.....	.....	10,513,931	22,900,229
1932.....	4,354,904	75	29	.....	.....	7,075,393	19,705,043
1933.....	4,063,775	109	47	.....	.....	13,976,358	25,057,007
1934.....	5,141,744	145	69	.....	.....	20,243,278	34,071,955
1935.....	4,927,204	177	72	.....	.....	25,407,914	40,662,633
1936.....	4,381,173	168	70	.....	.....	30,051,207	43,813,898
1937.....	6,145,244	185	113	\$48,617,920	\$4,663,843	43,954,077	62,950,536
1938.....	7,377,117	211	92	40,222,237	4,943,754	35,278,483	53,875,093
1939.....	7,212,171	217	99	45,133,788	4,416,919	40,716,869	53,554,092
1940.....	7,949,736	216	92	50,004,909	6,334,611	43,670,298	61,735,604
1941.....	8,007,937	200	96	52,354,870	5,673,048	46,681,822	62,607,882
1942.....	6,894,844	128	76	50,494,041	5,294,637	45,199,404	59,694,192
1943.....	5,786,864	48	32	37,234,070	3,940,367	33,293,703	52,651,868
1944.....	4,879,851	51	31	29,327,114	2,877,706	26,449,408	39,369,738
1945.....	4,377,722	36	27	34,154,917	2,771,292	31,383,625	48,724,001
1946.....	3,705,594	50	32	48,920,971	2,904,130	46,016,841	56,653,485
1947.....	5,011,271	75	33	81,033,093	4,722,010	76,311,087	93,124,847
1948.....	5,762,321	97	51	118,713,859	18,585,183	100,128,727	121,696,391
1949.....	6,125,460	118	54	99,426,678	19,613,185	79,814,604	107,775,413
1950.....	6,802,482	112	58	108,864,792	22,113,431	86,751,361	113,464,619
1951.....	6,972,400	119	64	142,590,427	25,096,743	117,493,684	147,646,989
1952.....	9,174,617	95	58	140,070,389	30,444,575	106,601,451	144,151,515
1953.....	9,660,281	80	48	94,555,069	27,815,152	66,739,922	123,619,837
1954.....	8,513,865	63	40	106,223,833	29,135,673	77,088,160	120,829,789
1955.....	9,126,902	53	34	119,039,285	30,696,044	88,343,241	138,145,095
1956.....	8,827,037	70	40	125,043,590	31,933,681	93,110,262	143,546,586
1957.....	7,282,436	59	40	95,044,930	30,273,900	65,370,185	119,409,764
1958.....	6,402,198	47	28	83,023,111	28,068,366	54,955,069	100,591,049

<sup>1</sup> Includes ores of iron, mercury, nickel, tungsten, and silica (flux).

<sup>2</sup> Data not collected before 1937.

<sup>3</sup> Previous to 1937 the shipper reported "Net Value at Shipping Point," no indication being given as to how the net value was computed. From 1937 on, the shipper has reported "Gross Value," from which deduction of freight and treatment gives "Net Value."

<sup>4</sup> Gross value calculated by valuing gold, silver, copper, lead, zinc, mercury (1938–44, 1955), and nickel (1936–37, 1958) at yearly average prices, and iron (1901–03, 1907, 1918–23, 1928, 1948–58) and tungsten (1939–45, 1947–58) at values given by operators.

TABLE XV.-LODE-METAL PRODUCTION IN 1958

Property or Operator	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Contents						
					Gold	Silver	Copper	Lead	Zinc	Cadmium	
<b>NORTHERN BRITISH COLUMBIA</b>											
<i>Atlin Mining Division</i>											
Nil			Tons		Oz.	Oz.	Lb.	Lb.	Lb.	Lb.	
<i>Liard Mining Division</i>											
Nil											
<b>CENTRAL BRITISH COLUMBIA</b>											
<i>Cariboo Mining Division</i>											
A 43 Cariboo Gold Quartz and Aurum	Wells	The Cariboo Gold Quartz Mining Co. Ltd., Vancouver	66,880	Bullion	27,892	3,682					
<i>Clinton Mining Division</i>											
Nil											
<i>Omineca Mining Division</i>											
Cronin Babine	Smithers	New Cronin Babine Mines Ltd., Vancouver	123	Crude ore, 123 tons; lead concentrates, 9 tons	6	6,169		70,481	68,143		
Silver Standard	Hazelton	Silver Standard Mines Ltd., Vancouver	5,044	Lead concentrates, 543 tons; zinc concentrates, 970 tons	267	178,347	17,837	492,040	1,065,717	16,766	
<b>COAST AND ISLANDS</b>											
<i>Alberni Mining Division</i>											
Buccaneer and Musketeer	Tofino	Bedwell River Gold Mines Ltd., Vancouver	100 <sup>1</sup>	Concentrates, 5 tons	33	29	31	470			
<i>Nanaimo Mining Division</i>											
Merry Widow No. 5 and Kingfisher	Benson Lake	Empire Development Co. Ltd., Vancouver	572,404	Iron-ore concentrates, 272,495 tons							
Prescott, Paxton, Yellow Kid, Yellow Jacket	Texada Island	Texada Mines Ltd., Vancouver	709,731	Iron-ore concentrates, 357,776 tons; copper concentrates, 3,338 tons	948	11,035	873,639				

<sup>1</sup> Estimate.

TABLE XV.—LODE-METAL PRODUCTION IN 1958—Continued

Property or Operator	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Contents					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
			Tons		Oz.	Oz.	Lb.	Lb.	Lb.	Lb.
<i>New Westminster Mining Division</i>										
Pride of Emory	Choate	Western Nickel Ltd., Vancouver	131,133	Nickel concentrates, 7,598 tons containing 1,776,183 lb. nickel; copper concentrates, 729 tons			744,657			
<i>Skeena Mining Division</i>										
Silbak Premier	Premier	Silbak Premier Mines Ltd., Vancouver		Salvage—concentrates, 100 tons	250	1,032		8,515	9,910	
Toric	Kitsault River	Torbrit Silver Mines Ltd., Toronto	135,892	Silver-lead concentrates, 1,872 tons; silver bullion		1,331,088		1,506,849		
<i>Vancouver Mining Division</i>										
Britannia	Britannia Beach	Britannia Mining & Smelting Co. Ltd., Britannia Beach (placed in voluntary liquidation, August 8, 1958)	66,863	Copper concentrates and precipitates, 6,882 tons; zinc concentrates, 3,048 tons; iron pyrite concentrates, 12,042 tons	2,585	19,302	4,485,078	171,685	3,496,446	18,593
<i>Victoria Mining Division</i>										
Blue Grouse	Cowichan Lake	Cowichan Copper Co. Ltd., Lake Cowichan	96,029	Copper concentrates, 7,778 tons		25,608	4,363,335			
<b>SOUTH CENTRAL BRITISH COLUMBIA</b>										
<i>Greenwood Mining Division</i>										
Highland-Bell	Beaverdell	Highland-Bell Ltd., Vancouver	18,729	Lead concentrates, 1,698 tons; zinc concentrates, 637 tons; jig concentrates, 217 tons	487	900,669		728,142	858,071	6,158
Providence	Greenwood	S. J. and J. S. Kleman, Greenwood	13	Crude ore	8	2,363		916	655	
<i>Kamloops Mining Division</i>										
Nil										
<i>Lillooet Mining Division</i>										
Bralorne	Bridge River	Bralorne Mines Ltd., Vancouver	146,358	Bullion; gold concentrates, 3,009 tons	99,489	21,119				
Elizabeth Group	Yalakom River	W. H. White, Vancouver	9	Crude ore	5	5		53	18	
Pioneer	Bridge River	Pioneer Gold Mines of B.C. Ltd., Vancouver	105,442	Bullion	49,853	10,799				
<i>Nicola Mining Division</i>										
Nil										

<i>Osoyoos Mining Division</i>										
Fairview	Oliver	Consolidated Mining & Smelting Co. of Canada, Ltd., Trail	35,708	Silica flux						
French	Hedley	French Mines Ltd., Vancouver	13,820	Bullion	8,607	657				
Horn Silver	Keremeos	Canada Radium Corporation Ltd., Toronto	54	Siliceous ore	15	3,684		718	714	
Nickel Plate	Hedley	W. B. Graham, Hedley, Jessee, from Kelowna Mines Hedley Ltd.		Salvage—concentrates, 16 tons	140	31	131			
<i>Similkameen Mining Division</i>										
Copper Mountain	Copper Mountain	Granby Cons. M.S. & P. Co. Ltd., Copper Mountain		Mill clean-up, 108 tons	441	154	8,483			
<i>Vernon Mining Division</i>										
Nil										
SOUTHEASTERN BRITISH COLUMBIA										
<i>Fort Steele Mining Division</i>										
Estella	Wase	United Estella Ltd., Vancouver		Lead concentrates, 29 tons; zinc concentrates, 57 tons clean-up		486		31,032	66,900	179
Sullivan	Kimberley	Consolidated Mining & Smelting Co. of Canada, Ltd., Trail	2,443,884	Lead concentrates, 121,198 tons; zinc concentrates, 285,936 tons; tin concentrates, 610 tons	314	3,102,951	428,600	205,413,400	273,913,600	
<i>Golden Mining Division</i>										
L.T.	Invermere	E. L. Tegart, Invermere	4	Crude ore (dump)		177		3,913	185	
Mineral King and Paradise	Toby Creek	Sheep Creek Mines Ltd., Nelson	192,426	Lead concentrates, 5,225 tons; zinc concentrates, 16,115 tons		98,966	178,456	6,452,482	18,104,313	77,834
Ptarmigan	Horsethief Creek	Selkirk Ptarmigan Mines Ltd., Edgewater	181	Crude ore	60	41,871		1,010	1,580	
<i>Nelson Mining Division</i>										
Arlington	Erie	G. D. Fox and R. W. Linn, Trail	30	Mill clean-up; crude ore and siliceous ore, 29 tons	22	63		1,258	1,408	
Emerald-Feeney-Dodger	Salmo	Canadian Exploration Ltd., Vancouver	64,114	Tungsten concentrates, 34,549 units WO <sub>3</sub>						
Gold Belt	Salmo	A. Endersby, Fruitvale	217	Siliceous ore	30	104		693	434	
H.B.	Salmo	Consolidated Mining & Smelting Co. of Canada, Ltd., Trail	458,213	Lead concentrates, 5,892 tons; zinc concentrates, 36,162 tons		83,024		8,308,920	40,764,400	353,206
Jersey	Salmo	Canadian Exploration Ltd., Vancouver	383,458	Lead concentrates, 10,296 tons; zinc concentrates, 18,488 tons		47,772		16,541,417	22,102,831	172,115
Kootenay Belle	Salmo	M. Arishenkoff, Shoreacres	15	Crude ore	1	36		290	29	
Nugget	Salmo	A. Endersby, Sr., and A. Endersby, Jr., Fruitvale	154	Siliceous ore	38	57		363	464	
Reeves MacDonald	Remac	Reeves MacDonald Mines Ltd., Vancouver	417,076	Lead concentrates, 5,168 tons; zinc concentrates, 25,901 tons		23,520		7,973,619	28,220,124	155,937
Silver King	Nelson	A. Burgess, Ymir	18	Crude ore	1	194		2,187	1,578	
Sun group	Nelson	W. Rozan and R. Gautier, Nelson	6	Crude ore	13	4		25	25	

TABLE XV.—LODE-METAL PRODUCTION IN 1958—Continued

Property or Operator	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Contents					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
			Tons		Oz.	Oz.	Lb.	Lb.	Lb.	Lb.
<i>Revelstoke Mining Division</i>										
Spider, Eclipse	Camborne	Sunshine Lardeau Mines Ltd., Vancouver	11,889	Lead concentrates, 1,256 tons; zinc concentrates, 1,544 tons; crude ore, 470 tons	1,136	143,894	-----	1,909,247	2,016,995	-----
<i>Slocan Mining Division</i>										
Black Diamond	Ainsworth	G. Hobbs and J. Hawes, Ainsworth	3	Crude ore	-----	253	-----	3,506	648	-----
Bluebell	Riondel	Consolidated Mining & Smelting Co. of Canada, Ltd., Trail	255,859	Lead concentrates, 18,759 tons; zinc concentrates, 31,344 tons	-----	363,156	320,757	27,545,899	31,792,649	149,421
Caledonia	Blaylock	Caledonia Mines Ltd., Kaslo	157	Lead concentrates, 14 tons; zinc concentrates, 8 tons; crude ore, 5 tons	1	2,010	-----	24,970	12,476	40
Fisher Maiden	Silverton	F. Mills and F. Dewis, Silverton	216	Crude ore	-----	2,373	-----	9,169	28,795	203
Highlander	Ainsworth	Yale Lead & Zinc Mines Ltd., Ainsworth	51,460	Lead concentrates, 3,996 tons; zinc concentrates, stockpiled, 995 tons	21	88,847	-----	6,052,922	170,343	-----
Laura M.	Ainsworth	M. B. Sirak, Ainsworth	1,074	Lead concentrates, 108 tons; zinc concentrates, 36 tons; crude ore, 124 tons	-----	3,782	-----	272,867	6,219	167
Little Phil	Ainsworth	T. Lane, Ainsworth	13	Crude ore	-----	288	-----	10,447	1,398	-----
Lucky Jim	Zincton	Lucky Four Leasers, New Denver	658	Lead concentrates, 28 tons; zinc concentrates, 53 tons; crude ore 7 tons	1	2,851	-----	43,643	64,054	374
McAllister	Silverton	M. Tarnowski and E. De Rosa, Silverton	2	Crude ore from dump	-----	225	-----	57	25	-----
Noonday-Curley	Silverton	K. Millar, Silverton	88	Lead concentrates, 6 tons; zinc concentrates, 12 tons; crude ore, 4 tons	-----	670	-----	9,099	14,993	529
Ottawa	Slocan	Yukon Western Mining & Prospecting Co. Ltd., Edmonton	28	Crude ore	1	4,200	-----	342	204	-----
Silversmith, Ruth-Hope, Slocan Star	Sandon	Lessees from Carnegie Mining Corporation, Sandon	640	Lead concentrates, 26 tons; zinc concentrates, 70 tons; crude ore, 109 tons	5	16,478	-----	157,614	99,770	553
Silver Mountain	Sandon	Silver Mountain Mines Ltd., Sandon	10	Crude ore	-----	736	-----	11,903	393	-----
Spokane	Ainsworth	T. Lane, Ainsworth	3	Crude ore	-----	22	-----	2,130	826	-----
Mammoth, Monarch	Silverton	Western Exploration Co. Ltd., Silverton, and lessees	13,326	Lead concentrates, 1,041 tons; zinc concentrates, 1,232 tons	41	204,675	-----	1,423,405	1,471,671	11,220

Utica.....	Kaslo Creek.....	J. A. Cooper, Kaslo; Lajo Mines Ltd., Vancouver	150	Lead concentrates, 71 tons; zinc concentrates, 63 tons	1	10,435	.....	30,218	92,176	396
Van Roi, Hewitt.....	Silverton.....	Slocan Van Roi Mines Ltd. and lessees	364	Lead concentrates, 31 tons; zinc concentrates, 50 tons; crude ore, 15 tons	2	9,940	.....	51,895	63,659	457
Victor.....	Sandon.....	Violamac Mines Ltd., New Denver	9,037	Lead concentrates, 1,409 tons; zinc concentrates, 1,147 tons; crude ore, 177 tons	165	217,489	.....	2,264,970	1,433,740	8,891
Westmont.....	Silverton.....	Chexdeco Mining Ltd., Silverton; Silver King Mining Co. Ltd., Silverton	445	Lead concentrates, 17 tons; zinc concentrates, 11 tons; crude ore, 218 tons	4	13,215	.....	41,283	61,283	113
<i>Trail Creek Mining Division</i>										
W.D.....	Trail.....	E. Wells and F. Donnelly, Trail	1,140	Crude ore.....	649	230	.....	2,957	997	.....

TABLE XVI.—LODE-METAL MINES EMPLOYING AN AVERAGE OF TEN OR MORE MEN DURING 1958<sup>1</sup>

Name of Mine or Operator	Days Operating		Tons		Average Number Employed	
	Mine	Mill	Mined	Milled	Mine	Mill
<i>Shipping Mines</i>						
Cariboo Gold Quartz Mining Co. Ltd.	280	365	66,880	66,880	175	13
Silver Standard Mines Ltd.	105	89	5,044	5,044	24	5
Torbrit Silver Mines Ltd.	365	365	135,892	135,892	98	22
Britannia Mining and Smelting Co. Ltd.	66	57	66,863	66,863	107	5
Highland-Bell Ltd.	259	259	18,729	18,729	34	6
Bralorne Mines Ltd.	365	365	146,358	146,358	358	27
Pioneer Gold Mines of B.C. Ltd.	365	365	105,442	105,442	235	18
French Mines Ltd.	284	364	13,820	13,820	14	8
Copper Mountain (Granby Cons. M.S. & P. Co. Ltd.)	—	—	( <sup>2</sup> )	( <sup>2</sup> )	46 <sup>2</sup>	—
Bluebell (Cons. M. & S. Co. of Canada, Ltd.)	253	348	255,859	255,859	268	19
Highlander (Yale Lead & Zinc Mines Ltd.)	250	250	51,460	51,460	36	8
Western Exploration Co. Ltd.	( <sup>3</sup> )	( <sup>3</sup> )	13,326	13,326	2	7
Victor (Violamac Mines Ltd.)	365	—	9,037	—	21	—
H.B. (Cons. M. & S. Co. of Canada, Ltd.)	365	365	458,213	458,213	106	13
Jersey (Canadian Exploration Ltd.)	365	365	383,458	383,458	118	11
Emerald-Feeney-Dodger (Canadian Exploration Ltd.)	204	212	64,114	64,114	82	8
Reeves MacDonald Mines Ltd.	252	352	417,076	417,076	103	25
Sullivan (Cons. M. & S. Co. of Canada, Ltd.)	254	254	2,443,884	2,443,884	1,123	333
Mineral King (Sheep Creek Mines Ltd.)	307	358	192,426	192,426	83	11
Spider (Sunshine Lardeau Mines Ltd.)	101	135	11,889	11,419	20	5
Blue Grouse (Cowichan Copper Co. Ltd.)	253	268	96,029	96,029	89	12
Western Nickel Mines Ltd.	213	213	131,133	131,133	125	19
Empire Development Co. Ltd.	266	266	572,404	572,404	( <sup>3</sup> )	( <sup>3</sup> )
Texada Mines Ltd.	266	366	715,182	709,731	112	34
<i>Non-shipping Mines</i>						
Ecstall Mining Co. Ltd.	—	—	—	—	10	—
Noranda Exploration Co. Ltd.	—	—	—	—	19	—
Granduc Mines Ltd.	—	—	—	—	21	—
Northwestern Explorations Ltd.	—	—	—	—	25	—
Phoenix Copper Co. Ltd.	—	—	—	—	12	—
Rexspar Uranium & Metals Mining Co. Ltd.	—	—	—	—	10	—
Sunro (Cons. M. & S. Co. of Canada, Ltd.)	—	—	—	—	14	—
Birkett Creek Mine Operators Ltd.	—	—	—	—	18	—
Britannia Mine Division (Howe Sound Company)	—	—	—	—	31	—

<sup>1</sup> The average number employed includes wage-earners and salaried employees. The average is obtained by adding the monthly figures and dividing by 12, irrespective of the number of months worked.

<sup>2</sup> One hundred and eight tons of clean-up material shipped to Tacoma smelter, and employment represents all clean-up operations, including salvage of equipment and machinery.

<sup>3</sup> Not available.



# Departmental Work

## DEPUTY MINISTER

John Fortune Walker, who had been Deputy Minister of Mines for twenty-two years, retired on September 30th, 1958. He was born in Binbrook, Ont., on September 17th, 1893, and is a veteran of World War I, a graduate of the University of British Columbia in geological engineering, and a Ph.D. from Princeton University in geology. He had served as an officer of the Geological Survey of Canada for ten years, working in various areas in British Columbia, when he left that service to become Provincial Mineralogist in the British Columbia Department of Mines in 1934 and continued in that position until he was appointed Deputy Minister in 1937.

Patrick Joseph Mulcahy, who had been in the service of the Government of British Columbia for thirty-nine years, was appointed Deputy Minister of Mines, effective October 1st, 1958. He was born in Victoria in 1901. He entered the service of the Government of British Columbia in the Department of the Attorney-General in 1919, and transferred to the Department of Mines in 1924. Since then he has served continuously in Victoria, except when he was Mining Recorder at Barkerville in 1931 and at Hope in 1932 and set up the central records office in Vancouver in 1942. Until his appointment as Deputy Minister he had been Chief Gold Commissioner since 1942 and Chief Petroleum and Natural Gas Commissioner since 1952.

## ADMINISTRATION BRANCH

The Administration Branch is responsible for the administration of the Provincial laws regarding the acquisition of rights to mineral and to coal, petroleum and natural gas, and deals with other departments of the Provincial service for the Department or for any branch.

Upon the retirement of John F. Walker, P. J. Mulcahy was appointed to the position of Deputy Minister. K. B. Blakey, who had been acting in the capacity of Deputy Chief Gold Commissioner and Deputy Chief Commissioner, Petroleum and Natural Gas, was appointed as Chief Gold Commissioner and Chief Commissioner, Petroleum and Natural Gas. R. H. McCrimmon and R. E. Moss were appointed to the positions of Deputy Chief Gold Commissioner and Deputy Chief Commissioner, Petroleum and Natural Gas, respectively, effective October 1st, 1958.

Gold Commissioners, Mining Recorders, and Sub-Mining Recorders, whose duties are laid down in the "Mineral Act" and the "Placer-mining Act," administer these Acts and other Acts relating to mining. Mining Recorders, in addition to their own functions, may also exercise the powers conferred upon Gold Commissioners with regard to mineral claims within the mining division for which they have been appointed. Similar duties may be performed by Mining Recorders with regard to placer claims but not in respect of placer-mining leases. Recording of location and of work upon a mineral claim as required by the "Mineral Act" and upon a placer claim or a placer-mining lease as required by the "Placer-mining Act" must be made at the office of the Mining Recorder for the mining division in which the claim or lease is located. Information concerning claims and leases and concerning the ownership and standing of claims and leases in any mining division may be obtained from the Mining Recorder for the mining division in which the property is situated or from the Department's offices at Victoria, and Room 104, 739 West Hastings Street, Vancouver. Officials in the offices of the Gold Commissioner at Victoria and the Gold Commissioner at Vancouver act as Sub-Mining Recorders for all mining divisions. Sub-Mining Recorders, who act as forwarding

agents, are appointed at various places throughout the Province. They are authorized to accept documents and fees, and forward them to the office of the Mining Recorder for the correct mining division. Officials and their offices in various parts of the Province are listed in the table on page A 50.

#### CENTRAL RECORDS OFFICES (VICTORIA AND VANCOUVER)

The transcripts of all recordings made in Mining Recorders' offices throughout the Province are sent to the office of the Chief Gold Commissioner in Victoria twice each month, and include the names of lessees of reverted Crown-granted mineral claims. These records and maps showing the approximate positions of mineral claims held by record and of placer-mining leases may be consulted by the public during office hours at Victoria and at the office of the Gold Commissioner at Vancouver, Room 104, 739 West Hastings Street. The maps conform in geographical detail, size, and number to the reference and mineral reference maps issued by the Legal Surveys Branch of the Department of Lands and Forests, and the approximate positions of mineral claims held by record and of placer-mining leases are plotted from details supplied by the locators. Provision has been made to supply the general public, on request to the office of the Chief Gold Commissioner, with copies of the maps. The charge for these maps is \$1 plus 5 per cent tax for each sheet.

#### LIST OF GOLD COMMISSIONERS AND MINING RECORDERS IN THE PROVINCE

Mining Division	Location of Office	Gold Commissioner	Mining Recorder
Alberni	Alberni	T. G. O'Neill	T. G. O'Neill.
Atlin	Atlin	L. P. Lean	L. P. Lean.
Cariboo	Quesnel	F. E. P. Hughes	F. E. P. Hughes.
Clinton	Clinton	W. E. McLean	W. E. McLean.
Fort Steele	Cranbrook	E. L. Hedley	E. L. Hedley.
Golden	Golden	R. E. Manson	R. E. Manson.
Greenwood	Grand Forks	R. Macgregor	R. Macgregor.
Kamloops	Kamloops	D. Dalglish	D. Dalglish.
Liard	Victoria	R. H. McCrimmon.	
Lillooet	Lillooet	E. B. Offin	E. B. Offin.
Nanaimo	Nanaimo	W. H. Cochrane	W. H. Cochrane.
Nelson	Nelson	K. D. McRae	K. D. McRae.
New Westminster	New Westminster	J. F. McDonald	G. C. Kimberley.
Nicola	Merritt	T. S. Dobson	T. S. Dobson.
Omineca	Smithers	G. H. Beley	G. H. Beley.
Osoyoos	Penticton	T. S. Dalby	T. S. Dalby.
Revelstoke	Revelstoke	W. T. McGruder	W. T. McGruder.
Similkameen	Princeton	B. Kennelly	B. Kennelly.
Skeena	Prince Rupert	T. H. W. Harding	T. H. W. Harding.
Slocan	Kaslo		F. R. Carmichael.
Trail Creek	Rossland	W. L. Draper	W. L. Draper.
Vancouver	Vancouver	J. Egdell	Miss S. Hyham (Deputy).
Vernon	Vernon	G. F. Forbes	G. F. Forbes.
Victoria	Victoria	R. H. McCrimmon	E. J. Bowles.

GOLD COMMISSIONERS' AND MINING RECORDERS' OFFICE STATISTICS, 1958

Mining Division	Free Miners' Certificates				Lode-mining						Placer-mining					Revenue		
	Individual	Company	Special	Provisional (Placer)	Mineral Claims Recorded	Certificates of Work	Cash in Lieu	Certificates of Improvements	Bills of Sale, etc.	Leases	Placer Claims Recorded	Placer Leases Granted	Certificates of Work, Placer Leases	Cash in Lieu	Bills of Sale, etc.	Free Miners' Certificates	Mining Receipts	Total
Alberni.....	74	2	4	---	163	312	\$300.00	---	23	4	---	2	6	---	---	\$524.50	\$2,347.75	\$2,872.25
Atlin.....	161	2	1	---	127	5	1,000.00	---	17	---	8	37	34	\$1,750.00	21	1,293.00	7,813.00	9,106.00
Cariboo.....	974	13	7	---	502	355	6,100.00	---	57	4	4	154	288	3,250.00	116	4,802.25	24,495.75	29,298.00
Clinton.....	40	---	1	---	128	155	1,800.00	---	35	---	---	3	6	---	4	190.25	3,271.25	3,461.50
Fort Steele.....	239	4	5	---	227	621	1,600.00	---	35	2	---	20	57	---	21	1,453.75	6,306.75	7,760.50
Golden.....	113	5	---	1	243	190	2,700.00	32	22	---	---	9	1	---	---	928.00	6,446.25	7,374.25
Greenwood.....	138	1	1	---	373	330	900.00	---	57	8	---	5	10	---	---	675.50	4,646.45	5,321.95
Kamloops.....	423	6	14	3	2,928	1,964	1,100.00	9	470	10	---	13	5	---	1	2,404.25	11,183.00	13,587.25
Liard.....	289	---	7	---	592	767	2,300.00	9	141	---	---	9	17	---	---	1,375.50	11,645.00	13,020.50
Lillooet.....	158	2	1	---	219	279	500.00	7	11	5	---	4	34	250.00	5	894.25	3,879.00	4,773.25
Nanaimo.....	124	3	---	---	150	287	4,700.00	---	35	7	---	1	---	---	2	743.00	6,394.00	7,137.00
Nelson.....	310	8	7	4	260	324	300.00	22	18	12	6	---	4	---	1	2,256.25	3,106.75	5,363.00
New Westminster.....	376	3	8	17	451	117	10,200.00	---	215	2	3	6	13	---	1	1,931.25	13,035.00	14,966.25
Nicola.....	309	---	2	---	4,494	1,122	100.00	---	516	1	---	---	1	---	---	989.00	17,424.76	18,413.76
Omineca.....	315	3	2	---	401	796	2,100.00	---	119	4	2	17	40	5,450.00	14	1,532.00	13,423.10	14,955.10
Osoyoos.....	160	1	6	---	249	163	1,600.00	3	31	6	---	---	---	---	---	808.25	3,199.95	4,008.20
Revelstoke.....	131	1	6	---	147	343	6,800.00	---	36	2	---	16	17	375.00	36	638.75	10,746.25	11,385.00
Similkameen.....	156	3	4	3	565	182	4,800.00	---	151	7	2	8	36	---	11	978.25	8,583.50	9,561.75
Skeena.....	239	4	1	---	128	358	3,500.00	---	53	19	---	1	---	---	---	1,317.25	7,091.75	8,409.00
Slocan.....	165	5	4	---	196	728	2,100.00	---	42	6	---	4	---	---	---	1,329.75	5,331.25	6,661.00
Trail Creek.....	104	3	2	---	16	55	---	---	3	1	---	---	---	---	---	712.50	241.75	954.25
Vancouver.....	1,792	186	46	---	390	117	1,400.00	1	29	3	3	---	1	---	---	24,267.25	3,382.37	27,649.62
Vernon.....	228	1	4	10	160	35	100.00	---	23	1	11	7	10	---	3	1,139.00	1,186.25	2,325.25
Victoria.....	325	22	---	---	350	452	200.00	---	36	2	---	---	18	---	---	3,474.50	3,300.25	6,774.75
Totals for Province 1958.....	7,343	278	133	38	13,459	10,057	\$56,200.00	83	2,175	106	39	316	598	\$11,075.00	236	\$56,658.25	\$178,481.13	\$235,139.38
Totals for Province, 1957.....	7,641	289	162	37	12,110	13,781	\$53,100.00	108	2,820	165	21	180	690	\$10,075.00	162	\$62,651.75	\$158,362.90	\$221,014.65

DEPARTMENTAL WORK

## COAL, PETROLEUM, AND NATURAL GAS

The Administration Branch is responsible for the administration of the "Petroleum and Natural Gas Act" and for the "Coal Act." Information concerning applications for permits and leases issued under the "Petroleum and Natural Gas Act" and concerning the ownership and standing of them may be obtained upon application to the office of the Chief Commissioner, Department of Mines, Victoria, B.C. Similar information may be obtained respecting licences and leases issued under the "Coal Act." Maps showing the locations of permits and leases under the "Petroleum and Natural Gas Act" are available, and copies may be obtained upon application to the office of the Department of Mines, Victoria, B.C. Monthly reports listing additions and revisions to permit-location maps and listing changes in title to permits, licences, and leases and related matters are available from the office of the Chief Commissioner upon application and payment of the required fee.

*Petroleum and Natural-gas Statistics, 1958*

Permits—		
Issued .....		87
In good standing .....		442
Assigned .....		122
Natural-gas licences—Issued .....		12
Drilling reservations—Issued .....		4
Leases—		
Issued .....		539
In good standing .....		842
Assigned .....		73

*Petroleum and Natural-gas Revenue, 1958*

Permits—			
Fees .....	\$146,250.00		
Rental .....	3,135,141.48		
Penalties and cash in lieu of work .....	26,590.47		
			<u>\$3,307,981.95</u>
Drilling reservations—			
Fees .....	\$750.00		
Rental .....	4,146.80		
			<u>4,896.80</u>
Licences—			
Fees .....	\$400.00		
Rental .....	9,757.29		
			<u>10,157.29</u>
Leases—			
Fees .....	\$13,125.00		
Rental .....	977,257.50		
			<u>990,382.50</u>
Tender bonus .....			4,510,123.14
Royalties—			
Gas .....	\$433,545.81		
Oil .....	140,158.48		
Processed products .....	62,104.77		
			<u>635,809.06</u>

Operators' licences .....	\$10,520.00
Assignment fees .....	1,800.00
Miscellaneous .....	550.00
	\$9,472,220.74

*Coal Revenue, 1958*

Licences—		
Fees .....	\$450.00	
Rental .....	3,669.50	
		\$4,119.50
Leases—		
Fees .....	\$400.00	
Rental .....	535.95	
Cash in lieu of work .....	400.00	
		1,335.95
		\$5,455.45

**MINING LAWS AND LAWS RELATED TO THE MINERAL INDUSTRY**

Synopses of mining laws and of laws related to mining, and the titles of the various Acts and the prices charged for each **are available** on application.

**ANALYTICAL AND ASSAY BRANCH**

By **S. W. Metcalfe**, Chief Analyst and Assayer

**ROCK SAMPLES**

During 1958 the chemical laboratory in Victoria issued reports on 3,929 samples from prospectors\* and Departmental engineers. A laboratory examination of a prospector's sample generally consists of the following: (1) A spectrographic analysis to determine if my base metals **are** present in interesting percentages; (2) assays for precious metals and for base metals shown by the spectrographic analysis to be present in interesting percentages. The degree of radioactivity is measured on all samples submitted by prospectors and Departmental engineers; these **radiometric** assays are not listed in the table **below**.

The laboratory reports were distributed in the following manner **among** prospectors who **were** not grantees, prospectors who **were** grantees under the "Prospectors' Grub-stake Act," and Departmental engineers:-

	Samples	Spectro- graphic Analyses	Assays
Prospectors (not grantees).....	973	26	2,692
Prospectors (grantees).....	275	1	660
Departmental engineers .....	213	27	577
Totals.....	1,461	54	3,929

Mineralogical specimens submitted for identification and rocks for classification **are** examined by the Mineralogical Branch of the Department.

\* A reasonable number of samples are assayed, without charge, for a prospector who makes application for free assays and who satisfies the Chief Analyst that prospecting is his principal occupation during the summer months. A form for use in applying for free assays may be obtained from the office of any Mining Recorder.

### COAL, PETROLEUM, AND GAS SAMPLES

Forty-three samples were analysed. Of these, fourteen were samples of formation water from wells being drilled for oil and gas in the Province; seventeen were samples of coal for proximate analysis and calorific value; two were waters tested for oil seepage; three were natural gases; and seven were samples of condensates from oil and gas wells in the Province.

### POLICE AND CORONERS EXHIBITS

Ninety-one cases of a chemical-legal nature were completed for the Attorney-General's Department. Twenty-eight cases involved analyses for poisons generally. Eighteen were for alcohol in blood and body fluids, and six were for carbon monoxide and alcohol in blood. Six cases involved narcotics, and six cases analyses of animal organs for poison. Eleven cases were analyses for liquor under the "Government Liquor Act" and the "Indian Act." In four cases, analyses were made in connection with charges of murder. In addition, there were four analyses of gasoline for colouring matter added in accordance with the regulations in the "Coloured Gasoline Tax Act." The remaining cases involved drugs and food for suspected poisoning, possession of explosives, breaking and entering, and wilful damage. On ten occasions, evidence was presented in Court.

Analytical work of this nature was discontinued by the laboratory at the end of the year.

### MISCELLANEOUS SAMPLES

For the Purchasing Commission, specification tests were made on eight samples of anti-freeze, and two blankets were examined.

For the Taxation Branch of the Department of Finance, two gasolines and one gasoline marker dyestuff were examined.

For the Department of Agriculture, four marls were analysed for lime and magnesia, one soil was examined for boron, two samples of hay and two of soil were analysed for molybdenum, and two samples of gypsum were examined.

For the Department of Highways, one water sample was examined,

For the British Columbia Power Commission, two partly decomposed wooden pegs from power-poles were examined for nitrates.

For the Department of Mining and Metallurgy at the University of British Columbia, one sand was analysed for titanium and iron, and one sample of sponge iron for total iron and free iron.

For the Royal Canadian Mounted Police, sixteen samples consisting of placer gold and gravel were assayed for their gold contents. Evidence was given in Court.

For residents of the Province, two water samples were examined,

### EXAMINATIONS FOR ASSAYERS

Provincial Government examinations for certificates of competency and licence to practise assaying in British Columbia were held at Victoria in April and May, and at Trail in December. In April and May, two candidates were examined and both passed, In December, ten candidates were examined; three passed, three were granted supplement& and four failed.

### INSPECTION BRANCH

#### ORGANIZATION AND STAFF

#### *Inspectors and Resident Engineers*

J. W. Peck, Chief Inspector.....	Victoria
Robert B. Bonar, Deputy Chief Inspector of Mines.....	Victoria
L. Wardman, Senior Electrical Inspector of Mines.....	Victoria

E. R. Hughes, Senior Inspector of Mines ..... Victoria  
 Robert B. King, Inspector and Resident Engineer ..... Vancouver  
 A. R. C. James, Inspector and Resident Engineer ..... Vancouver  
 J. E. Merrett, Inspector and Resident Engineer ..... Nelson  
 D. R. Morgan, Inspector and Resident Engineer ..... Fernie  
 David Smith, Inspector and Resident Engineer ..... Prince Rupert

The Inspectors are stationed at the places listed and inspect coal mines, metalliferous mines, and quarries in their respective districts. They also examine prospects, mining properties, and roads and trails.

E. R. Hughes supervised the Department's roads and trails programme and prospectors' grub-stakes.

#### *Instructors, Mine-rescue Stations*

Arthur Williams ..... Cumberland Station  
 T. H. Robertson ..... Princeton Station  
 Joseph J. Haile ..... Fernie Station  
 W. H. Childress ..... Nelson Station

#### *Staff Changes*

H. C. Hughes, Chief Inspector of Mines, retired on January 31st, 1958, after twenty years of service with the Department. He joined the staff on January 15th, 1938, as Inspector of Mines at Nelson.

J. W. Peck, Inspector and Resident Engineer at Nelson, was appointed Chief Inspector of Mines on February 15th, 1958.

#### *Board of Examiners for Coal-mine Officials*

Robert B. Bonar, Chairman and Secretary ..... Victoria  
 A. R. C. James, Member ..... Vancouver  
 D. R. Morgan, Member ..... Fernie

R. B. Bonar, A. R. C. James, D. R. Morgan, and the mine-rescue instructors for the district in which an examination is being held form the Board for granting certificates of competency to coal-miners.

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

### MINERALOGICAL BRANCH

Field work by officers of the Mineralogical Branch includes geological mapping and examination of mineral deposits, and studies related to ground-water and engineering geology. The results are published partly in the Annual Report of the Minister of Mines and partly in a series of bulletins. The Mineralogical Branch supplies information regarding mineral deposits and the mineral industry, in response to inquiries received in great number. The activities of the Branch also include identification of rock and mineral specimens submitted directly by prospectors and others, or through the Analytical Branch.

#### PROFESSIONAL STAFF

On December 31st, 1958, the professional staff included the following engineers classified as geologists or mineral engineers: H. Sargent, Chief of the Mineralogical Branch; M. S. Hedley, S. S. Holland, J. W. McCammon, N. D. McKechnie, G. E. P. Eastwood, J. T. Fyles, A. Sutherland Brown, J. M. Carr, H. W. Nasmith, A. F. Shepherd, and J. E. Hughes. H. W. Nasmith resigned at the end of December. J. E. Hughes was granted leave in October to continue postgraduate studies at McGill University.

Technical editing of the **Annual** Report of the Minister of Mines and of other publications was directed by **M. S. Hedley**. Copy for printing was prepared by and under the direction of the editor for English, which post was occupied until August by Mrs. C. C. Savage and from October by Mrs. **Rosalyn J. Moir**. Messrs. Hedley and Holland assisted in directing and supervising field work. Most of the other members of the professional staff are assigned to mapping the geology of selected areas and of mineral deposits. Mr. **McCammon** is responsible for studies of industrial minerals and structural materials and Mr. Shepherd for records and library,

#### FIELD WORK

Systematic field work was done by nine members of the permanent staff, and by one geologist retained for the field season. They were assisted by thirteen temporary field assistants.

A. Sutherland Brown began the geological mapping of Moresby Island in the Queen Charlotte Group,

J. M. Carr continued geological mapping in the Highland Valley area, including detailed mapping of workings at several properties, and made a preliminary study of a small area that contains the **Craigmont** property northwest of Merritt.

J. T. Fyles devoted the first part of the field season to reconnaissance mapping along the Columbia River from a point near Donald to **Nagle** Creek near Mica Creek in the western side of the Big Bend.

J. T. Fyles devoted the latter part of the field season and **G. E. P. Eastwood** devoted most of the season to finalizing mapping in the part of the **Lardeau** area between the head of Gainer Creek and the heads of Trout and **Beaton** Creeks.

J. E. Hughes completed field studies along the John Hart Highway between the West Pine bridge and Commotion Creek.

S. S. Holland examined operating mines and prospects in Bridge River and Wells areas, the area between Prince George and **Smithers**, the North Thompson River, and the **Revelstoke** area, and devoted two weeks to problems of engineering geology on the Fraser and Peace Rivers.

J. W. **McCammon** made studies of industrial-mineral occurrences, including limestone in the Cache Creek and Merritt areas, silica at **Sicamous**, Oliver, and Golden, **barite** in the Columbia-Windermere Valley, and **pegmatites** in part of the North Thompson area. He also assisted in setting up a geological display in "Nature House" at Manning Park.

**N. D. McKechnie** examined properties on Vancouver Island, near Hope, and near Merritt, and began a study of **ultrabasic** rocks in the **Kamloops-Princeton-Grand Forks** area.

**H. W. Nasmith** made a ground-water study in the **Bulkley** Valley and a preliminary investigation in the Prince George area. His work in the field of engineering geology included a study of water seepage at the **Whatshan** Dam, landslides at Golden and Prince **Rupert**, seepage pressures at a highway tunnel near Yale, a study of bridge foundations near **Quesnel**, and studies of Pleistocene sediments near **Peachland** and **Naramata** and on the Big Bend of the Columbia River,

**H. P. Trettin** was employed for the field season to complete mapping begun in 1957 of the area along the Fraser River from **Lillooet** to Big Bar ferry. This work was under the general direction of Professor K. C. **McTaggart**, retained as consultant,



## PETROLEUM AND NATURAL GAS BRANCH

## STAFF

J. D. Lineham, Chief of the Petroleum and Natural Gas Branch .....	Victoria
R. R. McLeod, Senior Petroleum Engineer and Chairman of the Board of Arbitration .....	Victoria
A. N. Lucie-Smith, Senior Petroleum Engineer and Chairman of the Conservation Committee .....	Victoria
W. L. Ingram, Petroleum Engineer .....	Victoria
K. C. Gilbart, Petroleum Engineer .....	Victoria
S. S. Cosburn, Mineral Engineer (Geology) .....	Victoria
D. L. Griffin, Mineral Engineer (Geology) .....	Victoria
T. A. Mackenzie, Engineering Assistant .....	Victoria
P. K. Huus, Engineering Assistant .....	Victoria
G. E. Blue, Petroleum Engineer .....	Dawson Creek
R. N. Thompson, Petroleum Engineer .....	Dawson Creek
H. B. Fulton, Assistant Geologist .....	Dawson Creek
H. A. Sharp, Engineering Assistant .....	Dawson Creek
E. N. Jernslet, Field Survey Assistant .....	Dawson Creek

The following are in charge of certain sections within the Branch: R. R. McLeod, reservoir engineering; A. N. Lucie-Smith, reserves; W. L. Ingram, development engineering; S. S. Cosburn, geology; T. A. Mackenzie, well information and statistics; G. E. Blue, field office.

## STAFFCHANGES

H. A. Sharp joined the field staff as an engineering assistant on March 31st and R. N. Thompson as a petroleum engineer on May 1st.

D. L. Griffin joined headquarters staff as a geologist on June 11th.

W. L. Ingram was transferred to Victoria from Dawson Creek on July 28th, and E. N. Jernslet was transferred from Victoria to the field staff on November 24th.

The Petroleum and Natural Gas Branch is responsible for the administration of the "Regulation Governing the Drilling of Wells and the Production and Conservation of Oil and Natural Gas" made pursuant to the "Petroleum and Natural Gas Act, 1954."

The regulation provides for the use of efficient and safe practices in the drilling, completion, and abandonment of wells; for the orderly development of fields discovered **within** the Province; and for the conservation and prevention of waste of oil and natural gas within the reservoir and during production operations.

The Branch, in addition to continuous field inspection of drilling and producing operations, makes studies relative to conservation.

## BOARD OF ARBITRATION

Chairman: R. R. McLeod, engineer. Members: A. W. Hobbs, solicitor; S. G. Preston, **agrologist**.

The Board of Arbitration, responsible to the Minister of Mines, held hearings in 1958 at Fort St. John and Pouce Coupe.

Seventeen applications, concerning right of entry came before the Board. Of these, one application **was** not processed because the operator did not effect **entry**; three were settled by private agreement; one. **was** adjourned at the request of the land-owner; one was settled by a Board award order with the agreement and consent of both **parties**; six were settled by award orders of the Board: and five award orders **were** pending at the end of the year.

R. R. McLeod, of the Department of Mines, was, at his request, replaced as Chairman of the Board on November 28th by A. W. Hobbs, of the Department of the Attorney-General. Mr. McLeod remained as a member of the Board.

#### CONSERVATION COMMITTEE

Chairman: A. N. Luck-Smith, engineer. Members: N. D. McKechnie, geologist; M. H. A. Glover, economist.

During 1958 the Conservation Committee considered two major matters which had been referred to it by the Minister:-

- (1) Whether production of gas from the Buick Creek sandstone at West Buick Creek should be allowed while there was apparently an accumulation of commercial oil in the same horizon down dip on the northeast flank; and
- (2) Whether the allowable production of a gas well may, in certain instances, be increased over the limit in force of 25 per cent of its open-flow potential by the application of the so-called "Alberta formula."

With regard to the first problem, conditional permission had been given on November 13th, 1957, to start producing gas from the crestal wells at West Buick Creek so that static bottom hole pressures could be taken continually in the oil wells, which had been shut in for that purpose. Gas production commenced on November 30th, 1957, and, with the co-operation of the operator, Pacific Petroleum Ltd., it was established at the beginning of March, 1958, that there was definite communication between the oil wells on the northeast flank and the gas wells on the crest of the structure; also, by this time, a well on the upper part of the southwest flank had started producing some oil with the gas and condensate. The Minister, acting on the advice of the Committee, ordered, on May 29th, all Buick Creek sandstone gas wells in the West Buick Creek field to be shut in, pending further information which might become available from further drilling. A well subsequently drilled between two of the oil wells on the northeast flank showed the formation to lack porosity, and by this time the production of the oil wells, which had been put back on the pump after the gas wells had been shut in, had declined considerably, both of which facts cast some doubt as to the extent of the oil accumulation. In view of this the operator was allowed to reopen the gas wells on September 5th on condition that two additional wells were drilled on the southwest flank at locations to be selected by the Committee to investigate the reservoir conditions there. The results of this additional drilling showed that the oil probably occurs in small patches around the perimeter of the structure with impermeable areas between, and that the reserve would probably be negligible compared with that of the gas. The Committee recommended that West Buick Creek, as far as the Buick Creek sandstone was concerned, should be produced as a gasfield and not an oilfield.

With regard to the second matter, the Committee recommended that the 25-per-cent rule should continue to apply to all gas wells, as there was still insufficient reservoir data available to allow the application of a formula, and no formula had yet been unreservedly accepted by any regulatory body.

#### GRUB-STAKING PROSPECTORS

Under authority of the "Prospectors' Grub-stake Act" the Department of Mines has provided grub-stakes each year since 1943 to a limited number of applicants able to qualify. An amendment to the Act in 1958 authorized an increase in the maximum allowable grub-stake to \$400, with an additional amount up to \$300 for travelling expenses.

To qualify at the present time the Department requires that the applicant shall be a physically fit male British subject, holder of a valid free miner's certificate, who has

been resident in the Province during the year preceding his application for a grub-stake, or who has been honourably discharged from Her Majesty's services, who is between the ages of 18 and 70, and who can identify common rocks and minerals.

It is required that in order to obtain the maximum grub-stake, he agree to spend at least sixty days actually prospecting in the area of his choice in British Columbia considered favourably by officers of the Department of Mines. If he prospects a lesser time, the grant will be reduced proportionately. In the past, rebates have been recovered from grantees to whom payments have exceeded the proper amount for the time and effort devoted to prospecting.

The grantee must not accept pay from any other source for services rendered during the period credited to the grub-stake. At the end of the season he shall provide the Department with a diary and maps outlining his activities while working under the grub-stake. Any discoveries made, staked, and recorded are exclusively his own property.

Statistical information covering the grub-stake programme since its inception is given in the following table:—

GRUB-STAKE STATISTICS

Field Season	Approximate Expenditure	Men Grub-staked	Samples and Specimens Received at Department Laboratory	Mineral Claims Recorded
1943	\$18,500	90	773	87
1944	27,215	105	606	135
1945	27,310	84	448	181
1946	35,200	95	419	162
1947	36,230	91	469	142
1948	35,975	92	443	138
1949	31,175	98	567	103
1950	26,800	78	226	95
1951	19,385	63	255	137
1952	19,083	50	251	95
1953	17,850	41	201	141
1954	19,989	48	336	123
1955	21,169	47	288	183
1956	20,270	47	163	217
1957	22,000	46	174	101
1958	24,850	47	287	211

Samples and specimens received from grub-staked prospectors are spectrographed, assayed, and tested for radioactivity. Mineralogical identifications are made on request.

Of the forty-seven grantees in 1958, twenty-four were given grants for the first time and eight of these proved unsatisfactory. Two grantees who had received previous grub-stakes were also struck from the list for unsatisfactory work. Five grantees, who for various reasons were unable to fulfil the terms and conditions of the grant, received only partial payment. Grub-staked prospectors worked in seventeen out of the twenty-four mining divisions.

D. H. Rae again gave able service in interviewing applicants and supervising grantees in the field. The following notes have been largely compiled from Mr. Rae's own observations while in the field and from information provided in the diaries of the grantees.

*Atlin Mining Division.*—Some work was done near Ash Mountain west of Tuya Lake, where the surface was found to be heavily drift covered. Some of this work extended into the Liard Mining Division. On both sides of Edasp Lake, outcrops of granite were encountered. Nothing of interest was reported in the Tuya and Stikine Ranges. Some small pegmatite dykes were found along the westerly contact of the Cassiar Batholith. More work will be done here. Work was also done in the Eaglehead Lake area, where barren quartz veins were found in limestone intruded by granodiorite. A large exposure of serpentine was found, but no asbestos was observed. South of the lake narrow stringers of asbestos were found in a peridotite zone.

*Cariboo Mining Division.*—West of Kleena Kleene some prospecting was done in the vicinity of Perkins Peak. In a wide exposure of argillite some rusty sulphides were found in cracks and fissures, along with some green and blue copper stain. Samples taken failed to show commercial values. About 20 miles southwest of McLeod Lake some prospecting was done but nothing of interest was reported.

*Clinton Mining Division.*—Some work was done in several areas between Tatla and Tatlayoko Lakes. A diorite-greenstone contact was prospected between Potato and Skinner Mountains. Nothing of interest was found. Some work was also done around the headwaters of Churn Creek. Nothing important was found. At the headwaters of Ruby, Bear, and Garnet Creeks more work was done. Scattered exposures of diorite showing considerable feldspar and hornblende and several large outcrops of serpentine were reported.

*Golden Mining Division.*—Work was continued in the Brewer Creek-Dutch Creek areas west of Canal Flats. At Thorald Creek narrow quartz veins cutting altered sedimentary rocks were prospected and sampled but no values were found. Nothing of interest was reported from work done in the Ben Abel Lake area.

*Kamloops Mining Division.*—Considerable work was done in the area between Lakeview and Eagle Creeks and some valuable gold-bearing quartz was found. Several heavily oxidized outcrops were investigated and found to be worth further prospecting. On Shuswap Lake some prospecting was done close to both Blind and Eagle Bays. The exposed rock is mainly andesite, chlorite schist, and limestone showing some scattered pyrite, but having no economic value. Some work was also done between Blind Bay, White Lake, Charcoal Creek, Blanc Creek, and around Pement and Wallenstein Lakes, but nothing of interest was reported.

*Liard Mining Division.*—Some work was done around Tuchodi Lakes and in the Tetsa River valley, where some copper float was found. Prospecting was carried on as far as 5 miles north and northeast of Tuya Lake, and in the Mount McGavin area. Considerable lava, coarse granodiorite, mica schist, and serpentine was encountered, but nothing of economic importance was reported. Some more work was also done near the headwaters of Blue River, near Jennings Lakes, and near Tootsee Lake. In the Rosella Creek area, outcrops of limestone, schist, and barite were investigated, and at Poorman Lake some green copper stain was found, and fine colours of gold panned in a small creek. Nothing of geological importance was found in ground explored at the head of Moody Creek, near Snow Creek, or on the Horseranch Range of mountains. The ground between McDonald Creek and Racing River received some further attention. This area is all the more interesting since Magnum mines started work in the district. Adjacent to the Tetsa Range, quartz, hematite, and magnetite along with small amounts of copper were found, although nothing proved to be of commercial importance. At Nine Mile Creek northeast of Telegraph Creek some inconclusive work was done, and from a base camp established near Adsit Lake a large area was prospected, and some basic rocks, narrow dykes, and granitic rocks were noted.

*Lillooet Mining Division.*—Some prospecting was done in the Bridge River area, extending from Pearson Pond to Spruce Lake, and continuing on to Cardtable Mountain. Some attention was paid to an exposure of limestone and altered sediments, but nothing of importance was reported.

*Nanaimo Mining Division.*—Prospecting was continued in the Menzies Bay area north of Campbell River. Small outcrops of copper-bearing quartz were explored, but nothing of commercial value was reported. Inconclusive work was carried on around Wolf Mountain, Bonell Creek, and the old O.K. mine. Several samples were turned in containing good values in gold.

*Nelson Mining Division.*—At the south end of Kootenay Lake, prospecting was continued northwest of the old Bayonne mine, up the west fork of Goat River, and at the

**headwaters** of Cameron Creek, interesting geological conditions were reported, but nothing of importance was found.

*New Westminster Mining Division.*—In the high, logged-off area adjacent to the northeast side of Weaver Lake numerous narrow mineralized veins containing copper, lead, and zinc minerals were found scattered through the exposed granite. These were thoroughly prospected, but no continuity or increase in width was found to exist. Several good exposures of copper ore were prospected on Agassiz Mountain, and further work is warranted in this area. Near the Alexandra Bridge in the Fraser Canyon an exposure of micaceous schist showing scattered mineralization of molybdenite received some attention. The values were too low to be of importance. A small amount of work was done several miles west of the Fraser River between Spuzzum and Clear Creeks. The area is very rugged, and no mineralization of interest was reported. East of Boston Bar, on the Anderson River, some inconclusive work was done. Exposures of slate, diorite, limestone, and serpentine were reported. Between Harrison Lake and the head of Spuzzum Creek much scattered molybdenite was found, but there was not enough concentration to make the area interesting.

*Nicola Mining Division.*—Some good work was done over an extensive area extending from Juliet westerly to the headwaters of Anderson River. Narrow pegmatites, gneissic granite, and considerable faulting were observed in the Murray Lake area. A feldspathic dyke containing pyrites and some manganese minerals was observed near Alexander Lake, and at the headwaters of Anderson River many fine-grained andesitic and rhyolitic dykes were reported. No important mineral occurrences were found, but excellent prospecting was done. Some work was done on rusty outcrops between Stump and Napier Lakes, near Brookmere, east of Aspen Grove, and at the north end of Mamit Lake. Nothing of interest was reported.

*Omineca Mining Division.*—A great deal of prospecting was done in this mining division. In the Fraser Lake area, outcrops of granite and volcanics were prospected, and a small deposit of kaolin was reported to have been discovered. Some time was spent in the Dog Creek valley near Germansen Lake, in the Tarnezell Creek area, at the north end of Trembleur Lake, and adjacent to the portage on Stuart Lake, but nothing of interest was reported. At the end of the northwesterly arm of Stuart Lake some cinnabar float was found. Several narrow veins containing manganese were uncovered on McKelvey Island and on the adjacent mainland, but these were not of commercial value. On the north shore of Pinchi Lake, east of the old Pinchi Lake mercury mine, a large heavily faulted zone was given considerable attention. Some work was also done on and adjacent to the south shore, near the centre of Trembleur Lake,

Several other areas around Manson Creek and Old Hogen received considerable attention. These included Jackfish Creek, Twenty Mile Creek at the road crossing, Osilinka River to Steele Creek, Groundhog Creek valley, Wolverine Lake area, headwaters of Granite Creek, and southeast end of Manson Lakes. Some interesting float was found, and several areas showing interesting geological conditions were mapped for further attention. Some prospecting was done in the Cheztainya Lake and Humphrey Lake areas, which are mainly underlain by altered conglomerates with some surface exposures of volcanics and granite. Nothing of interest was found in the whole area.

From a base camp on the north side of Nation Lake, 6 miles from Nation River outlet, an extensive area was prospected. This work was finally concentrated on an exposure of low-grade copper mineralization close to the lake. Assays of samples taken here were not commercial. Some work was also done near the centre of the south shore of Tchentlo Lake, where outcrops of agglomerate, argillite, and serpentine were reported.

From the north end of Usluka Lake, extending northwesterly for 20 miles, a great deal of prospecting was done, and several new discoveries of copper mineralization were explored.

*Similkameen Mining Division.*—East of the Hope-Princeton Highway, in the Friday Creek area, a great deal of work was done prospecting **successfully** around some old workings. Narrow but high-grade exposures of **bornite** occur over a large area. More work will be done here. Some work was also done in the Railroad Creek valley and in the Coquihalla River area, including the valleys of Divide and **Podunk** Creeks, and much of the Sowaqua River valley. Rhyolite, **argillite**, iron-stained schist, **some granodiorite**, and **dark-coloured** serpentine were observed, and some stringers of brittle **fibre** asbestos up to 2 inches long were found in the serpentine. More work is warranted in this area.

*Skeena Mining Division.*—Some attention was paid to areas close to Diana Lake, **Prudhomme** Lake, and Rainbow Lake, where considerable magnetite was found. At Diana Lake some **float** carrying high values in silver and lead was picked up, but nothing was found in place. **Sims Harbour** on **Porcher** Island was investigated, and some narrow veins containing pyrite and **chalcopyrite** were found in granite but proved to be non-commercial. Close to **Claxton** some work was done along a **granite-sedimentary** contact, where a **quartz** vein containing iron pyrites was uncovered. On **Kumealon Inlet** a large area underlain by a **pure** variety of limestone was prospected extensively, and this is being investigated for use in the pulp industry.

Some work was also done on the Queen Charlotte Islands (**Lyell** Island), where the source of placer gold in a stream was under investigation. On **Pitt** Island one man continued his 1957 prospecting and **turned** in an excellent report of his findings over a large area. The area reported on included Elbow Point area, **McCauley** Island, **Mink** Trap Bay, **Curtis** Inlet, **Union** Passage, and **Fin** Island. This area shows a large variation in the nature of the underlying rock, viz.: **Quartz-diorite**, **granodiorite**, coarse limestone, **biotite** schist, **gabbro**, **basalt**, and **monzonite**. Nothing of commercial interest was reported.

Some work was also done around **Alice** Arm, **Roundy** Creek, **Larcom** Island, head of **Hastings** Arm, **Donahue** Creek, **Lime** Creek, and the south end of **Porcher** Island. **Nothing** of interest was reported.

*Slocan Mining Division.*—**Work** was continued in the vicinity of **Burton**, including **Shannon** Creek, **Wilson** Creek, **Rodd** Creek, **Cariboo** Creek, **Bonanza** Creek, **Mosquito** Creek, **Rossland** Creek, **Scalping Knife** Mountain, and **Snow** Creek. Some small showings of **molybdenite** in granite were reported from the **Snow** Creek area. **Nothing** of further interest was found.

*Vancouver Mining Division.*—**Some** work was done on the **Toba** River 8 miles from the head of **Toba** Inlet. Several **high** assays were obtained from float material, but no definite geological information is available. On **Redonda** Island further prospecting was done in the vicinity of a discovery of **molybdenite** made last year. Small exposures were found to be of commercial **value**, but no continuity was maintained in the deposit. In the steep mountainous country behind **Woodfibre** a great deal of work was done in trying to trace the **Britannia** shear zone. No important zones were found.

*Victoria Mining Division.*—**Some** work was done around **Brow** Creek, near **Port Renfrew**, and **Harris** Creek. The result of this work was inconclusive.

## MUSEUMS

The Department has a large exhibit of mineral rock specimens in the Douglas Building, Victoria; collections are also displayed in the joint office in Vancouver and in the offices of the Inspectors of Mines in Nelson and Prince **Rupert**.

Specimens from the collection in Victoria, accumulated in a period of more than sixty years, are displayed in cases on the fourth floor of the Douglas Building. The collection includes specimens from many of the mines and prospects in the Province, and also specimens of type rocks and special minerals from British Columbia and elsewhere.

British Columbia material includes specimens collected by officers of the Department of Mines and specimens donated by property-owners. The collection also includes type specimens purchased from distributors. Other valued specimens or groups of specimens have been donated or loaned to the museum.

#### ROCK AND MINERAL SPECIMENS

Information regarding collections of specimens of rocks and minerals available to prospectors and schools in British Columbia may be obtained from the Chief of the Mineralogical Branch.

#### PUBLICATIONS

Annual Reports of the Minister of Mines, bulletins, and other publications of the Department, with prices charged for them, are listed in the Department of Mines List of Publications available from the Chief of the Mineralogical Branch.

Publications may be obtained from the offices of the Department in Victoria and elsewhere in the Province. They are also available for reference use in the Department's library (Mineralogical Branch) at Victoria, in the joint office in Vancouver, and in the offices of the Inspectors of Mines in Nelson and Prince Rupert, as well as in public libraries.

#### MAPS SHOWING MINERAL CLAIMS, PLACER CLAIMS, AND PLACER-MINING LEASES

From the details supplied by the locators, the approximate positions of mineral claims held by record and of placer-mining leases are shown on maps that may be inspected in the central records offices of the Department of Mines in Victoria and in Vancouver. Copies of these maps may be obtained on request. The boundaries of surveyed claims and leases are shown on the reference maps and other maps of the British Columbia Department of Lands and Forests.

#### JOINT OFFICES OF THE BRITISH COLUMBIA DEPARTMENT OF MINES AND THE DEPARTMENT OF MINES AND TECHNICAL SURVEYS, CANADA.

The Provincial Department's Inspector and Resident Engineer, the Gold Commissioner and Mining Recorder for the Vancouver Mining Division, and the officers of the Federal Geological Survey occupy one suite of offices. All official information relating to mining is now available to the public in the one suite of offices in Vancouver,

The services offered to the public include technical information on mining, the identification of mineral specimens, distribution of Federal and Provincial mining publications, a reference library, a display of rocks and minerals, and a central records office.

## Topographic Mapping and Air Photography

A satisfactory year of accomplishment in surveys and mapping was had by the Surveys and Mapping Branch of the British Columbia Department of Lands and Forests, and by the Departments of Mines and Technical Surveys and of National Defence of the Canadian Government.

The British Columbia Government surveys for the final demarcation of the northern boundary of the Province were successfully concluded in 1958.

The Legal Surveys Division of the Surveys and Mapping Branch is responsible for cadastral surveys of all Crown lands in the Province and issued 608 sets of instructions for surveys spread over the populated area. Notable amongst these is an area of 4,170 acres in the Peace River district from Hudson Hope east to the Beaton River road. Forty-nine and one-half miles were surveyed for rights-of-way for new highways in the vicinity of Yahk to Kingsgate, West Summerland to Peachland, Burns Lake, Allison Lake, and Arras to Dawson Creek. In the course of such surveys, 251 old lot corners were replaced by permanent monuments.

The Air Division of the Surveys and Mapping Branch, experiencing ideal flying weather during the season, covered 20,000 square miles with narrow-angle 1-inch-to-20-chains scale vertical photography for the British Columbia Forest Service, and an additional 2,500 lineal miles of various types of photography for other Government branches. These record operations added 26,000 photographs to the Air Photo Library, bringing the total number of air photographs (Federal and Provincial) now on file at Victoria to 453,553.

The Interim Mapping Section of the Air Division completed approximately 30,000 square miles of 1-inch-to-40-chains scale mapping showing planimetry, watershed boundaries, and cadastral surveys, bringing the total area of the Province covered by this series to 224,000 square miles.

In the 1958 programme of operations the Topographic Division of the Surveys and Mapping Branch nearly doubled its 1957 programme by completing field control for twenty standard National Topographic map-sheets covering 7,600 square miles located in the following areas: Mabel Lake, Clinton, Tatlayoko, Taseko and Chilco Lakes, and an area east of Bella Coola.

Control was established for 1,315 square miles by sixty-one multiplex extensions for 1-inch-to-500-feet mapping with 10-foot contours in the vicinity of Vernon, and forty-eight extensions for 1-inch-to-1,000-foot mapping with 20-foot contours in the Chemainus and Nanaimo River areas.

The Multiplex Section of the Topographic Division completed eleven projects covering 3,042 square miles.

Map compilation and reproduction by the Geographic Division of the Surveys and Mapping Branch resulted in the publishing of thirteen maps, seven of which are new editions. Prominently featured during the year was the much requested two-sheet wall map of the Province—No. 1A—scale 1: 1,000,000 (approximately 1 inch to 16 miles). Other new editions included four of the popular National Topographic series at 1-inch-to-2-miles scale, i.e., 82 E/NE—Upper Kettle River, 92 G/SE—Langley, 92 I/NW—Ashcroft, and 92 I/SW—Lytton, also two regional maps, i.e., 2C—Northerly Vancouver Island—scale 1 inch to 4 miles and 3H—Tête Jaune—scale 1 inch to 3 miles.

The Canadian Government Departments of Mines and Technical Surveys and of National Defence at Ottawa, working in close co-operation with Provincial agencies during 1958, completed the field work for sixty-two half-sheets of the National Topographic 1:50,000 series in the Province.

The 1958 Annual Report of the Deputy Minister of Lands contains key maps indicating coverage by air photographs and by topographic, interim, and lithographed maps. Further information concerning these and the corresponding Federal mapping may be obtained from the Director, Surveys and Mapping Branch, Department of Lands and Forests, Victoria.



## Department of Mines and Technical Surveys

The Canadian Government Department of Mines and Technical Surveys, created by an Act of Parliament introduced in November, 1949, took over most of the branches and functions related to mining of the former Department of Mines and Resources. The Mines Branch, Geological Survey of Canada, and Surveys and Mapping Branch are the three branches of the Department of the most direct interest to the mining industry. Brief reference to the work of the Surveys and Mapping Branch in British Columbia is made in the preceding note headed "Topographic Mapping and Air Photography." A note on the Geological Survey of Canada follows this paragraph and is followed by a note on the Mines Branch.

### GEOLOGICAL SURVEY OF CANADA

By an arrangement made at the time the Province of British Columbia entered Confederation, geological investigations and mapping in the Province are carried on by the Geological Survey of Canada. Several geological parties are in the field each year. Many excellent reports and maps covering areas of British Columbia have been issued by the Geological Survey of Canada, and they have made available a great amount of information that has been of much benefit to the mining and prospecting activities in British Columbia.

A branch office of the Geological Survey of Canada is maintained in Vancouver. Maps and reports on British Columbia can be obtained there. J. E. Armstrong is in charge of this office.

#### FIELD WORK BY GEOLOGICAL SURVEY OF CANADA IN BRITISH COLUMBIA, 1958

H. H. Bostock began the geological mapping of Squamish (92 G, W. ½) map-area.

H. Frebold studied Jurassic fauna and stratigraphy in the Tyaughton Lake area and south of Nelson.

J. G. Fyles completed the field study and mapping of the surficial deposits on the east coast of Vancouver Island between Cumberland and Campbell River (lowland parts of 92 F/10, 11, 13, and 14 and K/3 and 4).

H. Gabrielse conducted stratigraphic studies and geological reconnaissance of Kechika (94 L) and Rabbit River (94 M) map-areas.

H. W. Little began the revision of geological mapping in the Kettle River West Half (82 E, W. ½) map-area.

D. C. McGregor collected flora from Lower Cretaceous and adjacent strata in the foothills of Alberta and British Columbia.

B. R. Pelletier and W. B. Brady began and completed field work in the Tetsa River (94 K/9) map-area.

R. A. Price began geological mapping of the Fernie East Half (82 G, E. ½) map-area. This map-area extends into Alberta.

J. E. Reesor continued his study of granitic rocks, making detailed field studies within the Burton (82 F/13) and Passmore (82 F/12) map-areas.

E. F. Roots completed field work required to fill in gaps from Operation Stikine within Bowser Lake (104 A), Spatsizi (104 H), and Dease Lake (104 J) map-areas.

J. G. Souther completed similar work in Iskut River (104 B) map-area and in addition made a geological reconnaissance of Sumdum (104 F) map-area and the southern half of Tulsequah (104 K) map-area.

D. F. Stott completed stratigraphic studies of Cretaceous strata in the foothills of Alberta and British Columbia.

H. W. Tipper completed all but the northeast corner of Quesnel (93 B) map-area.

**REPORT OF THE MINISTER OF MINES, 195X****PUBLICATIONS OF THE GEOLOGICAL SURVEY**

A total of fifteen publications of the Geological Survey of Canada relating to British Columbia was received by the British Columbia Department of Mines in 1958. A list of the fifteen publications will be supplied on request.

**MINES BRANCH**

The Mines Branch has branches dealing with mineral resources, mineral dressing and process metallurgy, physical metallurgy, radioactivity, and fuels and explosives. A total of six publications of the Mines Branch pertaining to British Columbia were received in 1958 by the British Columbia Department of Mines. A list of these publications will be supplied on request. They included tabular pamphlets dealing with coal mines, gold mines, stone quarries, petroleum refineries, and milling plants in Canada.

# Lode Metals

## CONTENTS

	PAGE
GENERAL REVIEW.....	3
NOTES ON METAL MINES.....	6
Telegraph Creek.....	6
Unuk River.....	6
Portland Canal.....	6
Alice Arm.....	6
Ecstall River.....	7
Hazelton.....	9
Smithers.....	10
Omineca.....	11
Alaska Highway.....	13
Cariboo.....	14
Lac la Hache.....	15
Lillooet.....	15
Pukaist Creek.....	21
Highland Valley.....	21
Pimainus Lake.....	24
Guichon Creek.....	24
Merritt.....	24
Aspen Grove.....	28
Swakum Mountain.....	28
Meadow Creek.....	29
Kamloops.....	29
Birch Island.....	30
Similkameen River.....	30
Hedley.....	31
Keremeos.....	32
Fairview Camp.....	32
Camp McKinney.....	33
Rock Creek.....	34
Beaverdell.....	35
Phoenix.....	36
Trail.....	36
Nelson.....	37
Ymir.....	37
Salmo.....	38
Nelway.....	40
North Kootenay Lake.....	41
Woodbury Creek.....	43

NOTES ON METAL MINES—*Continued*

	PAGE
Kaslo.....	44
Paddy Peak.....	44
Retallack-Three Forks.....	44
Sandon.....	45
Slocan Lake.....	47
Springer Creek.....	49
North Lardeau.....	49
South Lardeau.....	50
Creston.....	50
Kimberley.....	51
St. Mary River.....	51
Fort Steele.....	52
Skookumchuck.....	52
Canal Flats.....	52
Windermere.....	52
Revelstoke.....	53
Skagit River.....	54
Hope.....	55
Harrison Lake.....	56
Howe Sound.....	56
Texada Island.....	57
Vancouver Island.....	57
REPORTS ON GEOLOGICAL, GEOPHYSICAL, AND GEOCHEMICAL WORK.....	61

## GENERAL. REVIEW

With the exception of gold, the prices of all principal metals were down in 1958 compared with 1957. The average Canadian price of gold was \$33.98 per ounce, 43 cents more than the twenty-four-year low reached in 1957. The price of silver declined only six-tenths of a cent per ounce. The New York price of copper dipped below 20 cents per pound early in March but climbed slowly to 26.975 cents at the end of the year. The average Canadian price for the year was the lowest since 1949. The average price for lead, below 12 cents per pound, was the lowest since 1946. The 10 cents average price for zinc was also the lowest since 1946 and was practically half the record high of 1951. The imposition in October of quotas on the amounts of lead and zinc imported into the United States had little effect on the quantity of those metals produced in 1958. The price of tungstic oxide reached a low of \$8.50 per short ton unit, although it was between \$12 and \$13 at the start and end of 1958.

Gold, silver, copper, lead, and zinc produced at British Columbia lode mines in 1958 had a gross value of \$93,516,891. Miscellaneous metals, including iron ore, tungsten, tin, and minor metals recovered at the Trail smelter, had a gross value of \$10,539,795. The total quantity of ore mined at all lode mines amounted to 6,402,198 tons and came from forty-seven mines, of which twenty-eight produced 100 tons or more. The average number employed in the lode-mining industry in 1958, including mines, concentrators, and smelters, was 7,434.

In 1958 twenty-five mills were operated, fifteen of them throughout the year. Two mills, that of Western Nickel Limited near Hope and that of Cowichan Copper Co. Ltd. at Cowichan Lake, produced for the first time. The Musketeer mill at Bedwell Sound reopened. Eight mills closed, four because of exhaustion of the orebodies which supplied them and four because of various economic reasons. Three Slocan mills accepted custom ore.

The Trail smelter recorded custom receipts of 3,238 tons of crude ore (including 1,225 tons of siliceous ore), 9,240 tons of lead concentrates, and 4,514 tons of zinc concentrates. Totals of approximately 26,000 tons of lead concentrates (including about 2,300 tons from the Sullivan mine) and approximately 65,000 tons of zinc concentrates were shipped out of the country for smelting. Most copper concentrates, and dross from the Trail smelter, were shipped to the Tacoma smelter; copper concentrates from Cowichan Lake were shipped to Japan. Concentrated iron ore was shipped to Japan. Tungsten concentrates were sold to the United States Government under contract; concentrates produced after expiration of the contract were stockpiled at the Emerald mine. Nickel concentrates were shipped to the refinery at Fort Saskatchewan.

The production of gold decreased somewhat in comparison with the 1957 figure. This, was largely due to the cessation of production from Tulsequah in 1957 and the closing of Britannia early in 1958. The deep development at Bralorne continued, with no diminution in gold content of the 77 vein. New interest was shown in gold by the reopening of the Musketeer mine and by investigational work at Tranquil Inlet and Camp McKinney.

The production of silver remained essentially unchanged, although the sources of silver were materially reduced with the closing of the Silver Standard and Spider mines in May. Production capacity of the Slocan Mining Division was also reduced. Highland-Bell, on the other hand, produced more silver than in any year since 1941.

The Britannia mine closed after fifty-three years of continuous operation, during the course of which it milled 44 million tons and produced 940 million pounds of copper in concentrates. The company had proposed to cease operations in December, 1957, owing to the low price of copper, but a direct subsidy payment by the Canadian and Provincial Governments enabled the mine to operate on a reduced scale until March 12th, 1958, when production ceased. The price of copper subsequently rose, however, and the

owners of the property, after a complete reorganization, were making plans at the end of 1958 to reopen the mine. After the closing of **Britannia** the only producing copper mine was that of **Cowichan** Copper Co. Ltd. Copper was a by-product of the milling of iron, nickel, and lead-zinc ores, and of the relining of copper matte from Trail.

Although the current **position** of copper was not satisfactory, the future was brighter. Interest in the region **Kamloops-Ashcroft-Merritt-Princeton** was shown by large and small exploration companies. American Smelting and Refining Company Ltd. dropped out of the Highland Valley camp owing to **pressure** of **business** elsewhere, but Bethlehem Copper Corporation Ltd. continued exploration on its own property and started an **adit** at an elevation of 4,600 feet. The **adit** had reached the Jersey zone at the end of 1958. The **Craigmont** property near Merritt was also brought to the stage of underground development, and at the end of the year the 3500 **adit** reached the ore zone which had been outlined by surface diamond drilling,

The chief producers of lead and zinc, apart from the Sullivan, continued to **produce** in the face of prices that made most operations little more than marginal. These were the **H.B.**, Jersey, Reeves MacDonald, Bluebell, and Mineral King. Three mines closed because their **orebodies** were exhausted—the Silver Standard and Spider in May and the Highlander in December. There was some reduction in output from the **Slocan**. The Sullivan mine produced approximately 2,444,000 tons or 9,600 tons per day of operation.

The Emerald tungsten mine closed on July 31st upon exhaustion of the developed **orebodies**, shortly after termination of its contract with the United States Government. Further development at the current market price of **tungstic** oxide is not considered. The Emerald tungsten ore zone was discovered in 1941, and the property was bought by the Canadian Government and developed as a wartime measure in 1942. The property (including the Jersey and the old Emerald lead-zinc mines) was purchased by its present owners in 1947 and mined for tungsten until January, 1949. Early in 1951 the Canadian Government bought back two blocks of ground covering the known Emerald tungsten **orebodies** and the partly developed Dodger tungsten showings, and a mill was constructed at Government expense. In October, 1952, all Government holdings were bought back by the company. The Emerald mine and the closely **related** Dodger and Feeney mines have produced 13,739,939 pounds of **tungstic** oxide in concentrates, valued at \$33,900,311, gross.

The Western Nickel mine came into production in January, 1958, and operated for half a year. It closed at the end of July because of **modification** and partial cancellation of European sales contracts.

**Molybdenite** was of more interest in British Columbia than in years past. American Metal Climax, Inc., at the Boss Mountain property outlined an ore zone that appears to be assured of future production. The same company was actively engaged elsewhere, especially at Glacier Gulch near **Smithers**. The Glacier Gulch showing is low in grade, but whether or not it will some day be mined the occurrence indicates the possibility that a major **molybdenite** zone may occur in non-granitic rock.

Exploration activity was at a fair level, considering the state of the market. Work was done mostly by the larger companies, some of which maintained large technical **field** staffs at considerable expense. Copper was the metal most sought after, partly because its future seemed bright, and also because there was promise of making important discoveries in the southern Interior. Exploration in the north was about normal, although development at the **Granduc** was halted for an indefinite period. **Preliminary** work was done on copper showings on Racing and Toad Rivers, near the north end of the Rocky Mountains, on the south side of the Alaska Highway.

**Other** metals were sought after to a lesser extent than copper. One of the few promising developments in lead and zinc was on Duncan Lake, where surface diamond

drilling showed interesting results, The search for silver, lead, and zinc was somewhat less than desirable in view of the several mine **closures**.

For some years the Department of Mines has accepted under the "Mineral Act" and the "Placer-mining Act" geological, geophysical, and **geochemical** reports for credit on assessment requirements. These reports have been available for examination at the **office** of the Mining Recorder for the appropriate mining division, and at the office of the Chief of the **Mineralogical** Branch, Department of Mines, Victoria. In **all**, 244 reports have been accepted since January **17th**, 1947. A list of the reports, to date, appears at the end of the Lode Metals section, pages **61** to **75**.

## NOTES ON METAL MINES

## TELEGRAPH CREEK\*

*Molybdenum*

**Balsom Group**  
**(Conwest Explora-**  
**tion Company**  
Limited)

(57° 132° N.E.) This property is on the headwaters of Barrington River. The showings consist of pyrite, pyrrhotite, and molybdenite in a brecciated zone in a dioritic stock which intrudes Triassic sedimentary and volcanic rocks, American Metal Climax, Inc., optioned twenty-two claims from Conwest Exploration Company and located eight more; work commenced June 17th and finished July 30th. A trail was built from Telegraph Creek to the property, a distance of 60 miles; 275 feet of rock trenching and 2,500 feet of surface stripping was done; geological mapping was done on the claims and seventy-six samples were taken in sampling the mineralized zone. Access to the property was by aeroplane and by pack-horse. Geologist in charge at the property was P. O. Hackey. An average crew of five men was employed.

## UNUK RIVER\*

*Copper*

**Granduc (Granduc**  
**Mines, Limited)**

(56° 130° S.E.) Company office, Room 507, 1111 West Georgia Street, Vancouver 5; L. T. Postle, president. The property is on the south fork of the Leduc glacier, 25 miles northwest of Stewart at an elevation of 4,500 feet. Work to date has indicated a mass of copper-bearing rock of major size.

On March 15th, 1958, all operations ceased, and at present there are no indications of an early resumption of work. Surface installations at the mine were completely dismantled, and machinery was weather-proofed and stored in the 3250 level.

On the surface 3,251 feet of ice-drilling was done on the Leduc glacier. A further 8,943 feet of diamond drilling was done underground. On the 2625 level 477 feet of drifting was done. A small raise 69 feet long was driven.

Work was carried out until the cessation of operations, an average crew of fifty-two men being employed.

## PORTLAND CANAL\*

*Gold-Silver-Lead-Zinc*

**Silbak Premier**  
**Mines Limited**

(56° 130° SE.) Company office, 572 Howe Street, Vancouver. A. E. Bryant, president; Henry L. Hill and Associates, consulting engineers. During the summer of 1958 mill clean-up work carried out by a crew of four men produced 99.6 tons of concentrates averaging 2.5 ounces gold per ton. There was no indication that operations would be resumed in the near future.

## ALICE ARM\*

*Silver*

**Toric (Torbrit**  
**Silver Mines**  
Limited)

(55° 129° N.W.) Registered office, 309 Royal Bank Building, Vancouver; executive office, 44 King Street West, Toronto; mine office, Alice Arm R. W. Burton, manager; H. Bapty, mine superintendent; G. K. Sutherland, mill superintendent. Capital: 3,000,000 shares, \$1 par value. The Torbrit mine camp and mill are on the west bank of the Kitsault River, 17 miles by road from Alice Arm.

Production: Ore milled, 135,892 tons. Total concentrates produced amounted to 1,872 tons containing 1,090,846 ounces of silver and 1,506,849 pounds of lead. In

\* By David Smith.



addition, the total bullion produced was 240,242 fine ounces. The source of the ore milled in 1958 was as follows: 34 per cent from the winze below the 813 level; 28 per cent from the 813 level; 17 per cent from the 916 level; and 21 per cent from the 1018 level.

A summary of mining operations follows:—

Ore broken—	Tons
Stoping .....	100,170
Stope raises and stope drifts .....	4,261
Development .....	2,691
Total .....	107,122
Waste broken—	Tons
Level development .....	615
Stope raises and stope drifts .....	937
Raises .....	438
Total .....	1,990
Development in linear feet—	Ft.
Drifts and crosscuts .....	304
Raises .....	233
Stope drifts .....	383
Stope raises .....	1,328
Total .....	2,248
Underground diamond drilling .....	6,011
Longhole drilling with tungsten carbide bits .....	33,971

No safety officer is employed, but a mine safety committee carries out regular monthly inspections of the mine and mill and holds monthly meetings. Sixteen compensable accidents occurred, as follows: Mine, 9 accidents; mill, 3 accidents; surface, 3 accidents; and kitchen, 1 accident.

On the surface no new construction was undertaken. The access trail to the hydro plant was put in excellent shape; all bridges were repaired or entirely replaced.

An adit was driven at 1,025 feet elevation from the west bank of the Kitsault River to investigate further the vein intersections found in the course of surface diamond drilling on the North Star claim. Total footage in the adit was 1,115 feet, and from the adit 4,403 feet of diamond drilling was done to explore further vein-matter which was found in driving the adit.

On the Tiger claim (Lot 3614), some trenching was done to trace the extension of a vein outcrop. Later, 667 feet of diamond drilling was done from surface sites.

#### ECSTALL RIVER\*

##### Pyrite-Zinc-Copper

##### Ecstall (Ecstall

Mining Company  
Limited)

(53° 129° N.W.) Company office, 355 Burrard Street, Vancouver. R. D. Mollison, New York, president; W. R. Bacon, director and manager of British Columbia operations. This property consists of twenty-one Crown-granted claims which extend across the Ecstall River at a point 30 miles above its confluence with the Skeena River. It is 45 miles southeast of Prince Rupert. Work on the property was confined to a few days' geophysical work for the purpose of checking two electro-magnetic anomalies obtained during the 1957 survey.

[Reference: *Minister of Mines, B.C., Ann. Rept., 1952, pp. 81-84.*]

\* By David Smith.



Entrance to Pocket Inlet, west coast of Moresby Island.



Pillow lava lying above limestone, Louise Island, Queen Charlotte Islands.

**Packsack** (Texas Gulf Sulphur Company)

(53° 129° N.E.) Executive office, 75 East Forty-fifth Street, New York, C. O. Stephens, New York, president. This property consists of sixteen claims, two rows of eight claims extending northward from the big bend of the Ecstall River. It is 7 air miles south 25 degrees east of the Ecstall property. In 1957 a crew

working under the direction of W. R. Bacon discovered massive sulphide showings on the east slope of what is now known locally as Prospect Hill. The showings are at a general elevation of 800 feet above sea-level and 650 feet above the valley floor.

There are two showings, They occur in the shallow beds of two tiny intermittent streams. The southern showing occurs in the northeastern corner of the Packsack No. 2 claim, and the northern showing, 550 feet north of the southern, straddles the location-line between the Gunnysack Nos. 1 and 2 claims.

The showings appear to be replicas of those occurring in Red Gulch Creek on the Ecstall property. In other words they consist largely of massive pyrite containing minor amounts of sphalerite and chalcopyrite. In addition, however, minor coatings of secondary chalcocite have been observed in a few places.

As on the Ecstall property, the showings occur in sericite schist, the favourable band of which is more than 100 feet wide at the southern showing. The band strikes northward and dips very steeply eastward.

The surface expression of the favourable band is a topographic depression, and extensive trenching with hand-tools is not practical. An electromagnetic survey was undertaken in 1958 to outline the extent of mineralization. The results of this survey indicate a minimum length of 2,000 feet for the mineralized zone and a probable maximum width of the order of 50 feet. The property was not visited.

**Silver-Lead-Zinc-Cadmium**

HAZELTON\*

Silver Standard (Silver Standard Mines Limited)

(55° 127° S.W.) Head office, 609, 602 West Hastings Street, Vancouver; mine office, Hazelton. R. R. Wilson, president; H. B. Gilleland, manager; A. C. Ritchie, general superintendent; G. E. Apps, mine superintendent. The property is on Glen Mountain, 5 1/2 miles north of Hazelton. All underground work ceased on

May 15th. No ore remains in the stopes and there are no more known ore-shoots on the veins. All surface break-throughs of stopes and raises have been caved and backfilled. To the end of production, May 15th, 1958, the mine worked 105 days with 2,537 man shifts underground, 800 man shifts in the mill, and 957 man shifts on the surface.

A summary of the work done in 1958 was as follows:-

<i>Mine</i>		
Development—		Ft.
Drifting and crosscutting .....		35
Subdrifting .....		70
Raising .....		230
Total.....		335
Diamond drilling—		Ft.
Surface .....		<i>Nil</i>
Underground .....		193
Total.....		193

\* By David Smith.

*Mine—Continued*

Stopping—	Tons
No. 11 cross-vein .....	5,320
No. 10 cross-vein .....	1,157
Ore-passes .....	36
Total .....	6,513
Ore to mill—	Tons
Stopes .....	6,513
Development .....	74
Total .....	6,587
<i>Mill</i>	
Ore from mine .....	6,587
Sorted as waste .....	1,543
Tons milled .....	5,044

All mining was on No. 11 and No. 10 cross-veins. The 1511-1100 D block at the south end of the No. 11 cross-vein ore-shoot was developed and stoped to supply approximately one-third of the 1958 production. The balance of the ore was mined from remnants of the orebodies, pillars, and small faulted vein segments. Eight diamond-drill holes totalling 193 feet were drilled to test the veins in the vicinity of the workings.

Milling was continuous from January 27th to April 17th and was intermittent to May 13th. A total of 6,587 tons of ore was drawn from the mine. Of this, 1,543 tons was hand-sorted and discarded as waste while the remaining 5,044 tons was treated by differential flotation. The indicated recovery was 93.7 per cent. There were no major alterations to the mill flow sheet and no major breakdowns.

All surface units were completely dismantled and placed in storage at the Sil-Van mine. Except for the hoist, all underground installations and equipment were dismantled and are now in storage at the Sil-Van mine.

## SMITHERS

*Silver-Lead-Zinc***Lorraine\***

(54° 126° N.W.) This property is on the eastern slope of Hyland Mountain at an elevation of 5,000 feet. Work on the property was confined to opening up the upper tunnel in preparation for stoping to surface. A truck-road 4 miles in length was built joining the Cronin mine road 2 miles below the present Cronin mill-site. Work was under the direction of D. A. Campbell, engineer. A crew of three men was employed.

*Molybdenum***Glacier Gulch†  
(American Metal  
Climax, Inc.)**

(54° 127° N.E.) The occurrence of molybdenite in rocks directly below the toe of the glacier at the head of Glacier Gulch on the east side of Hudson Bay Mountain has been known locally for some time, even though no published record exists. Four claims were located on the molybdenite showing in May and June, 1956, by W. D. Yorke-Hardy, E. E. Malkow, Hunter H. Simpson, and R. C. McFarland, of Smithers. These men located twenty-six more claims around the head of Glacier Gulch in July, 1957, and in December, 1957, title to all claims was transferred by bill of sale

\* By David Smith.

† By Stuart S. Holland.

to Climax Molybdenum (B.C.) Ltd., now American Metal Climax, Inc. The company located an additional twenty-five claims around the initial locations.

American Metal Climax, Inc., was actively engaged during the summer of 1958 in investigating the occurrences of molybdenite at and around the toe of the glacier at the head of Glacier Gulch. A trail from the head of the Glacier Gulch road was built up hill to a tent camp established within 200 feet of the toe of the glacier.

Over the past ten years or more the glacier has been receding rapidly and an extensive area has recently been exposed to view. This area of rock, immediately east of the ice front, is smoothed by ice erosion, and is almost devoid of drift and boulder cover. The bedrock of Hazelton formation tuffs, flows, and agglomerates is perfectly exposed to view. The rocks are cut by a few feldspar porphyry dykes high up along the northern edge of the glacier and by several shear zones along which there has been some carbonate alteration. The volcanics, regardless of type, are crossed by a system of north-westerly striking and northeasterly dipping joint-planes. The joint-planes, whose spacing may range from 1 foot to 10 or 15 feet, are mineralized predominantly by molybdenite. Some pyrite, chalcopyrite, and sphalerite have been observed in very minor amounts. The molybdenite ranges in thickness from a mere film to veinlets of about three-eighths of an inch maximum thickness. The rock between the mineralized joint-planes appears to be devoid of mineralization.

Bedrock and its contained mineralization is well displayed in an area 2,000 feet wide by 1,000 feet deep. The company was primarily engaged in sampling this area. A grid had been laid out and bulk samples were taken at 100- by 200-foot intervals. Although three sets of samples were taken over the area, uniform results had not been obtained. Eleven diamond-drill holes totalling 6,320 feet were drilled.

Exploration has shown that there is a very large surface area of molybdenite mineralization beyond the area sampled and that the mineralization appears to have a vertical range of several thousand feet. There is some indication that the more intensely hornfelsed rocks carry a slightly higher molybdenite content. The accurate determination of grade is the critical factor in assessing the worth of the property.

Work was under the direction of J. W. Bryant. A geological survey of the property was made by Professor W. W. Moorhouse, of the University of Toronto,

#### OMINECA\*

##### Mercury

(55° 125° N.E.) This property consists of ten claims-AMY Group Nos. 1 to 10 held by record-and is situated on Silver Creek 6 miles south of the Omineca River. The mineral showings are cinnabar impregnations in Permian rocks along the Pinchi fault zone. An average crew of three men was employed. Work included the removal of some 14,500 yards of overburden by hydraulicking and with a bulldozer. The access road was put into shape for truck transportation. Geological mapping was done. The project was a joint effort by Noranda Exploration Company, Limited, Canex Aerial Exploration Ltd., and Bralorne Mines Limited under the supervision of E. Bronlund.

##### Copper

(56° 125° S.W.) This property consists of seventeen claims—Jane Group Jane Nos. 1 to 17—held by record, and is situated on Croydon Creek 9 miles west of Aiken Lake. The mineral showings are shear zones in diorite and pyroxenite carrying values in copper and gold. An average crew of eight men was employed. Work accomplished included 9 miles of trail, 35,000 feet of line cutting, 1,537 feet of diamond drilling in seven holes, and geological mapping. E. Bronlund was engineer in charge for Noranda Exploration Company, Limited, Canex Aerial Exploration Ltd., and Bralorne Mines Limited.

\* By David Smith.



Glacier at the head of Glacier Gulch, Hudson Bay Mountain.



Packing to the Glacier Gulch molybdenite showings.

**Lead-Silver**

Silver Tip Group  
(**Canex** Aerial  
Exploration Ltd.) (59° 130' N.W.) The Silver Tip claims are about 4 miles north-east of Tootsee Lake and 17 miles by road south of Mile-post 701 on the Alaska Highway. A total of thirty-two claims are held by record by the owners, A. Zborovsky and associates. Conwest previously optioned the claims and did the following work: 1,950 feet of drifting and raising, 650 feet of underground diamond drilling in six holes, 1,908 feet of surface drilling in eleven holes, and some surface trenching. The option was dropped and Canex took up the option. A crew of ten was employed. Work commenced August, 1958, and ended in November. Three holes were drilled from the adit with a total footage of 3,296 feet. Approximately 10 miles of new tractor-road was constructed and improvements were made to the existing road.

**Copper**

## ALASKA HIGHWAY

(58° 125° N.E.) Company office, 700 Burrard Building, 1030 West Georgia Street, Vancouver. D. J. McDonald, president; A. (**Magnum** Copper Allan, field superintendent, The property is on the headwaters of Limited **N.P.L.**) Delano Creek, a tributary of the Racing River. A total of sixty-eight claims are held, partly by record, partly by option agreement from W. Lembke and A. Larson, Mile 408, Alaska Highway. The showings consist of closely spaced lenses of quartz within a northeasterly trending shear zone. The quartz lenses are more or less abundantly mineralized with chalcopyrite. Surface sampling by the company reportedly indicates a length of 1,050 feet, 7.0 feet wide, averaging 7 per cent copper. Sporadic low values in gold and silver are associated with the copper mineralization. The zone is persistent on strike and drilling shows it to extend at least 700 feet in vertical depth. Work on the property commenced July 28th and was discontinued on September 25th. The average crew consisted of twelve men. A length of 3,485 feet of AX core drilling was done in six deep holes. To obtain samples, 440 feet of EX core drilling was done in twenty-two shallow holes. Considerable trenching and open-cutting was done. Some work was done to improve the existing Racing River trail and in new construction on Delano Creek. The camp was supplied by pack-train and all heavy equipment was moved in by an S-55 helicopter. There was no permanent construction at the camp. All drilling equipment and supplies have been stored on the ground and a continuation of the drilling programme is planned for 1959. The property was not visited.

**Copper**

(58° 125° N.W.) Company office, 25 King Street West, Toronto. Toad River (**Fort** J. B. Streit, president; A. D. Wilmot, exploration manager, The Reliance Minerals property is on the Toad River, 18 miles south of Mile 442 on the Limited) Alaska Highway. A total of thirty claims are held-nineteen by location, eight by option agreement from H. Kvikstad, and three by option agreement from G. L. Johnson. The showings consist of a strong north-south trending shear zone with an average width of 8 feet that cuts through thin-bedded argillite and shale having a northerly strike and dipping to the west at 20 degrees. The copper mineralization occurs in narrow quartz-calcite stringers. Surface sampling by the company was concentrated within a length of 800 feet and reportedly indicated a length of 660 feet with an average width of 9.7 feet and a grade of 5.7 per cent copper. Diamond drilling commenced on September 17th and was continued until October 26th. Ten AX holes were drilled with a total length of 1,452 feet. All drilling equipment and supplies were placed in storage on the property. There was no permanent construction in 1958. The property was not visited.

\* By David Smith.

## CARIBOO\*

## WELLS-BARKERVILLE (53° 121° S W.)

**Gold**

Company office, 1007 Royal Bank Building, Vancouver. W. B. Burnett, president. M. Guiguet, manager; R. E. C. Richards and J. W. Wylie, superintendents; J. I. Stone, mill superintendent.

**Aurum and Cariboo Gold Quartz (The Cariboo Gold Quartz Mining Company Limited)** The Cariboo Gold Quartz and Aurum mines operated by this company are adjacent to the town of Wells, which is 51 miles by road from Quesnel on the Pacific Great Eastern Railway. The mine has two sections—the Quartz, which is the Cariboo Gold Quartz mine, and the Aurum, which was formerly the Island Mountain mine.

The ore deposits in the Quartz mine are in very irregular quartz veins; those in the Aurum mine are in tabular sulphide replacement bodies and in irregular quartz veins. Mining and development work was confined to the No. 1, Tailings, Rainbow, East, Mosquito, and Aurum zones.

The development footage in all sections of the two mines was as follows:—

Zone	Drifts and Crosscuts	Raises	Subdrifts	Diamond Drilling
	Ft.	Ft.	Ft.	Ft.
No. 1.....	301	.....	.....	250
Tailings.....	57	122	151	1,505
Rainbow.....	.....	52	.....	.....
Aurum E.....	717	326	769	4,904
Aurum W.....	237	54	.....	1,770
East Fault.....	802	171	.....	2,358
Mosquito.....	1,366	.....	.....	1,237
<b>Totals.....</b>	<b>3,480</b>	<b>725</b>	<b>920</b>	<b>12,024</b>

Irregular quartz **orebodies** are mined by a cut-and-till method. Replacement orebodies are developed by inclined drifting and are mined by slashing the ore on a retreating system. Ore was produced as follows:—

	Tons
Cut-and-fill mining .. .. .	46,982
Retreating system .. .. .	17,363
Development ore .. .. .	3,235
<b>Total .. .. .</b>	<b>67,580</b>

The Quartz mine is ventilated by a Sheldon fan that delivers 20,000 cubic feet per minute and is driven by a 25-horsepower electric motor. The Aurum mine is ventilated by a Sturtevant fan that delivers 15,000 cubic feet per minute and is powered by a 15-horsepower electric motor.

Ore from both mines is milled in the Cariboo Gold Quartz mill. Gold is recovered by cyanidation.

An active safety programme was maintained at the mine. At the end of the year, the Provincial Department of Labour presented the mine with a Centennial award. This award was for a low accident rate of 12.2 accidents per million man-hours.

**Production:** Ore mined, 67,580 tons; ore milled, 66,880 tons. Recovery: Gold, 27,892 oz.; silver, 3,682 oz.

\* By R. B. King.



## LAC LA HACHE\*

## TAKOMKANE MOUNTAIN (52° 120° S.W.)

**Molybdenum****Boss Mountain  
(American Metal  
Climax, Inc.)**

Company office, 61 Broadway, New York, N.Y.; British Columbia office, 718 Granville Street, Vancouver, The American Metal Company and the Climax Molybdenum Company joined to form American Metal Climax, Inc., at the end of 1957. This new company continued work on the property. The property consists of eleven Crown-granted claims, Lots 11116 to 11126, inclusive, and seventy-four claims held by record, all of which are optioned from H. H. Huestis and associates. The property is on the east side of Takomkane (Big Timothy) Mountain at the headwaters of Molybdenite Creek. It is served entirely by aircraft from Williams Lake, landings being made on a small lake near the head of Boss Creek at the southern foot of Takomkane Mountain. From this lake a pack-trail leads over the mountain and down to the camp near the showings.

Exploration work during 1958 consisted of road and trail work, geophysical mapping, and diamond drilling. A total of 9,090 feet of diamond drilling was completed to test the extension of two mineralized showings.

## LILLOOET†

## BLUE CREEK (51° 122° S.W.)

**Gold****Elizabeth**

The Elizabeth group of four Crown-granted claims is north of Blue Creek, a tributary of Yalakom River. It is owned by Elizabeth U. White, of Vancouver, and T. W. Illidge, of Bralorne. Access to the property is by 48 miles of road from Lillooet.

In 1958, 9 tons of ore was shipped to the smelter at Trail.

## GUN CREEK (50° 122° N.W.)

**Cobalt-Gold-Uranium****Northern Gem  
Mining Corpora-  
tion Ltd.**

Company office, 510 West Hastings Street, Vancouver. A. R. Allen, president; Isaac Shulman, managing director; H. R. Shuttleworth, superintendent. This property, consisting of eight Crown-granted and twenty-six recorded mineral claims, is on Roxey Creek near its headwaters. Roxey Creek flows into Gun Creek, which is a tributary of the Bridge River. The mine camp, elevation 5,500 feet, is 3 miles from Gun Creek and 12 miles from the Bridge River road. The mine road branches from the Bridge River road nearly 2 miles east of Minto.

During the year four men were employed doing assessment work.

## BRIDGE RIVER (50° 122° N.W.)

**Gold****Bralorne Mines  
Limited‡**

Company office, 355 Burrard Street, Vancouver; mine office, Bralorne. F. R. Joubin, president; M. M. O'Brien, vice-president and managing director; C. M. Manning, general superintendent; J. S. Thomson, mine superintendent; C. D. Musser, mill superintendent. Capital: 1,250,000 shares, no par value.

\* By R. B. King.

† By R. B. King, except as noted.

‡ By Stuart S. Holland and R. B. King.

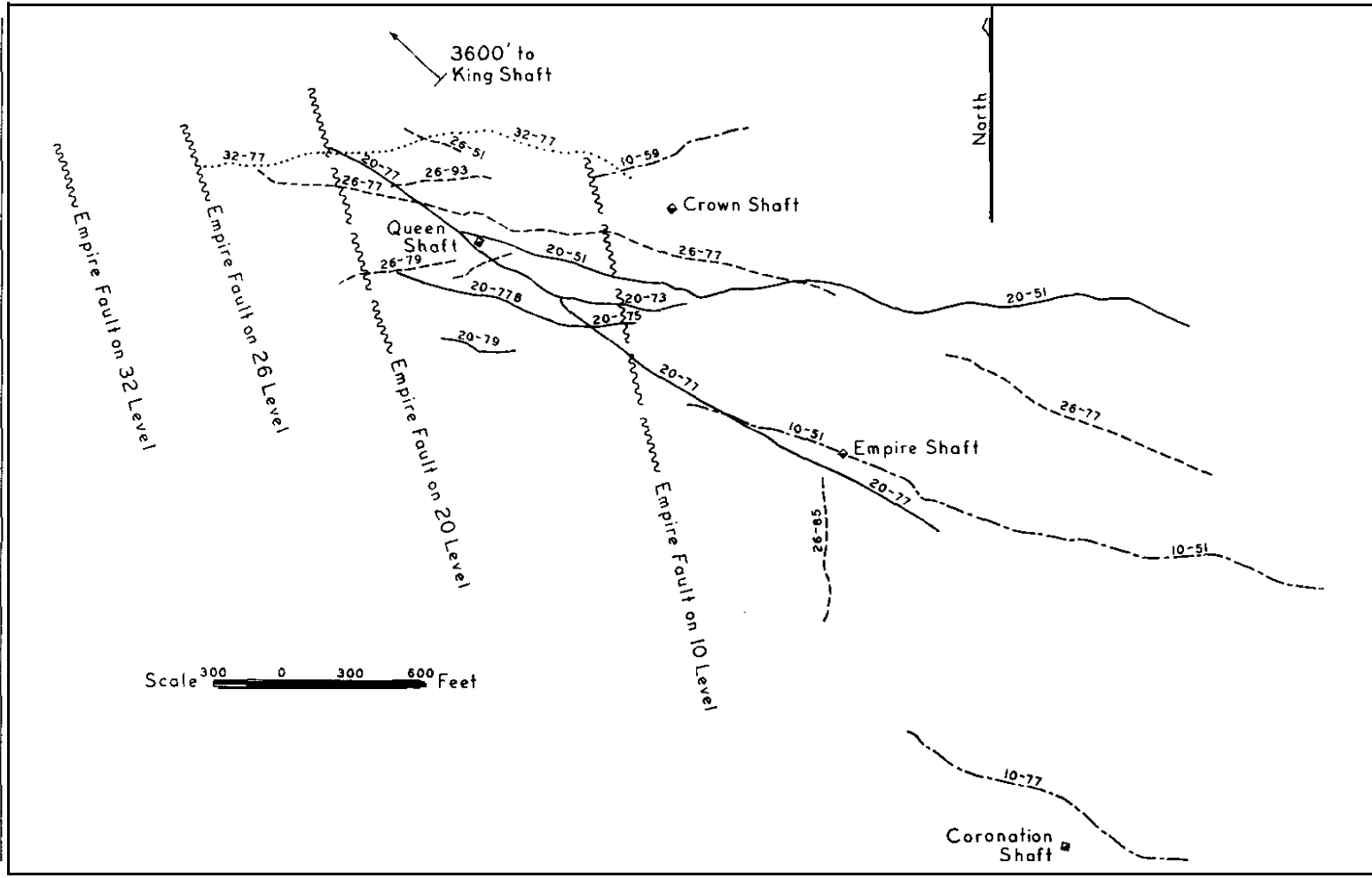


Figure 1. Bralorne Mines Limited—part of vein system.

The Bralorne mine is on Cadwallader Creek, a tributary of the Bridge River. It is reached by 51 miles of road from Shalalth or 75 miles of road from Lillooet, both stations on the Pacific Great Eastern Railway.

The company holds about a hundred claims extending along the east side of Cadwallader Creek for about 3 miles upstream from its junction with the Hurley River.

### *Workings*

The underground workings at Bralorne are extensive and have a total length of about 48.5 miles. The mine comprises four main sections, named from west to east the King, Queen, Crown, and Empire. Figure 1 shows the Queen, Crown, and Empire sections as well as the original Coronation shaft; the King section lies about 4,000 feet west of the Queen shaft.

The King section lies west of the Empire fault. It includes most of the original Lorne workings and in the early 1930's, prior to development of the Empire section, was the principal section of the mine. Mining finally ceased in the King section in 1940, though latterly there has been some exploration on No. 20 level in that section and from the crosscut extending northerly into Taylor Bridge River ground.

The Queen section lies east of the Empire fault. It is named from the Queen shaft, which is in the footwall of the 77 vein and has been sunk from No. 26 level to No. 36 level, a distance of about 1,500 feet.

The Crown section, named from the Crown shaft, lies in the footwall of the Empire fault east of the Queen section. The Crown shaft was sunk from No. 8 level to No. 26 level.

The Empire section, southeast of the Crown, is named from the Empire shaft sunk from No. 3 to No. 26 level. The Empire shaft was originally connected to the King section by a long crosscut on No. 8 level, which constitutes the main haulage level of the mine. In addition, the Crown and Empire shafts are connected on all levels between No. 8 and No. 26.

The Coronation shaft, lying southeast of the Empire, was sunk to No. 10 level and is one of the original mine workings.

Ore from below No. 26 level is hoisted in the Queen shaft to No. 26 level and then is trammed to the Crown shaft and hoisted to No. 8 level, the main haulage level of the mine, whence it is hauled to the mill.

Over the years gold production has come principally from the King, Shaft, North, and "C" veins in the King section, the 53 and 55 veins on the hangingwall side of the Empire fault, and the 51, 73, 75, 77, 79, 81, and 93 veins on the footwall side of the Empire fault. The total gold production of the mine from 1900 to 1958 is 1,933,095 ounces of gold from 3,930,195 tons of ore.

### *Vein System*

The King vein system is separate from and unrelated to the veins in the Crown and Empire sections. It is described in Geological Survey of Canada Memoir 213, pages 80 to 87. Bralorne veins on the footwall side of the Empire fault are quartz-filled fractures predominantly of two directions (*see* Fig. 1) : (1) Northwesterly trending fractures, generally striking from north 60 to 75 degrees west and dipping to the northeast, are occupied by important veins such as the 77 and 51, both of which have been explored for strike lengths of several thousand feet; (2) easterly trending fractures striking north 75 to 85 degrees east and dipping steeply northward are occupied by the 73, 75, 79, and 93 veins; this direction is also followed by short lengths of vein, even along dominantly northwesterly fractures. The 85 vein has a northerly strike, a direction of rare occurrence in the mine.

The northwesterly striking veins occupy shear fractures, which in effect are reverse faults in which the hangingwall side has moved up and to the northwest. The easterly striking veins and vein segments occupy tension fractures along which there has been little movement.

#### *Fault*

The Empire fault is a northwesterly striking and southwesterly dipping reverse fault which on the hangingwall side offsets the veins to the north. Above No. 26 level the western ends of the 51 and 77 veins were cut by it and a considerable amount of ore was mined from the faulted portions which are named the 53 and 55 veins on the hangingwall side of the fault. Drifting on the west end of the 77 vein below No. 26 level has not reached the downward extension of the Empire fault zone.

#### *Recent Development*

The Queen shaft was sunk in the footwall of the 77 vein below No. 26 level to develop the 77, 79, and 93 veins at depth. The shaft extends to the 36 level, 881 feet below sea-level. Crosscutting to the 77 vein has been completed on all levels down to No. 33 and the vein drifted out on these levels. Drifts on the vein have been extremely successful in developing ore. Annual reports of the company have published the following dimensions of ore on the four lowest levels:—

Level	Length of Ore	Average Width	Assay
	Ft.	Ft.	Oz. Gold per Ton
30.....	1,081	6.3	1.09
31.....	964	7.1	1.20
32.....	1,009	7.27	1.15
33.....	1,127	8.1	0.99

In the course of mining it has been found that veins commonly may veer from a northwesterly trending shear fracture to an easterly trending tension fracture. This characteristic is shown in Figure 1 by the 51 vein on No. 20 level. Similarly it has been found that below No. 28 level the western end of the 77 vein has veered from a strike of north 75 degrees west to one of north 75 degrees east; it is taking the course of the 93 vein and in actuality may be occupying the 93 vein fracture.

Over the past five years the amount of gold produced from the 77 vein has increased from 49 per cent of the mine total in 1954 to 94 per cent in 1958. In view of the increased importance of the vein it is significant that on the deeper levels much of the ore is in the western end of the vein, where it follows the 93 vein direction.

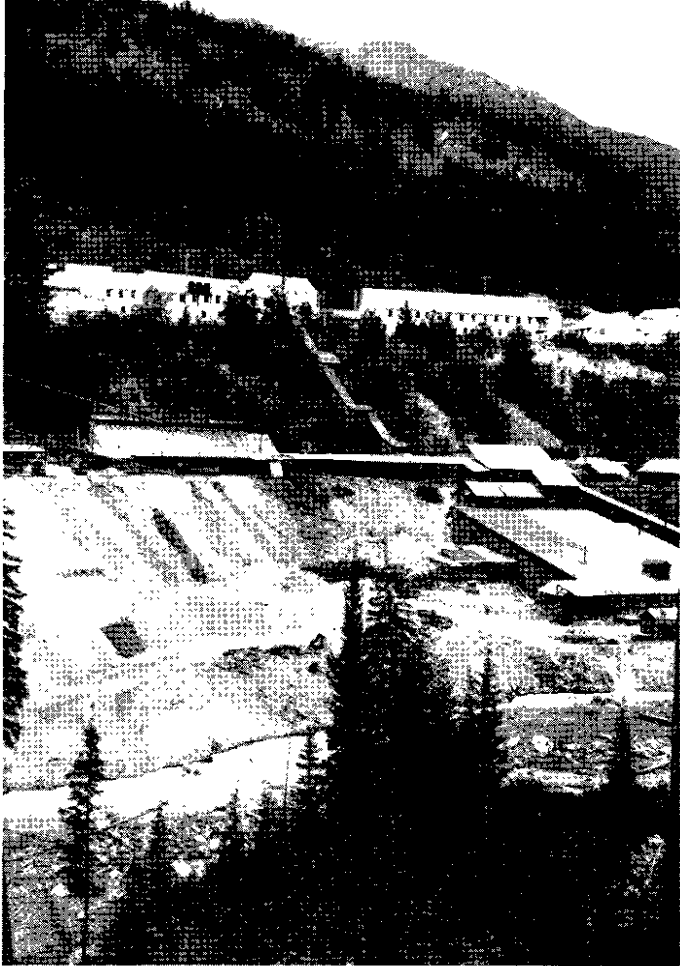
#### *Current Development*

In 1958 the Queen shaft was sunk 251 feet and Nos. 34, 35, and 36 levels were established. Loading-pockets, transfer-raises, and pumping-stations were completed.

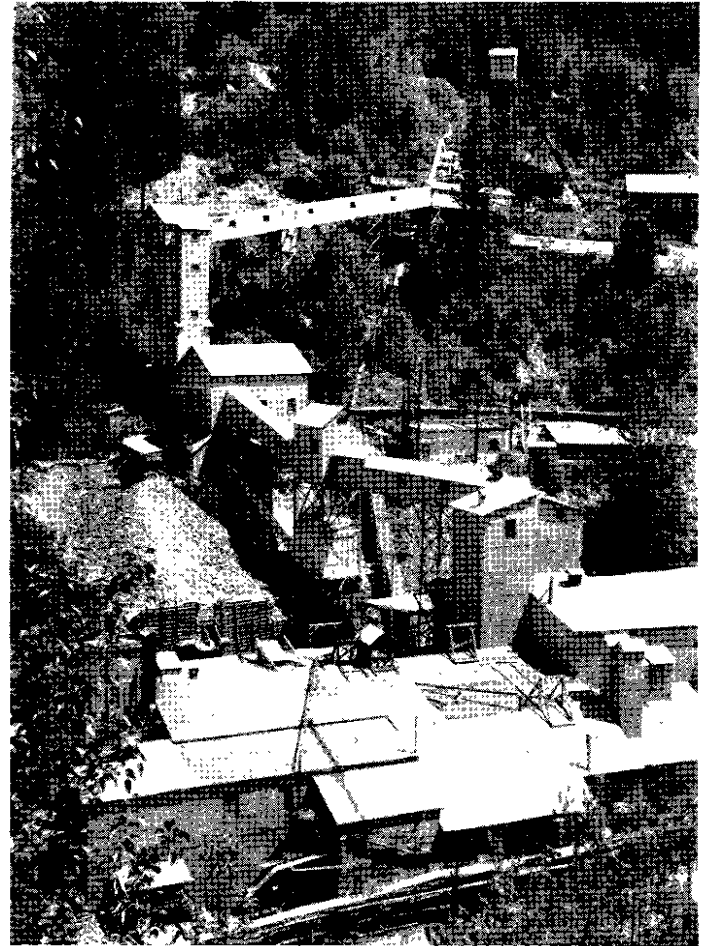
Development work comprised: 3,388 feet of drifting, 3,064 feet of crosscutting, 713 feet of raising, and 13,100 feet of diamond drilling. This development work was mainly in the Queen shaft section to explore the 77, 79, 85, 93, and 103 veins.

Ore is mined principally by cut-and-fill and shrinkage stoping. The tonnage of ore mined was as follows:—

	Tons
Cut and fill .....	92,556
Shrinkage .....	56,764
Development .....	9,402
Raising .....	1,795
Total .....	160,517



Bralorne Mines Limited, mill and part of camp.



Pioneer Gold Mines of B.C. Limited, mill on edge of  
Cadwallader Creek.

The mine is ventilated mechanically by fans circulating about 75,000 cubic feet a minute through the mine workings. Air is brought from surface to No. 25 level, where it is passed through a water-cooling plant. Fans distribute the cooled air through the working and exhaust the vitiated air. In 1958, 987 feet of ventilation raise was driven and a total of 1,550 feet of raise was slashed to 12 feet in diameter.

Through the combined efforts of all employees the number of days lost due to accidents decreased by 30 per cent from the 1957 average. Supervisors' course, safety discussions, first-aid and mine-rescue classes were held during the year.

In the mill, ore is treated by amalgamation, blanket concentration, and flotation. A sulphide concentrate made by flotation is shipped to the Tacoma smelter. Production: Ore milled, 146,358 tons. Recovery: Gold, 99,489 oz.; silver, 21,119 oz.

**Pioneer Gold  
Mines of B.C.  
Limited\***

Company office, 525 Seymour Street, Vancouver; mine office, Pioneer Mine. Hon. F. M. Ross, president; W. B. Montgomery, general manager; H. D. M. Jager, general superintendent; T. Bevister, mill superintendent. The property is on Cadwallader Creek, a tributary of Bridge River, and is about 78 miles by road from Lillooet on the Pacific Great Eastern Railway.

Production from Pioneer has come mainly from two veins—the Main vein and the 27 vein which since 1948 has contributed the bulk of production. The Main vein strikes northwestward and dips steeply northward and occupies a reverse fault comparable to those occupied by the 51 and 77 veins at Bralorne. The 27 was a blind vein and does not extend far above No. 16 level. The vein lies on the hangingwall side of the Main vein, strikes about north 20 degrees east, and dips about 55 degrees to the northwest. The 27 vein occupies a complex fracture system comprising northeasterly striking shear elements and northerly striking tension elements. Flatter dipping splits in the footwall of the 27 vein occupying tensional fractures contribute to the complexity of the vein system.

The mine is worked from No. 2 and No. 3 shafts and an inclined three-compartment winze, designated No. 5 shaft. No. 5 shaft services No. 26 to No. 29 levels.

In 1958 an intensive effort was made to find ore in the 27 and other veins. Development work was done to explore the 27, 40, 89, and 92 veins. Details are as follows:-

Level	Drifting	Crosscutting	Raising
	Ft.	Ft.	Ft.
0.....	146.5	17.0	147.0
20.....	31.5	.....	648.3
25.....	1,183.0	665.5	.....
26.....	.....	.....	197.0
27.....	53.0	.....	.....
28.....	83.5	.....	505.5
29.....	67.0	93.0	132.0
<b>Totals</b> .....	<b>1,564.5</b>	<b>775.5</b>	<b>1,630.0</b>

Diamond drilling totalling 17,594 feet was completed. Of this, 15,507 feet was done underground and 2,087 feet was drilled from surface.

Ore is mined by shrinkage, and by cut-and-fill stoping methods. The stopes are filled with sands from mill tailings. During the year 105,273 tons of ore was broken underground.

The mine is ventilated by a 48-inch-diameter Jeffrey Aerodyne fan which delivers 70,000 cubic feet of air per minute from surface down a ventilation raise to No. 5 shaft and from there down to 29 level. Air is circulated through the mine workings and is upcast through No. 2 and No. 3 shafts.

\* By Stuart S. Holland and R. B. King.

In the mill the ore is treated by cyanidation. In 1958, 105,442 tons of ore was milled, from which 49,651 ounces of gold was produced; an additional 202 ounces was recovered from slag shipped to the Tacoma smelter.

### PUKAIST CREEK\*

#### Copper

(50° 121° N.W.) Company office, 204, 569 Howe Street, Vancouver. **R. A. Brossard**, president. This company controls a total of fifty recorded claims in the lower section of Pukaist Creek about 3 miles from its confluence with the Thompson River. The area is largely underlain by rocks of the **Guichon** batholith. Geophysical surveys were carried out in the summer months and about 800 feet of diamond drilling was done. The work was under the supervision of **A. R. Allen**.

Louis (New  
**Hamil** Silver-Lead  
Mines Ltd.)

### HIGHLAND VALLEY?

#### Copper

(50° 121° N.E.) Company office, 1004, 850 West Hastings Street, Vancouver. **D. F. Farris**, president. This company holds ninety-three claims and fractions east of the north peak of Forge Mountain, in the **Krain**, **D.W.**, and **R.K.** groups. Northwestern Explorations, Limited, dropped its option on this property at the end of 1958.

Work in 1958 by Northwestern Explorations was supervised by **D. A. Barr**. It included one diamond-drill hole 633 feet long, which intersected the southeast part of the mineralized zone on the **Krain** Copper claim. This zone, which is oxidized at the northwest end, is now known to extend 1,200 feet with an average width of 200 feet; the deepest drill intersection on it is between 400 and 500 feet below the surface. Other work in 1958 consisted of 2,000 feet of bulldozer trenching, mainly on the **R.K.** group, as well as electrical, magnetometer, geochemical, and geological surveys. One mile of road was built, and 2½ miles of telephone-line installed. A shower-house was constructed. An average crew of twelve men was employed from June to October.

(50° 120° N.W.) Company office, 809,837 West Hastings Street, Vancouver. **George L. Conn**, president. This company holds about 100 claims and fractions north and east of the south peak of Forge Mountain. Work in 1958 was restricted to geological and geophysical surveys. These were directed by **W. H. White** and **F. J. Hemsworth**. An average crew of five men was employed for three months. In addition, a watchman was kept on the property throughout the year. **Newmont** Mining Corporation of Canada Limited optioned the property at the end of 1958.

(50° 120° SW.) Company office, 814, 402 West Pender Street. Bethlehem Copper Corporation Ltd. Vancouver. **H. H. Huestis**, president; **R. E. Hamilton**, mine manager. This company holds 112 claims and fractions immediately east of **Quiltanton** (Divide) Lake. According to estimates published by Bethlehem Copper Corporation in May, surface drilling done by **American Smelting and Refining Company** since 1955 indicates 50 million tons of material grading 0.65 per cent copper in the **Jersey zone** and 9.5 million tons grading 0.95 per cent copper in the **East Jersey zone**. The **Iona zone** contains an additional large tonnage whose grade is more uncertain. In 1958 **American Smelting and Refining Company Ltd.** did 6,752 feet of diamond drilling, mainly in the **East Jersey zone**, and about 1,660 feet of rotary test-hole drilling. The work was supervised by **C. J. Coveney**. The option on the property was dropped in May,

\* By **A. R. C. James**.

† By **J. M. Carr**.

Bethlehem Copper resumed operations in May. A contract for **tunnelling** was given to **Intermountain** Construction Ltd. The **camp** on the south side of Divide Lake was re-established and by the end of the year was equipped with **power**, water-supply, new cook-house, and dry. A portal-site was cleared 2,600 feet west of Jersey Lake at 4,600 feet elevation. A machine-shop and power-house were erected, together with an **office** building, assay office, and sampling plant. The 4600 level **adit** was begun in July and is directed **due** east. At the end of 1958 it was 2,840 feet long and had reached the fringe of the Jersey zone. The **adit** is 7 by 7 feet finished size and is about one-third timbered. The tunnel penetrates younger quartz-diorite for 1,640 feet, then older quartz-diorite for 970 feet followed by **dacite** porphyry and **breccia**. **Dykes** of quartz-diorite **porphyry** were intersected at 880 and 2,150 feet, respectively.

Thirty-two men were employed at the end of the year, including ten employed by Bethlehem Copper.

### Beaver

(50° 121° N.E.) This group of thirty-three claims and fractions adjoins the northwest **boundary** of the Bethlehem property and is held jointly by **Farwest** Mining Limited (previously named **Farwest** Tungsten Copper Mines Limited) and Beaver Lodge Uranium Mines Limited (office of both companies, 1075 Melville Street, Vancouver). Part of the group was **optioned** by American Smelting and Refining Company Ltd. until the end of 1958.

In 1958 American Smelting and Refining drilled three short rotary test-holes. Work by **Farwest** consisted of prospecting and of soil sampling at **200-foot** intervals on lines spaced at 400 feet over the entire group. In addition, reconnaissance electrical surveys were carried out over selected lines. The work was done by two men under the direction of W. M. Siroła, chief geologist.

### Lodge

(50° 120° N.W.) This group adjoins the Beaver **group** and the north boundary of the Bethlehem property. It comprises **thirty-six** claims and fractions which **are** held by Northlodge Copper Mines Limited (**company** office, 1075 Melville Street, Vancouver). The property was **optioned** by American **Smelting** and **Refining** Company until the end of 1958 and three short rotary test-holes were drilled. Work by Northlodge consisted of geochemical and geophysical prospecting by two men from **June** to August.

### Outrider

(50° 120° S.W.) This group of forty-four claims and fractions adjoins the east **boundary** of the Bethlehem property and is held by **Farwest** Mining Limited. In 1958 Northwestern Explorations, Limited, did electrical and geochemical surveys and geological mapping over parts of the group.

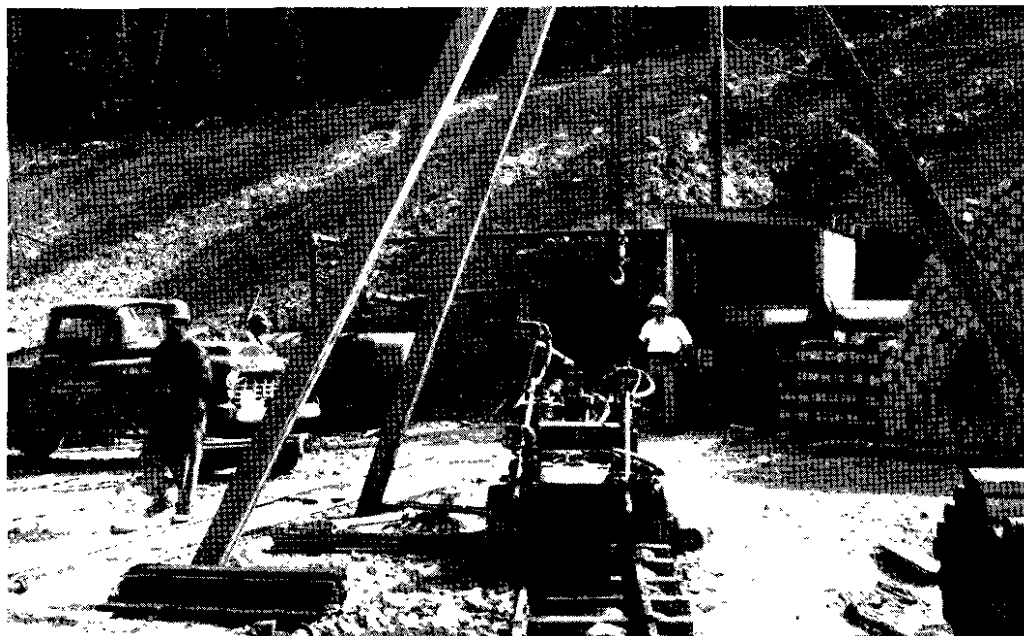
### Hat

(50° 120° S.W.) This group of eight claims adjoins the east boundary of the Outrider group and is held by **Northlodge** Copper Mines Limited. American Smelting and Refining Company dropped its option in August, whereupon Northwestern Explorations, Limited, did electrical and geochemical surveys and geological mapping.

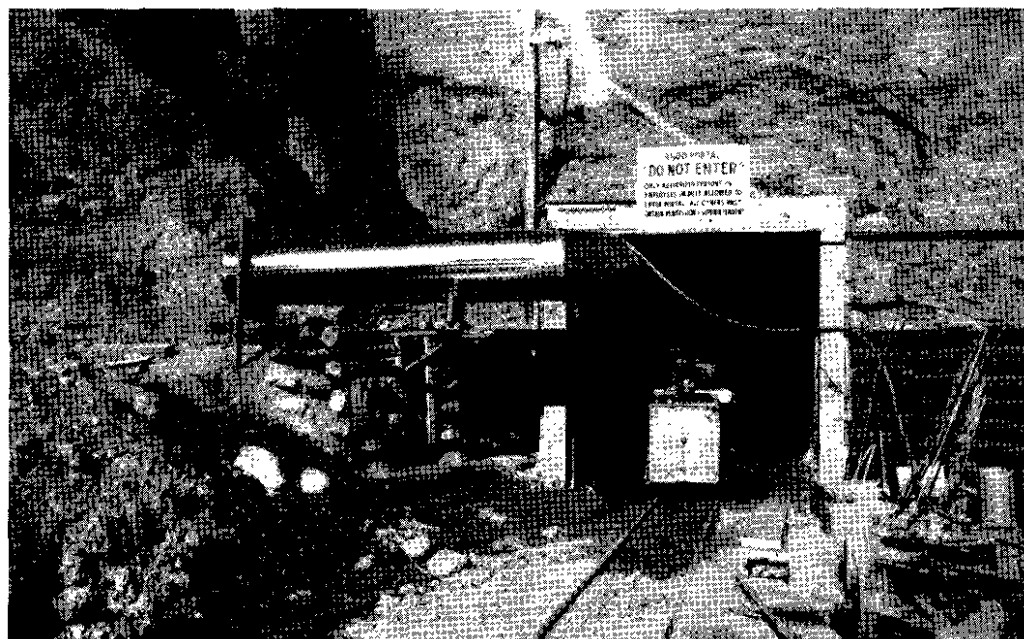
### Bob, Star, Cow, and B.X.

(50° 120° N.W.) These groups **are** immediately north and east of Bose Lake and adjoin the Lodge and Outrider groups. The Bob and Star groups comprise fifty-four claims and fractions which are held by **Torwest** Resources Ltd. (company office, 1001, 837 West Hastings Street, Vancouver). The Cow and B.X. groups comprise twenty-eight claims and fractions which are held by **B.X.** Mining Company Limited (company office, 1500, 355 **Burrard** Street, Vancouver). In 1958 the groups were **optioned** by **Noranda** Exploration Company, Limited. Camp was established at Bose Lake and an average of nine men was employed from July to September under the supervision of O. W. Nichols.





Bethlehem Copper Corporation Ltd., 4600 level adit portal, August, 1958.



Birkett Creek Mine Operators Ltd., Craigmont 3500 level adit portal, August, 1958.

Work consisted of an electromagnetic survey of the property together with geological mapping. Some bulldozer trenching was done on an old showing on the **B.X.** group. Five miles of road was constructed. The options were dropped at the end of the summer.

**Bethsaida Copper Mines Limited.**—(50° 121° S.E.) Company office, 303, 1075 Melville Street, Vancouver. **D. F. Farris**, president. This company holds fifty claims west of Divide Lake. Northwestern Explorations, Limited, dropped its option and no work was done on this property in 1958.

(50° 120° S.W.) Company office, 204, 717 West **Pender** Street, Vancouver. **James R. Murray**, president. This company holds about fifty-six claims and fractions south of Witches Brook about 7 miles east of Divide Lake. Until late in the year the property included more than 1,000 claims and was optioned by **Anson Mines Limited**, which is a subsidiary of **Phelps Dodge Corporation of Canada, Limited** (Vancouver office, 904, 1030 West Georgia Street). In 1958 work by **Anson Mines Limited** was supervised by **M. G. Mooney** and included six diamond-drill holes totalling 1,470 feet, together with magnetometer surveys of parts of the property. Three holes were drilled south and west of **Pimainus Lake**. The other three holes were drilled east of and adjacent to **Witches Brook**.

**Jericho Mines Limited** discovered a small high-grade copper showing about 1 mile west of **Billv Lake**. This showing is reached by a road constructed for about 8 miles from the camp near **Witches Brook**. At the end of the year five men were employed under the supervision of **W. E. McArthur**.

#### PIMAINUS LAKE\*

##### Copper

(50° 121° S.E.) Company office, 1111, 1030 West Georgia Street, Vancouver. **J. A. Gower**, manager. This company holds a large number of claims along the west margin of the **Guichon Creek** batholith south of **Pimainus Lake**. The claims comprise the **P.E.H., B.J., Eye, and Sku** groups. Work in 1958 was supervised by **J. J. Brummer** and **C. S. Ney**, and consisted of prospecting, geological mapping, magnetic surveying, and geochemical surveying. The existing road to **Pimainus Lake** from **Highland Valley** was improved and a small amount of hand-trenching was done on the **Eye** group. On the average sixteen men were employed from May to October on these groups and on others held by **Northwestern Explorations** in the **Guichon Creek** and **Merritt** areas.

#### GUICHON CREEK\*

##### Copper

(50° 120° N.W.) Company office, 1111, 1030 West Georgia Street, Vancouver. **J. A. Gower**, manager. This company holds a large number of claims along the east margin of the **Guichon Creek** batholith south of **Witches Brook** and west of **Guichon Creek**. The claims constitute the **J.B.** group. Work in 1958 was supervised by **J. J. Brummer** and **C. S. Ney**, and consisted of prospecting, geological mapping, magnetic surveying, and geochemical surveying. Two and one-half miles of road was constructed.

##### Copper

#### MERRITT†

The discovery of the **Craigmont** orebody in 1957 led to vigorous exploration of the surrounding area in 1958. The **Craigmont** mine is on the east slope of **Promontory Hills**

\* By **J. M. Carr**.

† By **J. M. Carr**, except as noted.

about 10 miles northwest of Merritt. The **orebody** is close to the south margin of the Guichon Creek batholith and is a **skarn** deposit in **stratified** rocks of the Nicola series. Equivalent rocks which outcrop at Lookout Point, **some** 2½ miles west-southwest of the **orebody**, include limestones, **tuffaceous** limestones, **limy tuffs**, **vitric** and lithic **tuffs**, and **greywackes**. At Lookout Point these rocks possess moderate to steep dips and strike generally east-northeast, toward Craigmont. In addition to the Guichon Creek batholith, which extends north for a distance of some 40 miles, **plutonic** rocks underlie parts of the area southeast of Lookout Point and east of Guichon Creek, respectively, and may be extensions or satellites of the batholith. Volcanic rocks of the **Kingsvale** group cover parts of the area south and southwest of the Craigmont ore zone. In the most westerly holes which have been drilled in the ore zone, **Kingsville** rocks overlie weathered and altered Nicola rocks and are believed to be later than the **mineralization**.

Elevations range from 2,000 feet at Nicola River and Guichon Creek to 5,688 feet at Lookout Point. The climate is semi-arid, and **many** of the creeks have a seasonal flow. Access to the various properties is by dirt roads either from Craigmont mine, from the **Merritt-Spences** Bridge Highway, or from the road between Lower Nicola and the Aberdeen mine. The Canadian Pacific Railway branch line and a gas pipe-line both pass through Merritt.

[References: *Geol. Surv., Canada, Mem.* 249 (Nicola Map-area), 1948; *Minister of Mines, B.C., Ann. Rept.*, 1957, p. 28.]

**Craigmont** (50° 120° S.W.) Head office, 700, 1030 West Georgia Street, Vancouver. R. G. **Duthie**, superintendent, Merritt; C. C. **Rennie**, resident geologist. This private **company** was formed in July, **(Birkett Creek Mine Operators Ltd.)** 1958. It is controlled by Canadian Exploration Limited together with **Noranda Exploration** Company, Limited, and Peerless Oil and Gas Company. Craigmont Mines Limited is a non-voting participant. The company controls 157 claims and fractions owned by Craigmont Mines Limited, of which fourteen have been legally surveyed. The Craigmont **orebody** is on **Merrell** Nos. 7 and 8 claims and **McLeod** Nos. 5 and 6 claims, and is south of the north fork of Birkett Creek at **surface** elevations between 3,800 and 4,200 feet.

In 1958 **Canadian** Exploration Limited directed exploration up to July, when **responsibility** passed to Birkett Creek Mine Operators Ltd. From November, 1957, to December, 1958, twenty-two holes **totalling** 15,404 feet were diamond drilled from surface. Of these, sixteen encountered mineralization. From December, 1957, to May, 1958, twenty-five rotary drill-holes **totalling** 1,392 feet were made in preparation for diamond drilling. Approximately 2,000 feet of bulldozer stripping was done in five separate areas and about 10 miles of roads were constructed. A new road 4.2 miles long with a j-per-cent grade was built from the Aberdeen road to the portal-site, and the Aberdeen road was widened and improved. **Magnetometer** surveys were made on sixty-two claims and fractions and some geological mapping was done.

Underground work started in July, 1958, and by the end of the year a complete plant was installed. It included dry-house, **temporary** offices, warehouse, core-house, combined shops and power **plant**, and water system with water-tank. Equipment included one Ingersoll-Rand 500-c.f.m. compressor, two **LeRoi** 500-c.f.m. compressors, one D 1300 75-kw. **Caterpillar** diesel generator set, and a D 1300 59-kw. Caterpillar diesel standby generator. An **adit** was directed north 70 degrees **west** from a portal-site on the north fork of Birkett Creek at 3,516 feet elevation, and at the end of the year was 1,066 feet long. The first 700 feet is fully timbered and measures 9 by 9 feet, **finished** size. The remaining length is half timbered and **measures** 9 feet high by 8 feet wide, finished size. An Ingersoll-Rand ABJ three-boom jumbo is used. Granby-type cars are hauled by a **Mancha** 6-ton diesel locomotive and a **Ruth** 3-ton diesel standby locomotive.

In 1958 the number of men employed on the property varied from fifteen to thirty-five, including drillers on contract. At the end of the year a total of twenty-eight men were employed. Underground work was on a three-shift basis, and all employees lived in Merritt.

The orebody is in an area devoid of outcrops. It has been exposed by recent trenching near hole No. 7, where it underlies about 6 feet of glacial drift. The nearest rock outcrops are about 1,000 feet north of the orebody, and are of altered and slightly mineralized quartz-diorite. The contact between the Guichon Creek batholith and the Nicola series possibly follows the north fork of Birkett Creek and apparently passes through a copper showing more than 1 mile to the east, on the former Eric claim. The orebody was found by drilling a strong positive magnetic anomaly. As shown by surface drilling, the mineralized zone strikes about north 80 degrees east and dips steeply south in the upper portions. At greater depths there is some indication of dip reversal. Mineralization is apparently continuous for a length of 1,750 feet across widths up to 200 feet. Its full extent both laterally and in depth is not yet determined. Probable ore reserves between 13 and 14 million tons grading about 1.8 per cent copper and 17 per cent iron were estimated in November, 1958, by both the consultants and the operators.

The following description is based on examination of the core from holes Nos. 7, 13, 15, 19, and 21, together with information provided by the resident geologist. Wall-rocks are greywacke and quartzofeldspathic tuff on the north, and andesite, quartzofeldspathic tuff, and mixed tuffs on the south in the western portion; a diorite dyke forms the south wall in the eastern portion. The ore zone consists of limy rocks altered to skarn and other rocks so heavily mineralized that their original lithology is uncertain. Actinolite, garnet, epidote, quartz, calcite, and chlorite constitute the gangue, together with pink orthoclase feldspar which in places is very abundant. Tourmaline was identified in thin section. Mineralization consists of magnetite, specular hematite, or both, with masses, irregular veinlets, and disseminations of chalcopyrite. Some of the hematite is distinctly magnetic. Bornite is rare and pyrite is only locally abundant in the ore zone. Oxidation is slight.

The adit on the 3500 level penetrated 326 feet of glacial till, 300 feet of weathered dark tuffs, and then diorite with small amounts of sulphide. The easterly extension of the mineralized zone was intersected early in 1959.

**P.C.M., cap,  
and Domino**

(50° 120° S.W.) These groups are held by I. Schulman, Vancouver. They consist of sixty-five claims on the south slopes of Promontory Hills at elevations which average 3,000 feet. From March to August, 1958, the property was optioned by Centennial Mines Ltd. (company office, 700 Burrard Street, Vancouver), which did work that included geological mapping and dip-needle and magnetometer surveys of the entire property. In this period, up to six men were employed under the direction of T. S. Smith and J. C. Foweraker, successively. From August the property was optioned jointly by Centennial Mines Ltd. and Magnum Copper Limited. Additional geophysical and geological work was then done on the Domino group before work ceased in December. Several small magnetic anomalies attributed to magnetite in andesite were discovered on the property.

**Hank**

(50° 120° S.W.) This group adjoins the P.C.M., Cap, and Domino groups and is held by I. Schulman, Vancouver. It consists of thirty-six claims at elevations between 4,000 and 4,500 feet. In September, 1958, the group was optioned jointly by Centennial Mines Ltd. and Magnum Copper Limited. Following geological mapping and geophysical work, attention was concentrated on an intense magnetic anomaly on the Hank No. 30 claim. Three bulldozer trenches were made, of which one exposed a small amount of chalcopyrite, and three diamond-drill holes were put down which totalled 1,746 feet. No mineralization

is reported to have been intersected other than above-average amounts of finely disseminated magnetite. A detailed spontaneous polarization survey was made over the anomaly. In addition to the above work, a dip-needle survey was completed of twenty-one claims, 2½ miles of road was built, and a core-house constructed. From four to eight men were employed under the supervision of J. C. Foweraker. Work ceased in December and the option was dropped shortly after.

Prior to the option, W. Taylor and associates did a large amount of bulldozer striping on the Hank No. 1 claim, approximately one-half mile south of the anomaly.

**Noranda Exploration Company, Limited** British Columbia office, 202, 2256 West Twelfth Avenue, Vancouver. B. O. Brynelsen, manager. In 1958 this company held by location or option a large number of claims in the Merritt area in four separate properties. A field office was established in Merritt and a large crew was employed under the supervision of M. M. Menzies and other geologists. All options were subsequently dropped.

(a) *Merritt Property*.—(50° 120" S.W.) Work was chiefly concentrated on this property, which adjoins the south and southeast boundaries of the Craigmont property. It consists of 135 claims and fractions held by Noranda. Up to fifteen men were employed from early January to August, 1958. Work consisted of line-cutting and surveying, followed by electromagnetic, magnetometer, dip-needle, and geological surveying. Five holes totalling 1,689 feet were diamond drilled to test some of the anomalies found. Some road building was done.

(b) *Tyner Lake Property*.—(50° 120° S.W.) This surrounds Tyner Lake at the north end of the Craigmont property and consists of 114 claims held by W. Rand. Work done by Noranda Exploration Company consisted of surveying, geological mapping, and electromagnetic surveying the whole property. Over 5 miles of road was constructed between the Aberdeen road and an existing road at Farr Lake. A camp was established at Tyner Lake and seven men were employed from June to August, 1958, under the supervision of S. G. Bruce.

(c) *Farr Lake Property*.—(50° 120° S.W.) This is near the west boundary of the Tyner Lake property and consists of fifty-four claims held by Midnight Consolidated Mines Ltd. The property was optioned by Noranda in 1957. Work done in 1958 consisted of the geological mapping of part of the property and extension of the road from Tyner Lake to join the road from Farr Lake to Dot.

(d) *Gordon Creek Property*.—(50° 121° S.E.) This is 4 miles east of Dot railway station. It consists of forty-seven claims making up part of the W.P. group, which is held by Highland Valley Mining Corporation Ltd. In 1958 work by Noranda Exploration Company consisted of surveying, geological mapping, and electromagnetic surveying of the entire property. Some bulldozer trenching was done and existing roads were improved. An electromagnetic anomaly that was trenched was reported to be due to a thin coal-bed. Camp was established on the property and an average crew of six men was employed from May to July under the supervision of D. Carson.

**Northwestern Explorations, Limited** (50° 120° SW.) Company office, 1111, 1030 West Georgia Street, Vancouver. J. A. Gower, manager. This company holds the C.J.S. and J.S.S. groups. The C.J.S. group adjoins the east boundary at the W.P. group and the west boundary of the Craigmont property. The J.S.S. group is near Jesse Creek, 4 miles north of Merritt. Work in 1958 was supervised by J. J. Brummer and C. S. Ney and consisted of prospecting, geological mapping, magnetic surveying, and geochemical surveying. On the C.J.S. group 2½ miles of road was constructed.

(50° 120° S.W.) Company office, 204, 569 Howe Street, Vancouver. **R. A. Brossard**, president. This company controls a group of forty-eight recorded claims on the north side of the **Merritt-Spences Bridge Highway**, about 3 miles west of Lower Nicola. A magnetometer survey was carried out and about 700 feet of diamond drilling was done. Four men were employed. **A. R. Allen** supervised the work.

#### *Lead-Zinc*

(50° 120° S.W.) This property, comprising two recorded claims, is 5 miles south-southeast of Merritt, and about one-half mile south of the summit of Iron Mountain. It is a part of the old **restaking** of the **Company (Canada) Leadville or Comstock** of B.C. property. Showings of lead-zinc mineralization were discovered in 1927 and development work was done from 1927 to 1930, and again in 1947 when the property was known as the Lucky Todd mine. An inclined shaft was sunk 100 feet on a **quartz-barite-galena** vein, at which point the vein is stated to have been displaced by a fault. A total of 36 tons of ore was shipped in 1947.

The present company diamond drilled one hole 87 feet horizontally from a point 120 feet northeast of the shaft. Work was commenced on October 27th and finished on November 5th. Two men were employed.

[References: *Minister of Mines, B.C., Ann. Repts.*, 1928, p. 224; 1929, p. 245. *Geol. Surv., Canada, Mem.* 249, p. 81.]

#### ASPEN GROVE\*

#### *Copper*

(49° 120° N.W.) Company office, 902, 718 **Granville** Street, Vancouver. **N. Martini**, president, Passaic, NJ., U.S.A., **V. M. Petroskey**, secretary, Vancouver. Capital: **10,000,000** shares, no par value. This company controls thirty-two claims in the Kentucky Lake area. A magnetometer survey was begun in the latter part of the year, but was later suspended due to heavy snow conditions.

#### SWAKUM MOUNTAIN\*

#### *Copper*

(50° 120° S.W.) Company office, 400, 837 West Hastings Street, Vancouver. **W. E. Garnett**, president; **W. H. Taylor**, resident manager. This company controls fourteen Crown-granted and 146 recorded claims situated mainly on the north and east sides of **Swakum Mountain**, 9 miles north of Nicola. Access is by road from Nicola up the valleys of **Clapperton** and **Shuta** Creeks. The claims include a number of old properties such as the **Thelma**, **Alameda**, **Last Chance**, and **Gold Gozzan**. Mineralization in this area was discovered in 1916 and intermittent work has been done since that time; small test shipments of gold, copper, lead, and zinc ores have been made. During the Second World War the **Last Chance group** was investigated and **diamond** drilled as a possible source of **scheelite**. The claims are entirely underlain by rocks of the Nicola group comprising **greenstones interbedded** with limestone. Mineral deposits include veins, disseminations, and replacements carrying lead, zinc, and **copper** minerals.

\* By A. R. C. James.

## MEADOW CREEK\*

**Copper**

**Vanex**  
(**Vanex Minerals**  
Limited)

(50° 120° S.W.) Company office, 902, 718 **Granville** Street, Vancouver. N. Martini, president, Passaic, **N.J.**, U.S.A.; **W. M. Petroskey**, secretary, Vancouver. Capital: **5,000,000** shares, **50** cents par value. The company holds 17.0 claims by record in the Meadow Creek area, 25 miles due north of Merritt. Also the company has entered into a development agreement with **Dunmore** Mines Ltd. on an additional fifty-one claims which adjoin the **Vanex holdings** to the south. The property is accessible by road from Merritt via **Mamit** Lake, or from Kamloops. The entire area is underlain by rocks of the **Nicola** group. Copper mineralization on the **Dunmore** Mines Ltd. property has been known for many years and some exploration work has been done in this locality in recent years.

The present company commenced operations in June. A magnetometer survey was carried out and it is reported that this indicated an anomaly in the area north of **Homfray** Lake. A small camp was established on the property, and diamond drilling commenced at the beginning of **October** was still in progress at the end of the year. A crew of eleven men was employed under the supervision of **S. B. McBeath**.

## KAMLOOPS\*

**Copper**

**D. M. (Cadamet**  
Mines **Limited)** †

(50° 120° N.W.) Company office, 1116, 85 Richmond Street West, Toronto. **T. J. Day**, president. This company (formerly named **Graham Bousquet Gold Mines Limited**) holds 117 claims which lie mainly south of the **Tram-Canada Highway** about 11 miles west of **Kamloops**. The property consists of the **D.M.** group and the **Afton** group, on which the old **Pothook** copper prospect is situated.

In 1958 the property was optioned by **Noranda** Exploration Company, Limited, which dropped the option late in the year. Work by **Noranda** was directed by **A. D. K. Burton** and included geological mapping together with electromagnetic and self-potential surveying. Several bulldozer trenches were made and 800 feet of diamond drilling (BX core) was done.

**Makaoo** Develop-  
**ment** Company  
Limited

(50° 120° N.E.) Company office, 919,736 **Granville** Street, Vancouver. **L. G. Wood**, president; **W. I. Nelson**, manager. This company holds five Crown-granted claims and seventy-two recorded claims in the vicinity of **Coal Hill**, about 3 miles southwest of **Kamloops**. This and other properties occurring in the eastern part of the **Iron Mask** batholith were fully described in the 1956 Annual Report, pages 47 to 69.

In 1958 a total of 220 feet of surface trenching was done and 66 feet of diamond drilling. Self-potential geophysical work was done over an area of about twenty acres.

(50° 120° N.E.) Vancouver office, 905, 525 **Seymour** Street, Vancouver. This company holds twenty-one recorded claims about 1½ miles west of **Knutsford**. Geological mapping and geophysical surveys were carried out over parts of the property. These claims have no important surface showings but they lie within the geologically favourable area of the **Iron Mask** batholith.

\* By **A. R. C. James**, except as noted.

† By **J. M. Carr**.

## BIRCH ISLAND\*

**Fluorite-Celestite-Uranium**

(51° 119° N.W.) Head office, 550 Sherbrooke Street, Montreal; **Rexspar Uranium & Metals Mining Company Limited** mine office, Birch Island. Philip Joseph, president, Montreal; John W. Scott, manager, Birch Island. Capital: 6,500,000 shares, \$1 par value. The **Rexspar property** is in the Red Ridge area., 2 to 3 miles south of Birch Island on the Canadian National Railway, 81 miles by rail or 90 miles by road north of Kamloops. The property comprises 124 claims and fractions, of which forty claims and fractions are held by Crown grant, seventy-three claims and fractions by record, and eleven claims and fractions by lease from Deer Horn Mines Limited. A brief history and description of the property was given in the Annual Report for 1957.

In 1958 no further exploration of the **Rexspar orebodies** was carried out. It is reported that negotiations on the major financing necessary to bring the property into production were still unconcluded at the end of 1958, but in the meantime the work begun in 1957 in preparation for the construction of an aerial tram-line and mill was continued. In the main plant area 1,000 feet of spur track was laid, loading-platforms and storage sheds were built by the track, the grinding-plant foundations were poured, and other building areas were stripped of topsoil and rough graded. A gravel pit near the plant-site was worked and 800 cubic yards of aggregate stocked. The aerial tram-line right-of-way was widened from 35 to 70 feet throughout the 900-foot length, all intermediate tower-sites were graded and access roads built to them, and the upper tram-terminal site was stripped and rough graded. On the property itself the B zone open-pit area was cleared of trees and stumps and prepared for stripping. At the mine camp a small tunnel and raise system totalling 120 feet was driven in the mine camp area to tap springs for a permanent camp water-supply.

In addition to the **Rexspar property**, the company holds thirty-two claims by option agreement and thirty-seven claims by record on Foghorn Mountain a few miles to the south. In 1958 a 7-mile jeep-road was made from the **Rexspar camp** to this property. Geiger and scintillometer surveys were carried out over a wide area, following up earlier indications of radioactivity, and this work was followed by some trenching on the best showings. It is reported by the company that the showings found were small and sporadic though of high grade. Geophysical surveys, including self-potential, electromagnetic, and soil-testing surveys, were carried out in an area of old lead-zinc showings, and some bulldozer trenching was done on anomalies found. The company reports that the results of this work were rather discouraging but that some possibilities remain to be investigated.

[References; *Minister of Mines*, B.C., Ann. Repts., 1957, pp. 31-32; 1954, pp. 108-111.]

## SIMILKAMEEN RIVER\*

**Copper**

(49° 120° S.W.) Company office, 904, 1030 West Georgia Street, Vancouver. **W. A. Hutchison**, general manager, Toronto; **Illk (Phelps Dodge Corporation of Canada, Ltd.)** D. C. Malcolm, resident geologist, Vancouver. The sixteen claims and fractions comprising this property were optioned from Len and Irvine Ashley in October, 1958. It is the old Wheeler property in the vicinity of Friday Creek, on the west side of the Similkameen River, about 10 miles south of Princeton. Access is by means of a 3-mile road leaving the Hope-Princeton Highway at a point approximately 5 miles south of Whipsaw Creek. The area is on the margin of the Copper Mountain stock and the presence of copper mineralization has been known for many years but prospecting has been difficult due to lack of outcrops.

. By A. R. C. James.



The company commenced dip-needle and geochemical surveys and 1,600 feet of bulldozer trenching was done. Overburden was more than 40 feet thick in places, Three men were employed under the supervision of M. G. Mooney.

[References: Minister of *Mines, B.C.*, Ann. Rept., 1929, p. 277. *Geol. Surv.*, Canada, Mem. 243 (1947), p. 89.]

### HEDLEY\*

#### Gold

#### French (French Mines Ltd.)

(49° 120" SE.) Company office, 314, 718 Granville Street, Vancouver; mine office, Hedley. W. B. Burnett, president; J. S. Biggs, mine superintendent. The French mine is on the Oregon mineral claim, about 8 miles by road from Hedley and 1½ miles east of the Hedley-Nickel Plate road at an elevation of 3,900 feet. The property includes three Crown-granted and thirteen recorded claims.

The **orebody** consists of gold-bearing **skarn** ranging up to 12 feet thick with many minor folds and faults. It is in general rather flat lying and irregular and has been mined for a distance of about 620 feet along the strike and from 40 to 80 feet in width. The main part of the **orebody** is flat lying at the 3,920-foot level, but the eastern section dips from 25 to 45 degrees northeast to the 3,785-foot level and a section in the central part of the **orebody** dips steeply northwest to the 3,835-foot level. Recent mining and development seems to indicate that the eastern section of the ore-bearing ground has a general northeasterly dip into the **mountain**. The **orebody** is cut by a number of faults, including the flat-lying Cariboo fault which strikes northeastward and at present forms the eastern limit of the **orebody**. So far no extension has been found east of this fault in spite of considerable exploration work carried out during the year.

The showings were originally discovered in the early years of the century, but mineralization at the surface was mainly copper and the grade was low. Intermittent development work was done from 1905 to 1917. In 1949 Kelowna Mines Hedley Limited obtained control of the property. From 1950 to 1955 a total of 32,463 tons of ore was mined. In 1956 a controlling interest in the property was acquired by The Cariboo Gold Quartz Mining Company Limited, and a new company, French Mines Ltd., was formed. Production under the present company began in August, 1957.

The mine is developed from three **adit** levels--the 3,920-foot (Kelowna) level, the 3,835-foot (Granby) level, and the 3,785-foot (Cariboo) level. In 1958 mining and development was carried out on all three levels, but mainly in the east section of the mine between the 3,920 and 3,785 levels. The ore is mined in open **stopes** and is transported by **slusher** to ore-passes. The following is a summary of work done in 1958:—

Drifting .....	ft.	356
Raising .....	ft.	332
Diamond drilling, surface (1 hole) .....	ft.	147
Diamond drilling, underground (32 holes) .....	ft.	2,530
Ore milled .....	tons	13,820
Gold recovered .....	oz.	8,607

The ore is transported by truck from the mine to the crushing plant and 50-ton cyanide mill which is situated in the Similkameen Valley just south of Hedley. A crew of twenty men is employed in all operations. There were no compensable accidents during the year.

\* By A. R. c. James.

## KEREMEOS\*

*Gold-Silver*

(49° 119" SW.) Company office, 1024, 85 Richmond Street Horn Silver (Can- West, Toronto 1, Ont.; mine office, Keremeos. W. L. **Hodgson**, **ada** Radium Cor- president, Scarborough, Ont.; H. Parliament, resident engineer, **poration** Limited) Keremeos. Capital: 7,500,000 shares, no par value. This company controls the old Horn **Silver** property, comprising the Horn Silver and Silver Bell Crown-granted claims and seven recorded claims. The property is on the east **slope** of Richter Mountain, 16 miles south of Keremeos and 4 miles north of the **International** Boundary. Access is by road from Keremeos to a point near the foot of Richter Mountain, from where a short side road leads to the ore-loading platform at 1,300 feet elevation. The **adit** portals at 2,622 feet elevation are reached by a steep **jeep-trail** 1 mile long.

The property was first developed in the early years of the century. Further development and production took place from 1915 to 1933 when a total of 5,824 tons of ore was mined, yielding 667 ounces of gold and 245,406 ounces of silver. The mine has been developed from two **adits**—an east **adit** at 2,622 feet elevation and a west **adit** at 2,615 feet elevation. When the present company resumed development in 1956, there were approximately 2,200 feet of open underground workings.

The orebodies consist of flat-lying veins in a hornblende-syenite intrusive of Mesozoic age which intrudes **Palaeozoic quartzites** and **greenstones**. The veins strike approximately east and dip as much as 30 degrees south. They range in width from a few inches up to 6 feet, and are much disturbed by faulting. The vein material consists in some places of hard banded quartz, and in others of soft crumbly quartz and gouge. The **silver**-bearing minerals include native silver, **argentite**, and cerargyrite. Other minerals include rather sparse pyrite, **galena**, **sphalerite**, and minor grey copper. Gold values occur in places where pyrite is the predominant mineral.

The company began work at the end of April and continued to the end of the year. The following is a summary of work done:-

	Ft.
Surface stripping .....	1,868
Drifting .....	415
Raising .....	<b>130</b>
Diamond drilling (underground) .....	1,721

A total of 54 tons of ore was shipped to the Trail and Tacoma smelters, yielding 15 ounces of gold and 3,684 ounces of silver. A tool-house, dry, and **100-ton** ore-bin were built, a jeep and tractor road 1 mile long was built from the ore-loading platform to the main east **adit**, and a trail was made from the west **adit** on the **Horn Silver** claim to the Silver Bell No. 5 claim. An average crew of eight men was employed.

[Reference: Minister of Mines, *B.C.*, Ann. Rept., 1928, p. 258.1

## FAIRVIEW CAMP\*

*Silica-Gold*

(49° 119° S.W.) Head **office**, Trail; mine office, P.O. Box 337, **Fairview** (The Con- Oliver. G. S. Ogilvie, property superintendent. This mine is about **solidated** Mining 5 miles west of Oliver at an elevation of 3,080 feet. Quartz is and Smelting 5 miles west of Oliver at an elevation of 3,080 feet. Quartz is mined and shipped to Trail for use as flux in the smelter. The Company of quartz contains a small amount of gold and other metals. The Canada, Limited) property comprises thirty-six Crown-granted claims, some of which were originally located in the late nineties of the last century. After many years of inactivity the property was revived in 1933 by **Fairview Amalga-**

\* By A. R. C. James,

mated Gold Mines Limited, and some production took place from 1933 to 1939. The mine remained inactive until 1946 when the present company commenced operations.

The **orebody** is a quartz vein ranging in width up to about 2.5 feet, striking north-westward and ranging in dip from 30 to 50 degrees northeast. In the present working areas there are many **small** faults, and as the ground is difficult to hold in shrinkage stope mining large pillars are left for support. The mine is at present worked from two **adit levels**, both of which have been driven several thousand feet along the strike of the vein. No. 6 level is the lowest **adit** and the haulage level, near the portal of which are the **dry-house**, blacksmith-shop, ore-bin, and compressor-house. No. 3 level is the top level and **stopping** is at present being done above it.

Ore mined in 1958 was from the 305-GH and the 305-J stopes. The 305-GH stope was mined out by the middle of the year. By the end of the year the 305-J stope was also mined out as a result of the vein being cut off by a fault striking southwestward across the stope area.

Meanwhile No. 3 level was driven through the fault, and, finding the vein again, was driven a further 188 feet on the vein. Box holes and chutes were made in preparation for a new stope. A raise was driven parallel to the north side of the fault to link up with the surface raise, thus providing return ventilation for the new stope. Operations were continuous throughout the year, and 35,708 tons of quartz was shipped. A crew of ten men was employed at the end of the year. Six **compensable** accidents occurred during the year.

#### CAMP MCKINNEY\*

##### Gold

(49° 11 9° S.E.) Company office, 626 West **Pender** Street, Vancouver. R. W. Hunstone, president; C. H. McLellan, superintendent. This private company hold the following Crown-granted Company Limited) claims under option from W. E. McArthur, of Greenwood: **Cariboo**, **Amelia**, **Emma**, **Alice**, **Maple Leaf**, **Sawtooth**, **Okanagan**, and **Wiar-ton**. The property includes the old **Cariboo-Amelia** mine, the principal producer of **Camp McKinney**. This mine was in production from 1894 to 1903; 123,457 tons of ore was milled and 69,581 ounces of gold was produced. The **camp** has been inactive since the early years of the century, although attempts at **revival** have been made during the past fifty years. The property is about Y miles north of the International Boundary and 6 miles north of **Bridesville** on the Tram-Provincial Highway. A branch road leaving the highway at Rock Creek canyon, 3 miles east of **Bridesville**, passes through the **camp** in a little more than 6 miles. The property is at an elevation of 4,400 feet on the lower southeastern slopes of **Baldy Mountain**.

The claims are underlain by a finely banded sedimentary series, the commonest rock types being **quartzites** and **greenstones**. Production has **come almost** entirely from the **Cariboo** vein, a quartz-filled fissure ranging up to 10 feet wide, striking westward and dipping vertically or steeply southward. The vein has been traced underground for a distance of 1,800 feet and to a depth of 530 feet. The mine was developed from a vertical shaft 360 feet deep to No. 4 level, and by a **winze** on the vein 200 feet to No. 6 level. At the eastern limit of the mine workings the vein is **cut off** by a northerly striking fault which dips westward at a low angle. Recent attempts to revive the property have been directed toward finding the extension of the vein beyond this **fault**. In 1939 Pioneer Gold Mines of B.C. Ltd. unwatered the mine and diamond drilled eleven holes on the eastern extension of the vein, eight from surface and three underground. More recently W. E. McArthur drilled several holes from surface. The present exploration programme is directed to finding the vein beyond the boundary fault on No. 5 level.

\* By A. R. C. James.

The present company began work on October 16th, 1958. A power-house and shop buildings were erected, and a 40-horsepower, electrically driven, 1 1-stage, Byron Jackson deepwell pump was installed at the old main shaft. The shaft was unwatered to No. 3 level at 260 feet from the surface. The last 100 feet of the shaft was found to be full of muck and had to be cleared. Then the unwatering was completed to No. 5 level at 480 feet from the surface. Work was still in progress at the end of the year. A crew of fifteen men was employed.

[Reference: Hedley, M. S.: Geology of Camp McKinney and of the Cariboo-Amelia Mine, B.C. *Dept. of Mines, Bull. 6.*]

#### ROCK CREEK\*

##### **Chromium**

(49° 119° S.E.) Company office, 536 Howe Street, Vancouver. **Belchrome (Belair Mining Corporation Ltd.)** W. P. Watson, president, Vancouver. This private company controls about fifty claims in an area 2 miles northeast of Baldy Mountain and 3 miles north of Camp McKinney. Chromite showings occur on the **Bridon** group of claims. A description of the property was given in the 1957 Annual Report. In 1958 a magnetometer survey was carried on from May 1st to September 31st. Two men were employed under the supervision of John Tregilges.

[Reference: *Minister of Mines, B.C., Ann. Rept., 1957, pp. 35-36.*]

(49° 119° S.E.) This property consists of the **Belchrome** Nos. 1 to 8 claims. It is not to be confused with the **Belchrome property** described in the previous note, but is a relocation of a low-grade chromite showing 2.7 miles north of Rock Creek and 500 feet west of the **Rock Creek-Kelowna** road. The showing is on the edge of the Westkettle River valley at the foot of a north-trending ridge; it has been known for many years but little previous work has been done.

The area of the showings is underlain by **serpentinized peridotite** which is intrusive into the surrounding altered volcanic and sedimentary rocks. Approximately 3,000 square feet of stripping was done in the early months of the year by B. A. Fenwick-Wilson, and five trenches totalling 150 feet long were excavated. Later four X-ray diamond-drill holes were drilled totalling 689 feet. The series of trenches disclosed segregated chromite in **talcose, serpentinized** rock. The segregations range from disseminated grains of chromite to relatively high-grade lumps up to about 8 inches in diameter, and occur over a width of from 10 to 23 feet as measured in the trenches. The serpent trends northeastward and has been exposed in the trenches intermittently over a length of about 100 feet. Beyond these limits the ground is covered with overburden.

The best width of the higher-grade material was 8 feet in the southwesterly trench. The drill logs suggest that the surface showings of chromite are not continuous at depth, but they indicate further segregations of chromite up to 30 feet thick about 100 feet below the surface. A chip sample taken across 9 feet of the better-grade material in the southwest trench assayed: Chromic oxide, 8.87 per cent. A sample selected from high-grade lumps assayed: Chromic oxide, 27.80 per cent.

\* By A. R. C. James.

BEAVERDELL\*

**Silver-Lead-Zinc-Cadmium**

**Highland-Bell (Highland-Bell Limited)** (49° 119" S.E.) Company office, 604, 789 West Pender Street, Vancouver; mine office, Beaverdell. K. J. Springer, president, Toronto; O. S. Perry, manager; J. de Yaeger, mine superintendent; A. D. Coggan, mill superintendent. The mine is at Beaverdell, 32 miles north of Rock Creek. The property consists of thirty

Crown-granted claims and six claims held by record. The mine consists of two sections—the upper and lower workings. Both sections are in the same ore zone, but are separated by a major fault known as the East Terminal fault, which dips 65 degrees to the east and has a vertical displacement of 800 feet. The No. 4 adit, at 3,974 feet elevation on Wallace Mountain, is the main haulage level for the upper mine. Access to the lower mine is by the 2900 adit level, which was completed in July, 1955. The portal of this adit is 1½ miles northeasterly from the office at Beaverdell.

In 1958 stope development was continued in the lower mine, and two-thirds of the production was from stopes mined from the 2900 and 3000 levels. Exploration was directed to finding the faulted extension of the ore zone beyond the 2905 fault on the southwest side of the workings. By August indications of the extension were found and development was proceeding in this area at the year end.

In the upper mine the salvaging of pillars and ore remnants from Nos. 7, 8, 9, and 10 levels continued throughout the year, and approximately one-third of the total production was from these operations.

A ventilation and emergency exit raise was begun in August to connect the upper and lower mines across the East Terminal fault. The raise is being driven from the 3000 level in the lower mine to No. 10 level in the upper mine, a total distance of 770 feet. At the end of 1958, 345 feet of the raise was completed. Ore was intersected in the raise at 138 feet from the 3000 level, and the presence of mineable reserves has since been confirmed by diamond drilling.

The following is a summary of mining operations in 1958 :—

Drifting .....	ft.	646
Crosscutting .....	ft.	256
Raising .....	ft.	603
Diamond drilling .....	ft.	6,926
Ore mined .....	tons	19,083

Construction work in 1958 included the building of a new concrete-block powder magazine near the 2900 level portal and the installation of a heavier transmission-line between mine and mill.

The ore from both mines is trucked to the mill, which is adjacent to a spur of the Canadian Pacific Railway at Beaverdell. The mill operated continuously throughout the year.

At the end of the year a crew of forty-two men was employed, of whom twenty-six were underground. There were four compensable accidents reported during the year. It is gratifying to report that in 1958, for the first time in the history of the Highland-Bell mine, a mine-rescue team was entered in the competition organized by the Central B.C. Mine Safety Association at Hope. Although a novice team, it won third place in the competition.

---

. By A. R. C. James.

**Silver-Lead-Zinc**

(49° 119° S.E.) Company office, 530, 470 Granville Street, Bounty Fraction Vancouver. K. E. Wickstrom, president. This company controls (Sheritt Lee Mines Ltd.) a group of six Crown-granted claims and fractions on Wallace Mountain. The property is about a mile south of the original Highland-Bell property and is 5 miles by road from Beaverdell. The showings were discovered early in the century and intermittent development work has been done in the past fifty years and small shipments made. The present company began work on July 2nd. Parts of the old workings on the Bounty fraction were cleaned out and retimbered. A raise was driven 30 feet to surface, and a winze was sunk 25 feet. Toward the end of the year a new adit was started about 25 feet vertically below the old adit. Approximately 1,000 feet of diamond drilling was done. A bunk-house, compressor-house, and ore-bin were erected. A crew of four men was employed under the supervision of K. E. Wickstrom.

## PHOENIX\*

**Copper-Gold-Silver**

(49° 118° S.W.) Company office, 1111 West Georgia Street, Phoenix Copper Vancouver; mine office, Davis Block, Grand Forks. L. T. Postle, Company Limited president, Vancouver; J. H. Parliament, manager, Grand Forks. Capital: 3,000,000 shares, no par value. Phoenix Copper Company Limited is a wholly owned subsidiary of The Granby Consolidated Mining Smelting and Power Company Limited and controls thirty-six claims in the Phoenix area. Twenty-eight of these are Crown-granted and eight are held by record. The Granby company resumed work on this property in 1955 after an interval of thirty-six years. The renewal of interest was stimulated by the then prevailing high price of copper and the possibility of cheap open-pit mining. Throughout the subsequent period of decline and partial recovery of copper prices, work has proceeded on a reduced scale with the object of preparing the property so that it may be put into production at short notice as soon as economic conditions are favourable.

In 1958 installation of machinery and equipment for the crushing plant and 750-ton mill was continued, and the transfer-house and conveyor-ways were partially built. The tailings dams were partially finished and 7,000 feet of concrete tailings line was installed.

Mining was confined to the removal of waste rock and overburden from the Snowshoe area in preparation for open-pit mining: a total of 90,240 tons of waste was removed. A small amount of ore, totalling 5,030 tons, was sorted out during mining and stockpiled near the concentrator. The main roads from the pit to the mill were improved and widened. Some rehabilitation was done in the old Victoria shaft, the main source of water for the camp. A limited amount of geological mapping was also done.

A total crew of twenty-three men was employed at the year end. No compensable accidents were reported.

## TRAIL†

**Gold**

(49° 117° S.W.) This prospect is on the west side of the Columbia River, 3 miles south of Trail, and is owned and operated by W.D. E. Wells and F. Donnelly, of Trail. It was at one time known as the Casino Red Cap. Mining was continued on a small quartz fissure vein at the base of a rock bluff immediately above the uppermost river bench between Casino Creek and Trail. Two drifts, each 200 feet long and 25 feet apart in elevation, were driven in a southerly direction on the vertical vein. A stope 150 feet long and 6 feet wide was mined between the levels. A small amount of crosscutting was done, both westerly and north.

\* By A. R. C. James.

† By J. E. Merrett.

erly, on the bottom level. The mine plant consisted of a portable compressor and a" ore-bin. Work was done intermittently and the ore obtained was trucked to the Trail smelter.

Production: Ore shipped, 1,140 tons. Gross content: Gold, 649 oz.; silver, 230 oz.

## NELSON\*

### Gold-Tungsten

**Venango**  
(Venango Gold  
Mines Limited)

(49° 117° S.E.) Company office, 459 Baker Street, Nelson. D. H. Norcross, president. This company owns four Crown-granted mineral claims, one-half mile south of the Blewett road and immediately west of Eagle Creek. The property adjoins that held by the former Kenville Gold Mines Limited. A small amount of surface stripping and 650 feet of diamond drilling were done to prospect the extension of a quartz vein and in an attempt to locate the source of molybdenite float found on the property.

### Silver-Copper-Lead

Silver King

(49° 117° S.E.) This old mine is under lease from The Consolidated Mining and Smelting Company of Canada, Limited, by A. Burgess, of Ymir. The lower or Dandy adit at 5,500 feet elevation is reached by 9 miles of rough road southwest of Nelson. This adit extends about 2,400 feet to the old Silver King vertical shaft. Approximately 18 tons of ore was mined from a small lens on the surface "ear the portal of the Dandy adit and was shipped to the Trail smelter. A further 25 tons of lower-grade ore was produced from 12 feet of raising and some stoping at a point 800 feet within the Dandy portal. This ore was not shipped. A bulldozer was used to strip a 100-foot-long trench on the Dandy vein, 800 feet southeast of and at a higher elevation than the Dandy portal. This work disclosed some lead ore with a high copper content. Further exploration was prevented by the onset of winter.

Production: Ore shipped, 18 tons. Gross content: Gold, 0.6 oz.; silver, 194 oz.; copper, 2,187 lb.; lead, 1,578 lb.

## YMIR\*

### Gold-Silver-Lead-Zinc

**Goodenough, Ymir (Americonda Mines Limited).**—(49° 117° S.E.) Company office, 117 West Broadway, Waukesha, Wisconsin; mine office, Ymir. This company holds under option the Goodenough and Ymir mines on Ymir Creek, 6 miles by road northeast of Ymir. One man was employed intermittently retimbering in the No. 2 adit of the Goodenough mine.

### Gold-Silver

**Tamarac.**—(49° 117° S.E.) George Powell and Austin K. Greenway, of Lillooet, reopened by bulldozer the 1½-mile section of road extending northwestward from the Goodenough to the Tamarac mine.

\* By J. E. Merrett.

## SALMO\*

## ERIE CREEK (49° 117° S.E.)

**Gold-Silver-Lead-Zinc**

Arlington (**New** Arlington Mines Limited) Company office, 609 Baker Street, Nelson. J. A. Russell, Edmon- ton, president. Capital: 3,500,000 shares, \$1 par value. This company owns the Arlington mine on Rest Creek, 7 miles by road from Salmo. A 125-ton mill on site was operated before 1954, treating dump material. G. D. Fox and R. W. Linn, of Trail, working under a lease arrangement, did a small amount of drifting on the 400 level immediately below a stoped area. Thirty tons of ore, including 1.46 tons of mill clean-up concentrates, was trucked to the Trail smelter,

## SHEEP CREEK (49° 117° S.E.)

**Gold**

Nugget This mine, which was formerly part of the Reno holdings in the Sheep Creek area, is owned and operated by A. Endersby, of Fruit- vale. Mining was continued in the Nugget upper workings, which are 6 miles by road up Fawn Creek from the Sheep Creek road. Additional stoping was done on No. 4 level of the Calhoun vein, about 1,100 feet from the portal. The back of the stope was raised to a height of 50 feet by shrinkage methods on a nearly vertical quartz vein which ranges in width from 2 to 6 feet. The ore was sorted and trucked to the Trail smelter.

Ventilation is by natural circulation of air up through the old lower workings, and compressed air for drilling is supplied through 2 miles of pipe by a water-driven compressor in the Reno mill building on the north bank of Sheep Creek.

## IRON MOUNTAIN (49° 117° S.E.)

**Lead-Zinc-Tungsten**

Head office, 700 Burrard Building, Vancouver; mine office, Salmo. Emerald, Jersey, G. A. Gordon, general manager; J. D. Little, assistant general manager; C. M. McGowan, plant superintendent; R. G. Weber, (Canadian Explora- mine superintendent; H. A. Steane, general mill superintendent; tion Limited) R. J. MacLeod, superintendent, tungsten concentrator; E. A. Erick- son, superintendent, lead-zinc concentrator, This company is a wholly owned subsidiary of Placer Development Limited. The Emerald, Feeney, Dodger, and Jersey mines, the tungsten concentrator, and the main camp are located on the sum- mit between Sheep Creek and Lost Creek. The property is reached by two roads which leave the Nelson-Nelway Highway 4 and 5% miles respectively south of Salmo. The lead-zinc concentrator is on the Nelson-Nelway Highway and is served from the mine by a series of underground conveyors. The average number of employees was 223, a decrease of 117 from the average for 1957. The following report, prepared by the management, is a synopsis of the 1958 operations:-

"*Emerald.*—All tungsten ore produced in 1958 was mined in the Emerald. Mining of ore remnants above 3800 level, the lowest adit, was completed by both open-pitting and underground mining. The Emerald orebody below 3800 level was developed by a three-compartment, 32-degree inclined shaft. All ore developed by this shaft from the 2730 level to 3800 level was mined by July 31st, the date on which the mine closed.

"*Feeney.*—This tungsten mine, 800 feet north of the northern end of the Emerald workings, has been idle since 1955 and is considered about mined out.

"*Dodger.*—Mining of tungsten ore was completed in 1957.

\* By J. E. Merrett.



*"Invincible.*—No work has been done in this area since October, 1957.

*"Tungsten Concentrator.*—The milling rate decreased from 12,000 tons per month in January and February to 8,000 tons per month thereafter. As of July 31st the milling of tungsten ore ceased, but clean-up operations in the concentrator continued through August and September.

*"Jersey.*—Operation of the Jersey lead-zinc mine continued at an approximate rate of 32,000 tons per month. Because of the thinner, more steeply dipping nature of the E, F, and G orebodies, increasingly more ore was mined by conventional mining methods, i.e., open-stope mining using jacklegs and slushers. Mining of ore remnants in the track area of the south end accounted for some 30 per cent of the lead-zinc ore production. At the end of 195X production from trackless mining methods accounted for approximately 50 per cent of the monthly production. It is expected that this amount will decrease as the development of thinner ore bands continues. Trackless haulage will continue to provide the main method of ore transportation.

*"Lead-Zinc Concentrator.*—The milling rate averaged 32,000 tons per month. The grade of the ore was approximately 4.2 per cent zinc and 2.3 per cent lead. Tailings were impounded in the tailings pond situated near the Salmo River. The concentrates were shipped to Kellogg, Idaho."

### **Lead-Zinc-Tungsten**

Tungsten King This property, comprising eighteen Crown-granted mineral claims and fractions, is adjoined on the north by the Emerald and Jersey holdings of Canadian Exploration Limited, and on the south by the Truman holdings of American Zinc, Lead and Smelting Company. Access is by way of 2 miles of road up Lost Creek from the Salmo-Nelway Highway, or by 1 mile of road from the new Creston-Salmo Highway. The property is owned by E. and R. O. Oscarson, of Spokane, Wash., and L. R. Clubine, of Salmo.

At a point approximately 1 mile south-southwest of the Jersey open-pit, bulldozing and surface blasting discontinuously over a distance of 800 feet has disclosed several lead-zinc-iron mineralized showings in limestone. Most work was done on the east half, where a little more stripping would provide a continuous section 400 feet long.

### BOULDER MILL CREEK (49° 117° SE.)

#### *Gold*

**Clubine Comstock** This property is 4.8 miles north of Salmo on the first north-flowing tributary of Boulder Mill Creek, a tributary of Salmo River. It is owned by L. R. Clubine and under lease to Darrell Fisher and Davis Bonfield, all of Salmo. On the surface the road to the mine and ore-bin was reopened, while underground No. 5 and No. 6 levels were reopened to provide ventilation. Some ore was recovered above No. 5 level at its northwest extremity.

### ASPEN CREEK (49° 117° S.E.)

#### *Silver-Lead-Zinc*

J. C. MacLean, property superintendent; H. G. Barker, mine superintendent; N. Doyle, mill superintendent. The H.B. mine is dated Mining and on the west side of Aspen Creek, with the main camp located on Smelting Company the north side of Sheep Creek, 7 miles by road from Salmo. Zinc-of Canada, Limited) lead replacement orebodies in dolomite have been developed by two adits connected by an interior two-compartment vertical shaft. The hoistroom is on the 3500 level, and the main haulage is the lowest or 2800 level. Long ore-pass systems extend from the 2800 level to the ore zones. Most of the production came from two orebodies above the 3300 level, where mining was done by blast holing to pillar slots above slusher drifts. The orebodies strike north and are roughly

parallel to each other, about 150 feet apart, and have a rake to the south of about 20 degrees. In cross-section they are **lenticular**, and are nearly vertical. The average width is 50 feet, and the maximum height is 450 feet. Development work over a period of years has outlined the No. 1 or east **orebody** for a length of 1,400 feet along which mining was done for a length of 1,000 feet. The No. 2 or west **orebody** was being mined over a length of 600 feet. Additional ore was obtained from two flat-lying ore zones adjacent to, but west of, **No. 1 orebody**. In 1958 a new haulage crosscut was being driven eastward from the 2800 level to a point where a **new** ore-pass can be driven to service **No. 1 orebody** south of the present workings.

The milling rate averaged 38,100 tons per month, the highest in the Nelson district. This was an increase above the rate in 1957. The average number of men employed decreased to 116, of whom fifty were employed underground.

An excellent safety record was achieved—one lost-time accident of five days duration was the only accident recorded.

### NELWAY\*

#### Silver-Lead-Zinc

(49° 117° S.E.) Company office, 413 Granville Street, Vancouver; mine office, Remac. W. L. Zeigler, Metaline Falls, Wash., general manager; L. M. Kinney, Metaline Falls, Wash., general superintendent; F. R. Thompson, property superintendent; J. Kozar, mine superintendent; J. S. Steele, mill superintendent. Capital: 3,000,000 shares, \$1 par value. This company owns the Reeves MacDonald mine on the Pend d'Oreille River—on the Nelway-Waneta road, 4 miles west of Nelway. Zinc-lead replacement bodies in limestone have been developed from the main haulage or 1900 level. The Reeves **orebody**, 3,500 feet from the 1900 portal, has furnished most of the ore produced to date and has been almost mined out above the 1900 level, but 24 per cent of the 1958 production came from recovery of ore in the hangingwall and footwall areas marginal to this part of the Reeves **orebody**. Above the 1900 level the Reeves **orebody** is developed from an internal X-degree inclined shaft extending from the 1900 level to the 2650 level.

The lower section of the Reeves **orebody** is being developed by a 52-degree inclined **winze** in the **footwall** of the **orebody**. Ore was encountered about 200 feet above the bottom or 1 100 level, and at this point the **winze** was steepened to 62 degrees. Crosscuts have been driven to the **footwall** on the 1100, 1320, 1520, and 1690 levels, and connecting raises have been driven on line from the crosscuts to form a pilot raise for No. 3 shaft. The pilot raise has been enlarged downward to dimensions of 19 by 9 feet and has been shaft timbered to a depth of 295 feet below the 1900 level.

Three other **orebodies** were being mined in 1958. These were the B.L., O'Donnell, and No. 4 ore zones, respectively, about 1,000, 3,100, and 3,250 feet east of the Reeves **orebody**. They are believed to be faulted segments of the upper section of the Reeves **orebody**. The No. 4 **zone** was discovered recently and is being explored.

Six per cent of the annual tonnage came from primary **stopping** in the B.L. **zone**, 50 per cent from primary **stopping** in the O'Donnell **zone** (which is now mined out below the 2350 level), and 26 per cent from pillar **recovery** in the Reeves and O'Donnell **zones**. In general, ore is removed by blasting to pillar slots above **scram drifts**,

The mill operated continuously at an average rate of 34,800 tons per month. **Mill-heads** averaged 3.85 per cent zinc and 1.24 per cent lead. Concentrates were shipped to smelters in the United States. The number employed averaged 126.

#### Red Bird†

This property comprises sixteen Crown-granted mineral claims and fractions owned by Hecla Mining Company, of Wallace, Idaho. The claims are on the south side of the Pend d'Oreille River adjoin-

\* By J. E. Merrett, except as noted.

† By J. T. Fyles.

ing and west of claims of the Reeves MacDonald property. The main showings are between elevations of 2,500 and 3,000 feet on the north slope of a steep valley draining eastward toward the Pend d'Oreille River.

The property is an old one, and little work has been done on it since 1929. Access was formerly by means of a trail from the old bridge across the Pend d'Oreille River about 1½ miles downstream from the Reeves MacDonald mine. In 1957 the Hecla company built about a mile of road from Russian Creek near the International Boundary to the property,

The showings are in zones of oxidized zinc and lead minerals in limestone. Old workings include three adits, now caved, a shaft, and several open-cuts. In 1958 Hecla company, employing six men, did a considerable amount of bulldozer stripping and 427 feet of diamond drilling in two holes. The strippings exposed a number of narrow lenses of rusty gossan carrying secondary zinc and lead minerals. One stripping which deepened an old cut, called the Beerbottle cut, disclosed an oxidized zone extending for 80 feet along one wall of the stripping. The oxidized zones cover a wide area but so far continuity between the lenses and the pattern of their distribution is not apparent,

#### NORTH KOOTENAY LAKE\*

RIONDEL (49° 116° N.W.)

#### Silver-Lead-Zinc

Company office, Trail; mine office, Riondel. D. S. Campbell, Bluebell (The Consolidated Mining and Smelting Company of Canada, Limited) Con-property superintendent; J. B. Donald, mine superintendent; T. F. Walton, mill superintendent. This property is at Riondel on a small peninsula on the east shore of Kootenay Lake. 6 miles by road north of the ferry landing at Kootenay Bay. The ore deposits are sulphide replacement bodies in a limestone band that crosses the peninsula and dips westward under the lake. The Bluebell ore zone is in the central part, the Comfort near the north, and the Kootenay Chief ore zone. is at the south end of the peninsula.

This property has been in operation for many years. The original underground development was done from a 35-degree inclined shaft sunk in the vicinity of the Bluebell ore zone. In 1929 an inclined shaft was sunk in the vicinity of the Comfort ore zone, and an adit was driven in the Kootenay Chief area. In 1949 drifts were driven from the 225 level of the Bluebell shaft to connect with the Comfort shaft and to the Kootenay Chief ore zone. At a point approximately 1,000 feet south of the Bluebell 225 level station a raise was driven at an inclination of 35 degrees to connect with a winze extending down to the 75 level of the Kootenay Chief workings. The raises were enlarged to 7 by 20 feet to form a three-compartment shaft known as the No. 1 shaft. This shaft was later extended to a total slope length of 1,876 feet with a bottom elevation of 810 feet. being 740 feet below the surface of Kootenay Lake. In order to simplify delineation, the levels were recently renumbered as follows, the zero level remaining the same: 75 level to No. 1 level, 225 level to No. 2 level, 300 level to No. 2A level, 375 level to No. 3 level, 525 level to No. 5 level, 675 level to No. 6 level, 825 level to No. 8 level.

Mining and development operations were, as in recent years, confined to the Comfort and Kootenay Chief ore zones, with most of the work being done in the latter area. Development work completed in 1958 was as follows: 3,680 feet of drifting, 2,006 feet of crosscutting, 2,917 feet of raising, and 16,782 feet of diamond drilling completed in 250 drill-holes. This work was done for local exploration, in extending 5 level north drift from No. 1 shaft to the Bluebell shaft and north toward the Comfort zone, and in preparation for the sinking of a vertical shaft below No. 8 level in the footwall area behind No. 1 shaft.

\* By J. E. Merrett.

A total of 47,262 cubic yards of backfill was placed in empty stopes. This amount was composed of 10,393 cubic yards of gravel and 36,869 cubic yards of deslimed tailings.

In December, 1958, the average amount of water pumped from the mine was 4,660,000 imperial gallons per day (3,236 gallons per minute). The capacity of the pump stations was further increased by the addition of a 300-horsepower 1,000-gallons-per-minute pump to No. 5 level station and three 150-horsepower 1,000-gallons-per-minute pumps to No. 8 level station. To provide power to operate the pumps, electrical services, including a new larger 6,900-volt cable and transformers, were installed on No. 8 level.

The induced ventilation of the mine was maintained at 150,000 cubic feet of air per minute. Some local changes were made in air distribution which resulted in improved ventilation of CO<sub>2</sub> contaminated areas. To safeguard mine ventilation in case of a power failure, a 150-kilowatt diesel standby generating unit was installed in the power-house. In addition to this a 375-kva. diesel generating unit has been obtained and will be installed, together with the other standby unit, in an extension to the compressor building.

Mine-rescue and first-aid classes were held in the spring. The mine-rescue team, captained by B. Ramage, was successful in winning the West Kootenay competition, and represented that district in the Provincial competition in Victoria. Among the awards received during the year were both the Dominion and Regional John T. Ryan Safety Trophies for 1957, and also the Award of Merit of the B.C. Safety Council for 1,000,000 man-hours of accident-free operation. There were three lost-time accidents during the year.

The average number of persons employed was 284, of whom 160 were employed underground.

The concentrator treated 255,859 tons of ore, or 701 tons per calendar day. The concentrates were shipped to the Trail smelter.

### Kootenay, Kootenian

(49° 116° N.W.) Thomas Lane, of Ainsworth, holds by location these two mineral claims, situated on the east shore of Kootenay Lake about 2 miles north of the Kootenay Bay ferry landing. The mineral occurrence consists of four parallel narrow quartz veins striking north 36 degrees east and dipping 68 degrees southeast. Occasional transverse quartz stringers connect adjoining veins. The veins are in paragneiss of the Lardeau series that dips flatly under Kootenay Lake. Two very narrow bands of limestone lie within the rocks through which the veins pass.

The main vein is exposed below the lake high-water mark, approximately 1,500 feet south of the main transmission-line. Trenching and open-pits have exposed the vein or fissure more or less continuously for a distance of 250 feet. The vein ranges in width erratically from nil to 6 inches, and is mineralized with galena, sphalerite, and pyrite in vuggy quartz. Several years ago The Consolidated Mining and Smelting Company of Canada, Limited, drilled three flat diamond-drill holes on this occurrence, but the results of this drilling were not known to the owner. Four samples taken along the vein at its wider and better-mineralized points assayed as follows:—

Sample No.	Location	Width	Gold	Silver	Lead	Zinc
		Ft.	Oz. per Ton	Oz. per Ton	Per Cent	Per Cent
1	No. 1 cut high-water mark.....	0.2	0.06	4.1	5.73	6.1
2	45 feet northeast No. 1.....	0.25	0.02	13.3	24.65	0.2
3	197 feet northeast No. 1.....	0.1	0.01	11.2	6.44	1.4
4	239 feet northeast No. 1.....	0.5	0.01	0.2	0.04	1.5

## AINSWORTH (49° 116° N.W.)\*

**Silver-Lead-Zinc**

Belle **Aire** This recorded claim on Coffee Creek, adjacent to the highway bridge, is owned by **Sven Hallgren**, who extended the main **adit** a distance of 50 feet to a total length of 120 feet. The work was done on a quartz vein having an average width of 2 feet and containing small lenses of galena and sphalerite.

Company office, 525 Seymour Street, Vancouver; mine office, Highlander, etc. Ainsworth. H. W. Knight, president; P. E. Olson, mine manager; (Yale Lead & Zinc E. Pickard, mine superintendent, succeeded in September by M. Mines Limited) Laughton; C. Anderson, mill superintendent. Capital: 5,000,000 shares, \$1 par value. This company controls most of the mineral claims lying between Coffee and Cedar Creeks in the Ainsworth camp. The crushing plant, mill, and main haulage adit are below and the mine plant and Highlander adit are above the Nelson-Kaslo Highway, about three-quarters of a mile south of Ainsworth.

A third of the ore produced was obtained from new development, while the remainder was from salvage of pillars and remnant ore blocks. The production was obtained from the Highlander vein, of which the Banker and Albion ore zones are parts. Three 225-foot-long crosscuts were driven at 420-foot intervals into the hangingwall of the 1900 level commencing at a point 960 feet north of the 1900 level main crosscut. At the end of 1958 diamond drilling was being done from these crosscuts to determine if the ore zone continued below the 1900 level. The mining and removal of ore was completed late in the year, and except for the diamond drilling the operation closed on December 12th.

At the beginning of 1958, fifty-seven men were employed, of whom thirty-four were employed underground. The crew gradually decreased throughout the year, until at the time of closing forty-two men were employed, twenty-two of whom were underground.

The concentrator treated 51,460 tons of ore from the mine. The zinc concentrate produced was stockpiled and the lead concentrate was shipped to the Trail smelter. Custom milling was done on ore from the Kootenay Florence at Ainsworth and the Caledonia at Blaylock.

Company office, 850 West Hastings Street, Vancouver; mine office, Kootenay Florence, Ainsworth. H. M. Wright, president; H. M. Turner, superintendent. Capital: 3,000,000 shares, \$1 par value. This company (Western Mines Limited) owns a large group of mineral claims lying south of Lendrum Creek and astride Princess Creek. The mine plant and mill are on the Nelson-Kaslo Highway, 2 miles north of Ainsworth.

M. B. Sirak and Lloyd Johnstone, lessees, mined stope pillars and ore remnants along 938 raise, which connects No. 9 and No. 5 levels. The ore was hand-sorted, the high-grade material being trucked to the Trail smelter and the low-grade material to the Yale Lead & Zinc concentrator. Compressed air was supplied initially by a small Pelton-driven compressor, and later by the mine compressor.

On the surface 3,000 feet of truck-road was constructed from the Lakeshore adit southward to the Nicolet workings.

## WOODBURY CREEK\*

**Gold-Silver-Lead-Zinc**

(49° 117° N.E.) Company office, 1519 Marine Building, 355 Scranton (Scranton Burrard Street, Vancouver. A. A. Loeb, president; C. J. Bailer, Mines Limited) general manager. Capital: 3,000,000 shares, \$1 par value. This company owns the Scranton group of claims in Kokanee Glacier Park, astride Pontiac Creek, a northerly flowing tributary of Woodbury Creek. The mine

\* By J. E. Merrett.

camp is on Pontiac Creek, at an elevation of 5,600 feet,  $11\frac{1}{2}$  miles by road from a point on the Nelson-Kaslo Highway, 8 miles south of Kaslo. The group consists of fourteen claims, including the Granite, Sunrise, **Grandview**, Scranton, Pontiac, and **Tecumsie** Crown-granted claims. Two men were employed with a bulldozer reopening the mine road and surface stripping at several points on outcrops of quartz veins in the vicinity of the mine.

### KASLO\*

#### *Copper*

##### **Logan**

( $49^{\circ} 116^{\circ}$  N.W.) An excavation, 150 feet long and as much as 40 feet deep, was made in a clay hillside  $1\frac{1}{2}$  miles west of Kaslo on the north side of the New Denver road. This work was done in search of an occurrence of **chalcopryite** reportedly encountered while sinking a well at this site several years ago. Two diamond-drill holes, each 40 feet in length, were drilled. The work was abandoned when no ore was encountered. The work was done under the direction of J. Hunt, of Kaslo, and J. Murison, of Edmonton,

### PADDY PEAK\*

#### *Silver-Lead-Zinc*

##### Utica (**Lajo** Mines Limited)

( $49^{\circ} 117^{\circ}$  N.E.) Company office, 717 West Pender Street, Vancouver; mine office, Kaslo. T. S. Lathrop, New York, president; J. A. Cooper, manager. This company holds a long-term lease on the Utica mine (which had been operated under lease from 1953 to 1956 by J. A. Cooper) from Utica Mines (1937) Limited. The mine is at the head of Twelve Mile Creek, about 15 miles by road from Kaslo. The main level is the No. 7 adit, which is connected by raise to the No. 4 adit. A sublevel, No. 5, has been driven from the raise to develop two parallel veins known as the East and West veins. The ore sections on the nearly vertical veins contain 1 to 6 inches of **galena** having a high silver content. Stopping was done under contract on both veins above and below No. 5 level, mostly on the East vein. The ore was brought to surface by diesel locomotive on No. 7 level and concentrated in the 50-ton mill. Lead and zinc concentrates were trucked to the Trail smelter. Nine men were employed, but the operation was suspended in mid-April.

### RETALLACU-THREE FORKS\*

#### *Silver-Lead-Zinc*

##### **Caledonia** (**Caledonia** Mines Limited)

( $50^{\circ} 117^{\circ}$  S.E.) Company office, 609 Baker Street, Nelson; mine office, Kaslo. Charles Lind, Kaslo, president and manager. Capital: 100,000 shares, 50 cents par value. This company optioned the **Caledonia** mine near **Blaylock** from G. E. McCready, of Kaslo. A raise was commenced at a point 200 feet from No. 2 adit portal to connect with No. 1 level in order to improve ventilation. From this raise, and an adjacent stope, 350 tons of ore was extracted, of which 157 tons was trucked to the Yale Lead & Zinc concentrator. This work was suspended in mid-November and a crew of four men commenced driving a 550-foot crosscut from the side of the Kaslo-New Denver road to intersect the downward projection of the vein from No. 1 and No. 2 levels, 220 feet below No. 2 level.

( $50^{\circ} 117^{\circ}$  S.E.) Company office, 1500 Marine Building, Vancouver; mine office, **Retallack**. Edward L. Borup, president and manager; T. R. Buckham, superintendent. This company controls the Star group of recorded claims and has a lease on the old Wellington mine near **Retallack**. The Star claims are 2 miles north of

\* By J. E. Merrett.

the Wellington mine, which is owned by New Wellington Mines Limited, and cover the Heba, Pluto Fraction, Oppollo, and Hera cancelled Crown-granted claims. A dry and repair building, and a building to house a portable compressor were constructed near the portal of the 1,000-foot-long Matheson tunnel, 2½ miles by road from Retallack. This crosscut was, where necessary, increased in size and retimbered to its face to permit the passage of a battery locomotive and mucking-machine. Ventilation pipe was installed and the track renewed. It is planned to extend this crosscut to the Wellington ore zone.

**Texas**, Cowboy, Fourth of July, etc. (Lucky Edd Mines Limited) (50° 117° S.E.) Company office, Edmonton, Alta.; mine office, Retallack. P. E. Colthorp, manager; H.E. Singel, superintendent. This company has optioned a group of Crown-granted mineral claims at the headwaters of Robb Creek, a tributary of Kaslo River. A crew of four men with a bulldozer constructed 3½ miles of road from Retallack up Robb Creek toward the property.

Snap, Lucky Jim (50° 117° S.E.) The Snap claim and the Lucky Jim mine at Zincton were leased by a group known as the Lucky Four Leasers under the direction of Richard E. Martin, of New Denver. The Snap is owned by J. L. Drumheller, of Spokane, Wash., and the Lucky Jim by Sheep Creek Mines Limited, of Nelson. A crew of three men working from May to November in the Lucky Jim mine did a small amount of raising at a point 216 feet within and 75 feet above No. 3 level portal. In addition, broken ore was salvaged from stopes and ore raises from above No. 1 level down to No. 3 level. A shipment of 7½ tons of ore was made direct to the Trail smelter, and 658 tons of ore was trucked to the Western Exploration mill at Silverton.

Monitor (50° 117° S.E.) This property, on the south side of Carpenter Creek at Three Forks, is owned by Slocan Monitor Mines Limited, 640 Pender Street West, Vancouver, and is under lease to C. Uphill, W. Pengelly, and A. Elsmore, of the New Denver area. Fifty-nine tons of ore was mined by underhand stoping and shipped to the Western Exploration mill.

Lost Atlantis (50° 117° S.E.) A. S. Wojna, of New Denver, holds this group of recorded claims astride the New Denver-Three Forks Highway just north of the old Alamo mill. R. J. Renn, of Calgary, Alta., dropped an option on the property after a crew of three men did more than 400 feet of crosscutting on the bottom level.

### SANDON\*

#### Silver-Lead-Zinc

Silver Mountain Mines, Ltd. (49° 117° N.E.) Company address, 406 Canadian Bank of Commerce Building, Calgary; mine office, Sandon. A. C. Weich, president; A. L. Bordula, manager; T. Kleim, superintendent, Capital: 20,000 shares, no par value. This company controls the old Reco property of twenty-six Crown-granted mineral claims and fractions, and holds two recorded mineral claims on the south slope of Reco Mountain. The property adjoins the east boundary of the Cody-Reco holdings. Access to the present workings is by 2 miles of road from Cody to a new adit at 5,300 feet in elevation which has been designated No. 16 adit in relation to the near-by Cody-Reco workings. It is also known as the Ted tunnel. One hundred feet lower, and slightly to the east, is the portal of the second or "A" adit. These adits have been driven in argillite to follow a quartz vein ranging in width from 4 to 16 inches, striking north 5 degrees east and dipping 65 degrees east. In some sections the vein is well mineralized with galena, sphalerite, pyrite, and minor amounts of tetrahedrite.

\* By J. E. Merrett.

No. 16 **adit** was driven a distance of 240 feet with an additional 37 feet of crosscut driven in an easterly direction. The "A" **adit** was driven a distance of 251 feet. A crew of four men was employed. The ore encountered while drifting was stockpiled and a shipment of 10 tons was made to the Trail smelter. An ore-bin of 50-cubic-yard-capacity, compressor-house, workshop, blacksmith-shop, and a powder magazine were constructed,

(49° 117° N.E.) Company office, 416, 25 Adelaide Street West, Silversmith, etc. Toronto; mine office, New Denver. George A. MacMillan, president; J. C. Black manager. Capital: 5,000,000 shares, no par value. In January, 1958, by terms of an agreement with Violamac Corporation Limited) Mines Limited, Carnegie Mines of British Columbia, Ltd., was reorganized to form Carnegie Mining Corporation Limited. This company owns forty-six Crown-granted and six recorded mineral claims and fractions, property that includes the Silversmith, **Slocan Star**, Richmond-Eureka, Ruth-Hope, and **Slocan King** mines on **Sandon Creek**, south of **Sandon**. A truck-road extends to all mines from the mill just west of **Sandon**.

No. 10 **adit** of the Silversmith was reopened, retimbered where necessary, and ventilated to the face of the 1051 crosscut commenced in 1955. More than 1,300 feet of crosscut was driven in a southerly direction, the face of the crosscut being at the end of 1958 more than a mile from the portal. The crosscut was being directed to explore the downward projection of the Adams lode zone. A crew of eight men was employed on this work,

As in past years a small amount of ore was produced by lessees working in various parts. E. and J. **Perepolkin** and L. Fried, mining above No. 4 level on the lower part of the Ruth **orebody**, produced 532 tons of milling and 62 tons of shipping ore having a combined gross content in ore and concentrates of: Silver, 10,510 oz.; lead, 119,683 lb.; zinc, 89,140 lb.; cadmium, 553 lb. E. **Singel**, J. **Lingle**, and J. **Turner** leased the **Rabbits Paw** section of the Silversmith and shipped 34 tons of ore to the Trail smelter. Gross content: Silver, 4,819 oz.; lead, 23,653 lb.; zinc, 8,850 lb. E. **Petersen** shipped 3 tons of ore from No. 2 level of the **Ruth**. Gross content: Silver, 375 oz.; lead, 4,360 lb. A. **Maxinuk** shipped 4.3 tons of ore from a surface cut on the **Slocan Star**. Gross content: Silver, 468 oz.; lead, 5,424 lb. J. **Zambon** and S. **Sibilleau** shipped 5.5 tons of ore from No. 5 level of the **Slocan Star**. Gross content: Silver, 306 oz.; lead, 4,494 lb.; zinc, 1,195 lb.

The concentrator, employing a crew of nine men, operated continuously throughout the year, milling the total production of the Victor mine and the above 532 tons from the **Ruth orebody**.

(49° 117° N.E.) Company office, 416, 25 Adelaide Street West, Victor (**Violamac** Mines Limited) Toronto; mine office, New Denver. Mrs. Viola MacMillan, president; J. C. Black, manager, western operations. Capital: 5,000,000 shares, \$1 par value. This company owns the Victor mine, 2½ miles by road northwest of **Sandon**, or 2½ miles by road southeast of Three Forks. The nearly vertical Victor vein has been developed by several connecting **adits**. The vein has a mineralized length of about 2,000 feet and a width ranging from a crack to as much as 6 feet. Most of the 1958 production came from the west end of the vein known as the West Victor **orebody**. This was obtained principally from close timbered cut-and-fill **stopes** above both No. 5 and No. 7 levels. Exploration continued on the west end of No. 5 level on a high-grade occurrence of silver-lead **ore**. No. 11 level was completed in January with a small ore recovery from the development work. Mining was suspended on No. 10 and No. 11 levels at that time. In addition to 177 tons of crude ore shipped directly to the Trail smelter, the mine produced 8,861 tons of ore that was



trucked to **Sandon** and concentrated in the Carnegie mill. The number of men employed was reduced from forty-seven to nineteen.

(49° 117° N.E.) Company office, 373 Baker Street, Nelson. Wonderful (**Silver H. F. Magnuson**, Wallace, Idaho, president and acting manager. Ridge Mining Capital: 5,000,000 shares, 50 cents par value. This company Company Limited) owns a large group of claims southwest of **Sandon**. The claims lie between the holdings of **Violamac Mines Limited** and those of Carnegie Mining Corporation Limited, The drift commenced in 1956 between the Pearson **adit** and Tributary Creek, was extended to a total length of 75 feet. The work disclosed a short, foot-wide section of **galena** in a quartz vein. Two men were employed. At the end of December a profit-sharing working agreement was entered into with **Violamac Mines Limited** for the development of the property.

### SLOCAN LAKE\*

#### Silver-Lead-Zinc

(49° 117° N.E.) Company office, 38 South Dearborn Street, Mammoth, Stand- Chicago, Ill.; mine office, **Silverton**. M. P. McCullough, Chicago, **ard**, Monarch, president; A. M. Ham, **Silverton**, managing director; J. M. Mc- Enterprise (**West- Dearnid**, manager; R. A. Avison, mine superintendent; C. E. **ern** Exploration **Towgood**, mill superintendent. Capital: 2,000,000 shares, 50 Company Limited) cents par value. A management contract is held by H. L. Hill and Associates, consulting mining engineers, Vancouver. The company owns the Mammoth, Monarch, and Standard mines near **Silverton**, and the **Enterprise** mine on Enterprise Creek, 12½ miles by road south of **Silverton**. **Stope** mining was continuous throughout the year, with about equal amounts of ore being produced from the Mammoth and Monarch **orebodies**. The Mammoth main haulage is the **No. 7 adit**, which is connected by a 45-degree raise to No. 9 level, 340 feet below. The ore from this area was obtained by square-set **stopping** between No. 9 and No. 8 levels. On No. 7 level the Monarch **orebody** was explored by a raise from the **Hecla** drift to the Monarch **adit**, 310 feet vertically above. A sublevel was established in 1957 midway between levels from it and an **orebody** was developed that produced half the 1958 ore supply. All ore was delivered to the mill via the 16,000-foot tram-line, the upper terminal of which is at the portal of No. 7 **adit**. No. 12 **adit**, at 4,290 feet elevation, was commenced on the east side of **Avison** Creek and was driven to intersect the downward projection of the Mammoth **orebody**. This crosscut, **more** than 2,500 feet long, for the most part parallels the Buffalo vein. The crosscut intersected the Buffalo vein in two places where considerable **sphalerite** was seen. In December the face of the crosscut was close to, but west of, the believed **favourable** zone. Late in December **stope** mining in the upper levels was suspended because of lack of ore. The concentrator ceased operating at the **same** time.

The Standard and Enterprise. mines remained idle. Custom milling was done on several lots of **ore**. The crew numbered seventy in January and was reduced to forty-six at the time of closing.

(49° 117° N.E.) Company office, 511, 850 West Hastings Street, Vancouver. R. Crow-Swords, president. Capital: 3,000,000 **Bosun (New** shares, 50 cents par value. The **Bosun** mine is on the east shore Santiago Mines of **Slocan** Lake, 1½ miles south of New Denver on the **Nelson- Limited)** **Nakusp** Highway. The **main** haulage, No. 6 **adit**, is driven beneath the highway from a site 40 feet above the lake. W. H. **McLeod**, of **Silverton**, with the aid of a partner, has operated a lease intermittently since 1956. A small amount of

\* By J. E. Merrett.

exploratory raising and diamond drilling was done in the west central section. However, the main work completed was the sinking of a **winze** 40 feet on the vein in the centre section at the intersection of the main vein and No. 6 level crosscut. A Z-foot vein, mineralized with **galena** and **sphalerite**, was exposed on the east wall of the **winze**. Additional **sulphide mineralization** was disclosed above a false **hangingwall** and will be mined with the vein material.

**Van Roi**, Hewitt  
**(Slocan Van Roi**  
**Mines Limited)** (49° 117° N.E.) Company office, 532 **Burrard Street**, **Vancouver**. Capital, 5,000,000 shares, no par value. This company owns the **Van Roi** and **Hewitt** mines, 6½ miles by road southeast of **Silverton**. **Transcontinental Resources Limited** has directional control. **E. Derosa** and **M. Tarnowski** mined 104 tons of ore under lease between No. 9 and No. 10 levels in the **Hewitt mine**, and **L. Fried** and **V. Hansen** mined 260 tons of ore on No. 4 sublevel in the **Van Roi** mine. The ore from both mines was trucked to the **Western Exploration mill** at **Silverton**. All mining equipment was removed from both mines and stored at the **Van Roi** mill, 1 mile south of **Silverton** on the **Nelson-Nakusp Highway**,

**Noonday** (49° 117° N.E.) The **Noonday** mine is on **Gold Creek** just east of the **Galena Farm** mine. It was under lease to **K. Millar** and **H. Lyon**, of **Silverton**, who made a shipment of 88 tons of ore to the **Western Exploration mill** at **Silverton**. An **outcrop** of ore was exposed by **hydraulic** in the bed of **Gold Creek** immediately below the lowest portal of the **Noonday** mine.

**Fisher Maiden** (49° 117° N.E.) This property of two **Crown-granted** mineral claims owned by **F. Mills**, of **Silverton**, is on **Silverton Creek**, 8 miles by road from **Silverton**. No. 3 level on the south vein was reopened, and 206 tons of ore was removed from an old stope above the level and was trucked to the **Western Exploration mill** at **Silverton**. The caved portal of No. 3 level of the north vein, approximately 300 feet north of the south vein, was reopened and **retimbered** for a distance of 60 feet.

**Westmont (Silver**  
**King Mines**  
**Limited)** (49° 117° N.E.) Company office, 2, 415 **Baker Street**, **Nelson**; mine office, **Silverton**. Capital: 100,000 shares, \$1 par value. **B. F. Marasek**, president and manager. This company holds under option from **J. A. Cullinane**, of the **Ellis Syndicate** of **Nelson**, nine **Crown-granted** mineral claims and fractions on the north side of **Enterprise Creek**, opposite the **Enterprise** mine. Access is by 5.6 miles of road from the **Nelson-Nakusp Highway**. The one-half mile of old road between the mine and **Enterprise Creek** road was reopened, and a **30-foot** bridge was constructed over **Westmont Creek**. A portable ore-bin of 60 tons capacity was constructed near the portal of No. 4 **adit**. This portal was reopened and **retimbered** from the surface to the intersection of the main vein, a distance of 200 feet. West of the intersection, caved ground was cleared sufficiently to provide access to the bottom of the old stope area, approximately 1,000 feet west. This work permitted the reestablishment of natural ventilation. At the intersection of the crosscut and main vein a stope has been prepared for mining. Immediately west of this point, a crosscut 35 feet long was driven into the **footwall** following a **narrow** silver-bearing quartz vein. East of the intersection, 100 feet of drifting was done on the main vein and 425 tons of ore was removed from a stope above the drift. The stope back was close to the surface. The quartz vein in this stope ranged in width from 6 inches to 2 feet and was well mineralized with **galena**, **sphalerite**, **tetrahedrite**, **ruby silver**, and native silver. The ore produced was shipped to the **Western Exploration mill** at **Silverton** and to the **Trail smelter**. A crew of three was employed.

## SPRINGER CREEK\*

**Silver**

(49° 117° N.E.) Company and mine office, **Slocan City**. **W. A. Ottawa** (Yukon **Ady**, Edmonton, manager; **C. Thickett**, **Slocan City**, foreman. Western Mining This company holds an option on the Ottawa mine on Springer and Prospecting Creek, **5 miles** by road from **Slocan City**. Between February and Company Limited) November a crew of **four men** completed 200 feet of drifting and 65 feet of raising on the east vein on the **No. 8** or bottom level. On the west vein on this level 190 feet of raising was completed. One **mile** of new road was constructed northeast from No. 8 level portal to the Hamilton portal on Little Tim Creek, where 94 feet of crosscutting was done to intersect a quartz vein believed to be the continuation of the Anna vein. Twenty-eight tons of ore was trucked to the Trail smelter.

## NORTH LARDEAU\*

**Gold-Silver-Lead-Zinc**

(50° 117° N.W.) Company office, 604,744 West Hastings Street, Spider, Eclipse Vancouver; mine office, **Beaton. J. Drybrough**, president; **J. A. (Sunshine Lardeau** Pike, managing director; **G. G. Sullivan**, manager; **O. Meurling**, Mines Limited) mine superintendent; **E. Hall**, mill superintendent. Capital: 4,000,000 shares, no par value. The mine **camp** and mill are at the old **townsite** of **Camborne**, at the junction of Poole Creek and **Incomappleux** River, 6 miles by road northeast of **Beaton** on the northeast arm of Upper Arrow Lake. The mine is on the south side of Poole Creek, 2 to 3 miles by very steep road from **Camborne**.

No development work was done and production was on a salvage basis. All broken ore below **No. 10** level on the Eclipse and No. 4 veins was recovered. Underhand **stopping** on No. 4 vein indicated a pinching of the **orebody**. Mining and milling were suspended on **May 14th**, the mill having produced 1,256 tons of lead concentrate and 1,544 tons of zinc concentrate during **1958**. The concentrates were shipped to smelters in the United states.

The road to No. 6 level was reopened and **S. Barclay** and partner, holding a lease on the workings on this level, made some ore shipments.

Prior to 1952 approximately 400 tons of ore was **mined**. During the period of operation by the present **company**, from 1952 to 1958, 140,772 tons of ore was mined, having the following gross content in concentrates and in approximately 4,000 tons of crude ore: Gold, 11,876 oz.; silver, 1,686,805 oz.; **copper**, 188,161 lb.; lead, 23,793,322 lb.; zinc, 25,301,641 lb.; cadmium, 145,529 lb. Mill recoveries averaged about 91 per cent. Of the foregoing, the Eclipse vein produced about 35,000 tons of ore, the remainder coming from the Spider workings. The ore grades of the two veins were practically the same. On suspension of mining operations a small **crew** was maintained to examine an adjoining group of claims, owned by **Lardeau** Mines Exploration Limited, and the Lead Star group, situated about 4 miles westerly and owned by **D. A. McIntosh**. After **some** diamond drilling and surface examination the options on these properties were **dropped**.

(50° 117° N.W.) Company office, 404 **Pemberton** Building, 744 Beatrice (**Beatrice** West Hastings Street, Vancouver. **W. J. Scorgie**, president and Mining Co. Ltd.) managing director. Capital: 50,000 shares, \$1 par value. This **company** owns a group of claims at the head of the east fork of Mohawk Creek. The main workings are on the Beatrice claim and are accessible by 4 miles of tractor-road from the Spider mine road. The tractor-road was reopened **but** no other work was done.

• By J. E. Merrett.

## FERGUSON (50° 117° N.E.)

**Silver-Lead-Zinc**

Black Warrior,  
**Elsmere (Circle** City  
Mines Limited)

of these properties.

Company office, Trail. A. Peterson, Trail, manager. These prop-  
a-ties, **optioned** from J. Main, of **Ferguson**, are at the **headwaters**  
of Ferguson Creek, 10 miles by trail **from Ferguson**. A crew  
of two men **was** employed **repairing** the trail and **reopening**  
open-cuts and caved drifts so that examination **can** be made

## HALL CREEK (50° 117° N.E.)

**Silver-Lead-Zinc****Bannockburn**

J. Gallo, of **Howser**, owns the **Bannockburn group** of Crown-  
**granted** mineral claims on the south side of the **headwaters** of Hall  
Creek, a tributary of Duncan River. The property **is** reached by  
17 miles of road from the **Lardeau River** road "p **Healy** Creek, over the summit into  
Hall Creek, and by 4 miles of trail south to the mine workings. The **Lardeau River**  
bridge **was** reconstructed and the road was reopened to Hall Creek. Three miles of  
pack-horse trail was constructed toward the workings. Some **surface** stripping was done  
at various points along a vein mineralized with **galena** and sphalerite.

Wagner

J. Gallo, of **Howser**, owns the **Wagner group** of Crown-granted  
**mineral** claims on the north side of the **headwaters** of Hall Creek,  
a tributary of **Duncan River**. The property is reached by the **same**  
road providing access to the **Bannockburn group** and by 2 miles of trail north to the mine  
workings. Some surface stripping was done on a vein exposed by the recession of a  
glacier.

## SOUTH LARDEAU\*

**Silver-Lead-Zinc**

(50° 116° S.W.) Company office, Trail. This company has  
J.G., **Rosco**, etc. a purchase option from J. Gallo and associates, of **Howser**, on a  
(**The Consolidated** block of mineral claims extending north from Glacier Creek  
Mining and Smelt- across a mountain ridge to the north end of the peninsula on the  
**ing** Company of east side of **Duncan Lake**. A band of limestone, mineralized  
Canada, Limited) with **galena** and sphalerite, has at various times **been** explored  
by **diamond drilling** and trenching over several thousand feet of  
strike length. There is a **adit** on the north side of Glacier Creek. **Further** geological  
**mapping** was done in 1958, and a considerable amount of diamond drilling was done  
on the peninsula.

## CRESTON\*

**Copper**

May-Bee

(49° 116° S.E.) This property, comprising three recorded claims  
owned by **O. Arrowsmith**, of Erickson, is on the north side of  
Arrow Creek, 3 miles west of **Kitchener** on the **Creston-Cranbrook**  
Highway. The claims are astride the south end of the Iron Range Mountain **fault**, and  
extend from the north side of Goat River northward up the mountain. The showing is  
a **chalcopyrite-bearing** quartz vein ranging in width from 1 to 5 feet. The vein strikes  
north 36 degrees west and dips vertically, and is in a **diorite** sill of **Purcell** age in the  
Iron Range Mountain fault zone. The **upper adit** at 3,200 feet elevation was extended  
12 feet to a total length of 95 feet. The lower **adit** at 3,020 feet elevation was extended  
15 feet to a total length of 60 feet.

\* By J. E. Merrett.

## KIMBERLEY\*

**Silver-Lead-Zinc**

(49° 115° N.W.) Company office, 215 St. James Street West, Sullivan (**The Con-Montreal**; western headquarters, Trail, R. E. **Stavert**, Montreal, **solidated** Mining president; R. D. Perry, Trail, vice-president and general manager. and Smelting Sullivan mine office, **Kimberley**. J. R. **Geigerich**, general superintendent; R. M. Porter, mine superintendent; H. J. Chalmers, Company of Chapman Camp, superintendent, Sullivan concentrator. The **Sul-livan** mine is on Mark Creek, 2 miles north of Kimberley, and the Canada, Limited) concentrator is at Chapman Camp, 2 miles south of Kimberley. The holdings include 678 **Crown-granted** mineral claims and fractions. The following report, prepared by the management, is a synopsis of the 1958 operations:-

“The Sullivan Mine produced and the Concentrator treated **some 2,400,000 tons of ore**. Seventy per cent of this was produced from the section Above 3900 Level and thirty per cent from Below 3900 Level.

“Long-hole drilling methods, using diamond and percussion drills with sectional steel, accounted for 95% of the production. The remainder was mined by bench mining methods in open stopes. Three winzes for float filling stopes Below 3900 Level were sunk by drilling a raise pattern through to the stope by diamond drill and blasting in sections from the stope to the level. These winzes were an average of 60 feet in length.

“Development footage was **52,497.5 feet**, about ten per cent below 1957. 870,562 cubic yards of fill were placed, made up as follows-175,731 cubic yards gravel; 172,452 cubic yards float fill; 522,379 cubic yards planned cave.

“Primary ventilation of the mine was done by eleven fans, using 1,375 H.P. Volume of air handled was in the order of 1,000,000 c.f.m., or four tons of air for each ton of ore produced.

“Safety programs have been active at both the Mine and the Concentrator. The Mine, with 43 lost-time accidents, had a frequency rate of 22.5 and a severity rate of 1199 compared to 1957 figures of 28.9 and 1594 respectively. The Concentrator, with three lost-time accidents, had a frequency of 3.7 and a severity rate of 221 compared to 1957 figures of 5.7 and 115 respectively. Days lost due to accidents were 2,291 at the Mine and 180 at the Concentrator. The eye protection program at the Mine has been quite successful with a reduction of 22% of eye injuries from 1957.

“One hundred thirty-two new employees attended the induction school at the Mine, bringing the total to 2,137 having received this training. Eighty miners received a two-week course of mining instruction, bringing the total to have received this training to 331. Six employees were trained in Mine-Rescue and received their certificates. Mine-Rescue and First-Aid teams competed in local, East **Kootenay**, and Provincial competitions.

“The Concentrator operated 254 days during 1958 at an average of close to 9,500 tons per day.

“Employees totalled 1,437 at year-end, with 1,038 at the Mine and 399 at the Concentrator.”

## ST. MARY RIVER\*

**Lead-Zinc**

(49° 116° N.E.) This property is 18 miles northwest of **Kimberley**, west of White Creek, and 6 miles north-northeast of the confluence of White and **Dewar** Creeks. The property comprises twenty recorded claims owned by The Consolidated Mining and Smelting Company of Canada, Limited, and covers a showing of disseminated lead and zinc in sediments. The claims were located in September, 1957. Eight men were employed for a period of

\* By D. R. Morgan.

three months during the **summer** of 1958. They geologically mapped and prospected the group, completed 7 miles of trail, **drilled** three diamond-drill holes **totalling** 85 feet, and did a limited **amount** of geophysical work. The men were housed in tent camps, and a truck and pack-horses were used for transportation.

#### FORT STEELE\*

##### **Silver-Lead-Zinc**

Fort Steele Gold  
and Silver Mines  
Limited

(49° 115° N.W.) Registered office, 1442 Bay Avenue, Trail; mine office, Box 1720, **Cranbrook**. D. **Shirling**, president; C. **F. Gorse**, manager. The Joy, **Rita**, and Gertrude claims are owned by C. **F. Gorse**, and are located between Brewery and Fisher Creeks, on **the** north side of Wild Horse River. Access is by means of a **5-mile** logging-road leading from Fort Steele. A small crew was employed reopening two old shafts, one 20 feet deep and the other 40 feet. Both shafts are on a mineral occurrence of silver, lead, and zinc.

#### SKOOKUMCHUCK\*

##### **Tungsten**

(49° 116" N.E.) This property comprises fifty-eight claims owned by The Consolidated Mining and Smelting Company of Canada, Limited. It is on Burnt Creek, a tributary of **Skookum-Smelting Company** chuck Creek, approximately 30 miles by logging-road west of Canada, Limited) Torrent. The claims cover **scheelite** mineralization associated with garnet, **epidote**, and minor **chalcopyrite** in **skarn** zones within sediments and **diorite**. The showings were trenched in 1957.

During 1958 a contract company employing five **men** for a period of six weeks drilled five holes **totalling** 1,455 feet on the "sediment" showing. Personnel were housed in a tent camp on **Burnt** Creek.

#### CANAL FLATS\*

##### **Silver-Lead-Zinc**

##### **Key**

(50° 115° S.W.) This property comprises fourteen claims owned by J. W., J. E., and J. C. Blake, of **Skookumchuck**, and A. M. Blake, of **Ta Ta** Creek. It is on the south tributary of Doctor Creek, 19 miles by logging-road and 7½ miles by good pack-trail southwest of Canal Flats. The **claims** cover showings of **galena**, **sphalerite**, pyrite, and some **tetrahedrite** with minor quartz in argillaceous sediments. The **Consolidated** Mining and Smelting Company of Canada, **Limited**, **optioned** the property in 1957 and seven **men** were employed for a period of two months in 1958. The trail was cleared and two holes were diamond **drilled** a total of 501 feet. The option was relinquished in October, 1958.

#### WINDERMERE\*

##### TOBY CREEK (50° 116" S.E.)

##### **Silver-Lead-Zinc**

Mineral King  
(**Sheep** Creek  
Mines Limited)

Company office, 6, 490 Baker Street, Nelson; mine office, **Toby** Creek. H. E. **Doelle**, managing director; J. B. **Magee**, resident manager. This mine is 28 miles by road southwest of **Athalmer**, on the **Toby** Creek side of the ridge between **Jumbo** and **Toby** Creeks. The mineral deposit is a lead-zinc replacement, with **barite**, in limestone of the Mount Nelson formation. The mine is operated by the open-stope method and the workings are in four **subparallel** **orebodies** known as the "A," "B," "C," and "D" bodies.

. By D. R. Morgan.

During 1958, 192,426 tons of ore was mined and milled, with most of the tonnage coming from above the No. 4 level. Exploration, development, and mining were continued on all levels from No. 2 to No. 6, inclusive, and the finding of a better grade of ore in the lower levels raised the average mill head slightly above that of 1957. The development included 1,728 feet of drifts and crosscuts, 1,783 feet of raises, and 11,570 feet of diamond drilling in a total of 126 holes.

No major installation was made underground during 1958, and there has been very little change in the operation. Preparations were being made to mine barite from the top-level workings at the end of the year, and it is expected there will be production of barite in the near future. This mining will be separated from the remainder of the operations by transporting the barite along No. 3 level and down the surface skipway.

The mine is ventilated by both mechanical and natural ventilation, and approximately 29,000 cubic feet of air per minute is exhausted from the workings. Of this quantity, 18,000 cubic feet per minute is supplied by a 15-horsepower electrically driven Sirocco fan at the portal of the No. 2 level intake airway. Transportation from the mine is by diesel locomotive, and all production is brought to No. 7 level.

New construction work on the surface during 1958 included an extension to the power-house to accommodate a 500-kva. portable diesel generator and a 300-c.f.m. portable diesel compressor. The original 500-ton capacity coarse-ore bin, located near the main haulage portal of the mine, was rebuilt and trestled for lead-zinc ore. A new 100-ton ore-bin was built at the bottom of the surface incline for barite ore.

The average number of men employed was ninety-four, of whom fifty were employed underground.

#### HORSETHIEF CREEK (50° 116° N.E.)

##### *Silver-Copper*

President and manager, Heinz K. F. Seel, Edgewater. This property is at an elevation of 8,600 feet, at the headwaters of Red Line Creek, a tributary of McDonald Creek, which in turn is a tributary of Horsethief Creek. Access is by means of a 29-mile road from the village of Wilmer. A description of the property is included in the 1955 Annual Report.

The property is owned by Mr. Seel, and the present company, which is a private one, was formed in 1958 to continue the operations at the mine. Three men were employed and activities were directed mainly to the No. 3 level, where a small cut-and-fill stope was commenced in 1957. Further ice was removed for a distance of 160 feet at the inner portion of the level, and 34 feet of drifting was done on a new lead of high-grade ore. The total tonnage of ore from the stope and drift was 181 tons, which was shipped by truck to the Trail smelter. Silver assays of the shipments ranged from 210 to 400 ounces per ton. The mine is ventilated by natural means, and a raise was driven from the level to an old incline for a distance of 45 feet to improve the ventilation.

On the surface 2½ miles of the upper portion of the road was relocated to improve the grade, and a small building was put up for storage and heating of water for drilling.

#### REVELSTOKE\*

##### *Silver-Lead-Zinc*

(51° 1 18° S.E.) Twenty-three claims and fractions located in King Fissure, S.B., September, 1955, and held by American Standard Mines Limited C.R., and Deby were under option in 1958 to Bunker Exploration Ltd. The claims cover old lead-zinc occurrences first located many years ago but not mentioned in any geological reports. The company improved the trail into the

\* By Stuart S. Holland.

property and established a tent camp at an elevation of about 4,500 feet at the head of **Lorenz Creek**, a tributary from the south to **Copeland Creek**. The camp is reached via a truck-road which leaves the Tram-Canada Highway at the railway crossing about 2 miles west of **Revelstoke**. The truck-road follows the west side of Jordan River for about 10 miles. From there a pack-horse trail continues for another 2 miles to the mouth of **Copeland Creek**. The trail extends up the north side of **Copeland Creek** for 3 miles, then crosses to the south side and climbs steeply for 3 miles to the camp-site at the head of **Lorenz Creek**.

The mineralization is exposed between 6,000 and 7,500 feet elevation on the northern slope of Mount **Copeland**. The mineralization is well exposed in natural outcrops on moderate and steep slopes for a total length of about 7,500 feet, although part is obscured by lobes of glacial ice.

The area is underlain by a succession of **quartzites, micaceous quartzites, schists, and garnetiferous mica schists** containing a few marble beds. The rocks strike north 50 degrees west, dip 50 degrees southwest, and are folded into an **isoclinal syncline** whose axis is essentially horizontal even though local plunges of 5 degrees northwest or southeast are observed. The central part of the **syncline** is occupied by a band of **gneiss** which is crossed by several narrow, irregular **pegmatite dykes**.

The mineralization, which is a **fine-grained aggregate** of pyrite, **pyrrhotite, galena, and sphalerite**, seems to replace a single stratigraphic bed. It lies close to a white marble bed that makes an excellent marker horizon and outcrops mainly along the southwest limb of the syncline. On the northwestern end the mineralization can almost be seen to follow down into the **synclinal** trough and then up on the northeastern limb where it outcrops **discontinuously** along strike.

The **sulphide mineralization** ranges from 1 foot to about 8 feet in width and probably averages about 5 feet. Chip sampling done in 1956 for American Standard Mines Limited indicated that the outcropping mineralization along the southwestern limb might assay up to about 10 per cent combined lead and zinc and contain 1 to 2 **ounces** of silver per ton.

Work during the summer of 1958 was directed solely toward a thorough sampling of the outcropping mineralization. Trenches at 25-foot intervals were blasted across the mineralized bed and a generous-sized bulk sample taken from each locality. Further exploration work by Bunker Exploration Ltd. will be largely contingent upon obtaining encouraging assay results from this sampling.

[References: *Minister of Mines, B.C., Ann. Rept.*, 1956, p. 114; *Western Miner*, October, 1956, p. 128.]

#### SKAGIT RIVER\*

##### **Copper**

(49° 121" S.E.) The A.M. group, consisting of eight Crown-granted claims, was optioned from **Canam Copper Company Ltd.** dated Mining and The property is on the western boundary of Manning Park and is **Smelting Company of Canada, Limited** about 4 miles by road southerly from Mile 26 on the **Hope-Prince-of** ton Highway. From 1930, when the showings were discovered, up to the end of 1956 a considerable amount of underground exploration has been carried out, and detailed descriptions of the property have appeared in previous Annual Reports.

From August 12th until November 4th a surface geological mapping programme was carried out under the direction of J. K. Webb. A four-man party prepared a plane-table map of the significant claim area.

[References: *Minister of Mines, B.C., Ann. Repts.*, 1954, pp. 152-159; 1949, pp. 210-213.]

\* By A. R. C. James.



A total crew of 156 men was employed in the final month of operation.

[References: *Minister of Mines*, B.C., Ann. Rept., 1954, pp. 161-163; *Geol. Surv., Canada*, Mem. 190 (1936).]

#### HARRISON LAKE\*

##### **Molybdenite**

**Newmont** Mining  
Corporation of  
Canada Limited

work were done to  
Five men were employed.

(49° 121° N.W.) Company office, 744 West Hastings Street, Vancouver. J. A. Pike, resident manager. This company **optioned** the AB group of forty recorded claims. The **group** is on Clear Creek, a tributary of Big **Silver** Creek, which flows into the east side of Harrison Lake. Surface **trenching**, sampling, and geological

**outline** zones of **molybdenite** mineralization in the **granitic** rocks.

#### HOWE SOUND\*

##### **copper**

**Britannia (Howe**  
Sound Company  
(**Britannia**  
Division))

(49° 123° N.E.) Head office, 500 Fifth Avenue, New York, N.Y.; mine office, **Britannia** Beach. William M. Weaver, Jr., president; Frederick A. **McGonigle**, vice-president; D. W. **Pringle**, general superintendent; L. L. Allen, mine superintendent; P. C. Emery, chief **engineer**. In December, 1957, **Britannia** Mining and Smelting Co. Limited proposed to cease operations, but with the assistance of a direct subsidy payment from the Federal Government and the Provincial Government the company continued to operate on a reduced scale until March 12th, 1958, when all operations, except maintenance, ceased. On August 8th **Britannia** Mining and Smelting Co. Limited was placed in voluntary liquidation and Howe Sound Company became the successor. At the end of the year D. W. **Pringle** was appointed general superintendent and plans were made to reopen the mine,

The following summary supplied by the management provides detail of **the** operations in 1958:—

	No. 8	Victoria	Total
Drifts .....	Ft. 151	Ft. 188	Ft. 339
Raises .....	530	262	792
Powder-workings .....	245	.....	245
Diamond drilling .....	1,117	549	1,666

**The** ore is mined by shrinkage, cut-and-fill, and square-set mining methods. The tonnages produced by each mining method in the two mines was as follows:-

	No. 8	Victoria	Total
Development .....	396	552	948
Square-set .....	14,863	.....	14,863
Cut-and-fill .....	3,597	4,856	8,453
Shrinkage .....	25,494	14,238	39,732
Totals .....	44,350	19,646	63,996

Production: Ore milled, 66,863 tons.

\* By R. B. King.

**Zinc-Lead-Copper**

(49° 121" S.E.) British Columbia office, 202, 2256 West Twelfth Gold Coin (**Noranda** Avenue, Vancouver. B. O. **Brynelsen**, manager, Vancouver. This Exploration property includes forty-one claims which are held under option Company, Limited) agreement with I. **Ashenbrenner** and F. Lemieux, of Hope. The claims are on Shawatum or Ten Mile Creek, a tributary of the Skagit River, and are approximately 25 miles in a direct line southeast of Hope. Numerous outcrops of sulphide mineralization occur in rocks of the **Hozameen** series, and have been prospected over a number of years by minor surface workings. In 1950 a few hundred feet of diamond drilling was done on the Gold Coin No. 2 claim to explore the downward extension of the series of narrow veins that outcrop on bluffs to the north of Shawatum Creek and east of Star Group Creek.

The work undertaken by the present company included prospecting, sampling, mapping, and some magnetometer surveying. A crew of four men was employed for two months.

[References: Minister of Mines, B.C., Ann. Repts., 1929, pp. 241, 242; 1938, pp. F 19, F 20.]

HOPE\*

**Nickel-Copper**

(49° 121" S.W.) Company office, 1111 West Georgia Street, Pride of Emory Vancouver; mine office, Hope. D. W. **Pringle**, manager; L. R. (**Western Nickel** Archibald, mine superintendent. The property is at the head of Limited) Stulkawhits (Texas) Creek, which flows eastward into the Fraser River about 6 miles north of Hope. From a point on the **Trans-Canada** Highway 10 miles north of Hope, a good gravel road 5.1 miles long leads up Stulkawhits **Creek** to the mine camp near the 2600 **adit** portal. A branch road from the camp provides access to the 3550 portal.

A description and history of the property was given in the 1954 Annual Report. The property remained inactive from November, 1954, until April, 1957, when The **Granby** Consolidated Mining Smelting and Power Company **Limited** was appointed to conduct the management of the mine. Throughout the latter half of 1957 the property was prepared for production, which began in January, 1958. As a result of economic **difficulties**, the mine was closed at the end of **July**.

The orebodies are pipe-like in form and occur in an irregular northerly plunging mass of ultrabasic rocks, approximately 2 square miles in area. They comprise concentrations of sulphides, of which **pyrrhotite**, pentlandite, and chalcopyrite are the most common, in the ultrabasic rocks. **The** mine is developed from two **adit** levels—the 3550 level, with portals on both west and east sides of the mine, and the 2600 level, which is the main haulage level. An ore-pass and an internal inclined shaft join the two levels. The greater part of the ore was mined from stopes above the 3550 level in the Pride of Emory and the Brunswick Nos. 5 and 8 orebodies, but a considerable amount of ore was also mined from an **orebody** above the 2600 level. Sublevel and shrinkage methods of mining were used. The following is a summary of production and work **done**:—

Drifting .....	ft.	1,032
Raising .....	ft.	3,373
Diamond drilling .....	ft.	5,477
Ore mined .....	tons	13 1,133
Nickel concentrates shipped .....	tons	7,598
Copper concentrates shipped .....	tons	729

\*BY A. R. c. James.

TEXADA ISLAND\*

**Iron**

(49° 124° N.W.) Registered office, 626 West Pender Street, Vancouver. **Texada** Mines Ltd. **couver.** A. D. Christensen. San Francisco. **president:** R. L. Alexander, general manager; **J. Kenneth Halley**, chief engineer; **J. Yuill**, mine superintendent; **L. D. Smillie**, mill superintendent. This property is on the southwest coast of **Texada** Island, about 3 miles westerly from **Gillies Bay**, which is nearly 70 air miles northwest of Vancouver airport. The company holds eight Crown-granted and ten recorded mineral claims.

Magnetite is mined in pits from levels which are established at 20-foot intervals. Waste rock is stripped where necessary. Vertical holes are drilled with Gardner-Denver rotary drills and are blasted electrically. The broken ore or waste is loaded by 2½-cubic-yard diesel-driven shovels into 15-cubic-yard-capacity trucks and is transported to specific stockpiles or to the crushing plant.

The development work at the various mines is summarized as follows:—

Mine	Diamond Drilling (Ft.)	Waste Stripping (Cu. Yd.)
Prescott.....	3,481	.....
Yellow Kid.....	7,468	164,731
Paxton.....	5,841	446,176
Boulder Nest and others.....	1,039	.....
<b>Totals</b> .....	<b>17,829</b>	<b>610,907</b>

In the mill a copper concentrate is made by flotation and a magnetite concentrate is made by magnetic separation. The magnetite concentrate is dried in a rotary kiln and conveyed to stockpiles. Magnetite concentrates were shipped to Japan and copper concentrates to Tacoma.

Production: Iron concentrate, 357,776 tons; copper concentrate, 3,338 tons.

VANCOUVER ISLAND?

**BENSON (ELK) LAKE (50° 127° S.E.)**

**Iron**

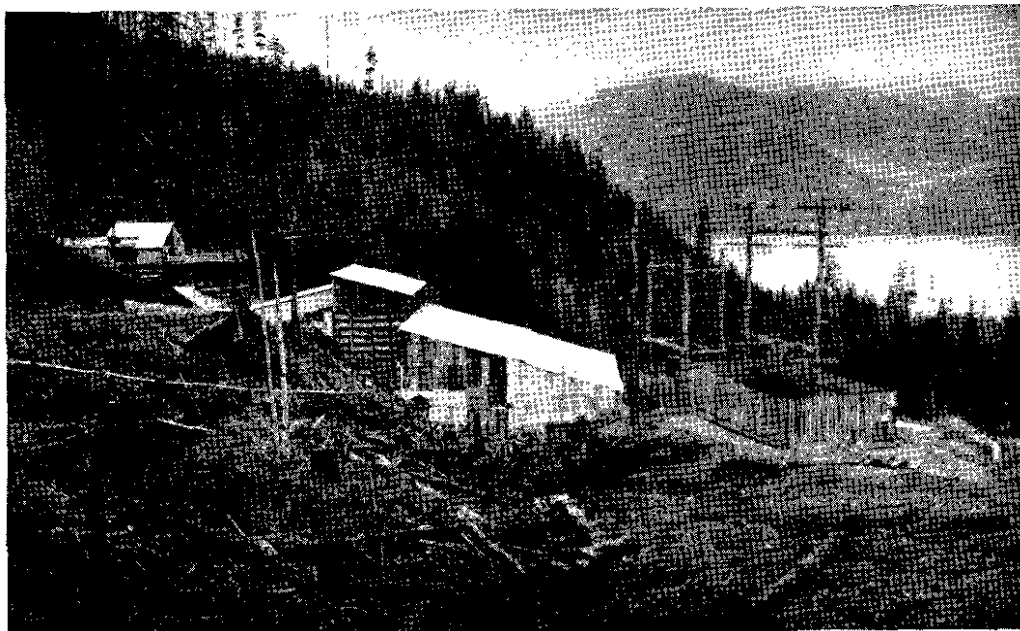
Empire Development **Company Limited**

Company office, 736 Granville Street, Vancouver; mine office, Port McNeill. George C. Lipsey, general manager. This property is operated by Mannix Company Limited; company office, 546 Howe Street, Vancouver; A Shaak, project manager. The property is south of Benson and Kathleen Lakes in the Quatsino-Nimpkish area of Vancouver Island. It is reached by a 25-mile road from Port McNeill on Broughton Strait. Magnetite ore is mined from two open pits on the Merry Widow orebody at an elevation of 2,500 feet. Vertical blast-holes are drilled by Gardner-Denver rotary drills. Broken ore is loaded by 2½-cubic-yard diesel-driven shovels onto trucks and hauled about 1 mile to the primary crushing plant. Crushed material is conveyed to a loading-bin at the head of an inclined surface tram. Ore is loaded into 8-ton-capacity skips which operate in counterbalance. The ore is dumped from the skips into a bin and is then conveyed to the concentrator, at an elevation of 800 feet, where it is further crushed and ground to proper size for magnetic separation. The concentrate is trucked to Port McNeill, where it is stockpiled for shipment.

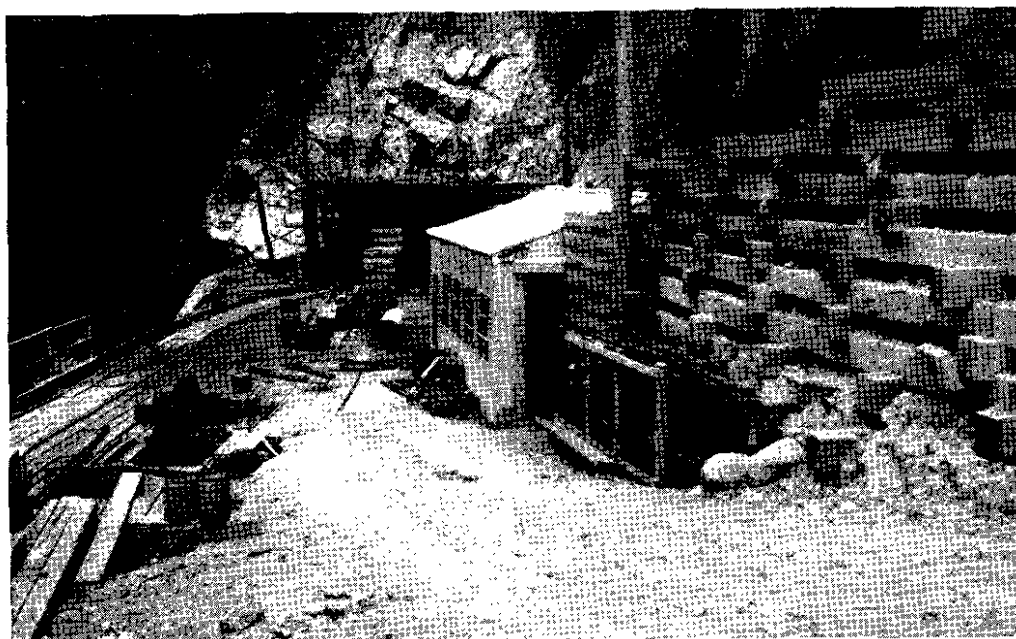
To facilitate the handling of supplies and personnel to the pits a road was constructed from the camp during the year. The mine produced 572,404 tons of ore, yielding 272,495 tons of magnetite concentrate.

\* By R. B. King.

† By R. B. Bonar, except as noted.



Cowichan Copper Co. Ltd., mill.



Sunro Mines Limited, adit portal in Jordan River Canyon.

## BEDWELL SOUND (49° 125° S.W.)

**Gold**

Musketeer (Bedwell River Gold Mines Limited) Company office, Tofino. S. D. Craig, managing director. This company acquired the Musketeer property from Pioneer Gold Mines Limited, and early in 1958 commenced to reopen the mine. The mill and cook-house had been severely damaged by heavy snowfall, but by July the reconditioning of the mill building and machinery was well in hand. The mine was in fair condition in spite of the long closure. Considerable work was done to improve the road from the head of Bedwell Sound to the mine, a distance of approximately 10 miles.

Near the end of 1958 the property was put into production and an initial shipment of concentrate was sent to the Tacoma smelter.

## TRANQUIL INLET (49° 125" S.W.)

**Gold**

Fandora and Gold Flake (Tofino Gold Mines Ltd.)\* Company office, 408, 402 West Pender Street, Vancouver. F. R. Burton, president; R. H. Seraphim, exploration manager. Moneta Porcupine Mines, Limited, acquired management control of this property in 1957. The property consists of five Crown-granted claims and thirty-one claims held by record. These are on Tranquil Creek about 2 miles from the head of Tranquil Inlet on Vancouver Island, about 115 miles by air west of Vancouver airport. From a beach camp near the mouth of Tranquil Creek, a tractor-road  $1\frac{3}{4}$  miles long follows the general course of the creek to a steep trail leading to the camp-site at an elevation of about 1,500 feet. A tram-line from the end of the road is used to service the camp and 1500 level (Upper Craig adit).

The gold-quartz veins were discovered in the late 1930's, when surface work disclosed the veins in a shear zone adjacent to an andesite dyke. Adits were later driven at 1,900 and 2,100 feet elevations. In 1946 the property was optioned by Privateer Mine, Limited. This company extended the 1900 and 2100 levels and opened levels at 1,700 and 1,500 feet elevations. The property closed in 1947. In 1949 Camac Mining Co. Limited optioned the property and did some underground and surface work. In 1957 Moneta Mines reopened the property and began driving the 1500 level. In 1958, 946 feet of drifting was done and thirty-two cuts were blasted in the north wall of the drift to sample a vein in the hangingwall.

The rocks in the area are altered volcanics, tuffs, and breccias. Fractures, striking north of east to south of east and dipping 60 to 85 degrees to the north, cut the volcanic rocks. In the workings an andesite dyke of varying width follows one of these fractures, striking north 70 degrees west and dipping 75 degrees to the north. This dyke has some narrow, fairly continuous quartz veins in it or near its contacts. The quartz veins split and join with no apparent regularity. The widest section of quartz vein sampled has been 28 inches, the average width being considerably less.

The gangue material of the veins is mainly quartz with some carbonate. The known metallic minerals are pyrite, galena, sphalerite, chalcopyrite, and visible gold. The walls of the veins are for the most part oxidized by circulating ground water.

\* By R. B. King.

## COWICHAN LAKE (48° 124" N.E.)

**copper**

Blue Grouse  
(Cowichan Copper  
Co. Ltd.)\*

Head office, 620 Howe Street, Vancouver; mine office, Lake Cowichan. Oswood G. McDonald, president and general manager; J. R. Billingsley, mine manager; G. G. Sullivan, geologist. The property consists of three Crown-granted mineral claims and sixty claims held by record. It includes two old properties-the Blue Grouse and Sunnyside-and is on the south side of Cowichan Lake about 3 miles by motor-road northwest of Honeymoon Bay.

In 1958 stoping of the G-H orebody (see Ann. Rept., 1956, pp. 120-122) continued and stoping of the E zone (see Ann. Rept., 1957, p. 71) was begun. Development work was entirely in connection with these stoping operations.

The following summary, provided by the management, shows details of the work done during the year:-

	Ft.
Drifting and crosscutting .....	1,115
Raising .....	703
Diamond drilling underground .....	5,627

A total of 96,029 tons was milled, containing an average of 3.196 per cent copper. Concentrates were shipped to Japan from a loading-dock at Hatch Point at the head of Saanich Inlet.

## JORDAN RIVER (48° 124° S.E.)

**Copper**

Sunloch and  
Gabbro (Sunro  
Mines Limited)

Head office, Tadanac; mine office, River Jordan. This property is on the Jordan River about 1 mile upstream from the mouth. The present workings are reached by a branch road, 1 mile long, that leaves the Victoria-Jordan River highway, about half a mile east of River Jordan post office. The adit started in 1957 about 100 feet above sea-level was extended 3,456 feet during the year. The adit is straight, with a bearing of about north 35 degrees east and has a total length of 7,805 feet. It was driven to explore further the downward extension of a mineralized shear zone indicated in old surface workings and partly outlined by previous diamond drilling. The zone was penetrated at about 7,500 feet and consists of basalt mineralized with chalcopyrite and minor amounts of pyrrhotite and pyrite.

A drift was started near the point of contact and was driven north 1.5 degrees west on the strike of the zone for 400 feet. This drift was completed about the end of June. An extensive diamond-drill programme was inaugurated in June from underground stations.

\* By N. D. McKechnie.

REPORTS ON GEOLOGICAL, GEOPHYSICAL,  
AND GEOCHEMICAL WORK

Reports accepted to the end of 1958 for credit on assessment requirements for properties held under the "Mineral Act" and the "Placer-mining Act" since January 17th, 1947, and reports on geochemical surveys accepted since April 6th, 1951, are shown in the accompanying table. A copy of each report may be examined in the office of the Mining Recorder for the mining division in which the property is. A second copy of each report is filed in the office of the Chief of the Mineralogical Branch, Department of Mines, Victoria.

In the following list the property name is that which appears to be in most common use. It is not feasible to list all the claim names in each property. The author of each report is given and the principal for whom the report was written.

REPORTS CREDITED FOR ASSESSMENT

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
48° 123°	N.W.	East Sooke Copper A. Stretton, F. Cooke, W. A. Gray, and H. Stretton. P. A. Chubb and A. E. Lchmberg. August 27, 1951.	X	X	---
48° 123°	N.W.	Lucky Strike Group Miss Winnifred McLellan. Victor Dolmage. May 15, 1948.	X	---	---
48° 124°	S.E.	Ann, Don, Jo A-D Claims Rio Canadian Exploration Ltd. L. B. Gatenby. June 3, 1958.	X	X	X
48° 124°	S.E.	Bob A-B, Conrad A-D Groups Rio Canadian Exploration Ltd. L. B. Gatenby. June 3, 1958.	X	X	X
48° 124°	S.E.	Chef and Chef No. 2 Groups Gabbro Copper Mines Limited. M. M. Menzies. March 8, 1956.	---	---	X
48° 124°	N.E.	Cowichan Copper Group Cowichan Copper Co. Ltd. A. C. Skerl. May 25, 1954.	---	X	---
48° 124°	N.E.	Stella 1-4 Rosea Copper Mines Ltd. F. J. Hemsworth. April 29, 1957.	---	X	---
49° 115°	S.W.	Barkshanty, Etna, Larson, Glencairn, and Tradedollar Groups St. Eugene Mining Corporation Limited. Alexander Smith. November 24, 1947.	X	---	---
49° 115°	N.W.	Dries and Tonia The Consolidated Mining and Smelting Company of Canada, Limited. P. H. Sevensma. June 11, 1954.	---	X	---
49° 115°	N.W.	Estella Group Estella Mines Ltd. A. R. Allen. May 8, 1952.	X	---	---
49° 115°	N.W.	Fly, Spoon, Hook, and Trout Group The Consolidated Mining and Smelting Company of Canada, Limited. P. H. Sevensma. May 27, 1954.	---	X	---
49° 115°	S.E.	Jason Groups Northwestern Explorations, Limited. W. P. Hammond. September 3, 1954.	X	---	---

## REPORT OF THE MINISTER OF MINES, 1958

## REPORTS CREDITED FOR ASSESSMENT-Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadrant	Quarter		Geological	Geophysical	Geochemical
49° 115°	N.W.	Kimberley Claims Conwest Exploration Company Limited. A. A. Brant. February 24, 1948.	---	X	---
49° 115°	S.W.	M.L. Claims (Moyie Lake) St. Eugene Mining Corporation Limited. Alexander Smith. November 24, 1947.	X	---	---
49° 115°	S.W.	M.L. 1-6 Group St. Eugene Mining Corporation Limited. Alexander Smith. November 25, 1948.	---	X	---
49° 115°	S.W.	M.L. 72 Fraction and M.L. 73-75 Claims St. Eugene Mining Corporation Limited. Alexander Smith. September 13, 1951.	---	X	---
49° 115°	S.W.	M.L. 7 and 8 Groups St. Eugene Mining Corporation Limited. Alexander Smith. September 13, 1951.	---	X	---
49° 115°	S.W.	M.L. 7 and 8 Groups St. Eugene Mining Corporation Limited. Alexander Smith. September 11, 1953.	---	---	X
49° 115°	S.E.	Rex, Jason, Intruder Groups Northwestern Explorations, Limited. McPhar Geophysics Limited. September 3, 1954.	---	X	---
49° 115°	S.W.	St. Joseph Group Northwestern Explorations, Limited. C. S. Ney. January 11, 1955.	X	---	---
49° 115°	N.W.	I.P.C. Group Northwestern Explorations, Limited. C. S. Ney. January 27, 1955.	X	X	---
49° 116°	S.E.	Delaware Claims John W. Hill. McPhar Geophysics Limited. April 13, 1955.	---	X	---
49° 116°	N.W.	Fred, Mar, and Nick Groups Highland-Bell Limited. W. H. Mathews. December 11, 1956.	X	---	---
49° 116°	N.W.	Jackpot and Sunshine Groups Arcon Base Metals Limited. W. V. Smitheringale. June 12, 1955.	X	---	---
49° 116°	N.W.	Jim Group The Consolidated Mining and Smelting Company of Canada, Limited. H. L. McCallum. May 13, 1955.	---	X	---
49° 116°	N.E.	Mathew Creek Group Anyox Metals Limited. Alexander Smith. March 9, 1948.	---	X	---
49° 117°	S.E.	Amco Group Amco Exploration, Inc. W. W. Moorhouse. December 5, 1952.	X	---	---
49° 117°	S.E.	Amco 43-47 Fractions Amco Exploration, Inc. W. W. Moorhouse. September 8, 1953.	X	---	---
49° 117°	S.E.	Calcite Group Canadian Exploration Limited. H. Lakes. September 25, 1947.	X	---	---



REPORTS CREDITED ASSESSMENT—Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
49° 117°	S.E.	Caviar, Larch, and Val Groups..... Diem Mines Limited. P. J. Shenon and R. P. Full. November 7, 1950.	×	---	---
49° 117°	S.W.	Celtic Queen Group..... Rosland Mines Limited. A. R. Clark and E. H. Lovitt. August 23, 1947.	×	×	---
49° 117°	S.E.	Deer and Double B Groups..... The Consolidated Mining and Smelting Company of Canada, Limited. W. T. Irvine. December 4, 1951.	×	---	---
49° 117°	S.E.	Falcon and Larch Claims..... Diem Mines Limited. F. McIntosh Galbraith. September 23, 1952.	---	×	---
49° 117°	S.E.	GPX, Phil, North Wind, and King Mineral Claims..... Kenville Gold Mines Limited. F. C. Buckland and W. R. Baker. October 19, 1948.	×	---	---
49° 117°	S.E.	Grouse Claims..... Diem Mines Limited. S. H. Ward and F. McIntosh Galbraith. September 21, 1951.	---	×	---
49° 117°	S.E.	Hal Group and Scott Fraction..... Canadian Exploration Limited. James Crowe. June 9, 1947.	×	---	---
49° 117°	S.E.	H.B. Nos. 2-7 Mineral Claims..... The Consolidated Mining and Smelting Company of Canada, Limited. Leonard Telfer. February 15, 1949	×	---	---
49° 117°	S.E.	Joker and One Shot Groups..... Canadian Exploration Limited. H. Lakes. October 10, 1947.	×	---	---
49° 117°	S.E.	Last Chance No. 1 Group..... New Jersey Zinc Exploration Company (Canada) Ltd. E. Livingston and R. C. Macdonald. November 6, 1953.	---	---	×
49° 117°	S.W.	Little Bess Group..... Rosland Mines Limited. S. G. Bruce. March 22, 1948.	×	×	---
49° 117°	S.W.	May Queen Groups and May Queen Fractions 1, 17, 23, 36, and 38..... Rosland Mines Limited. A. R. Clark and S. G. Bruce. March 22, 1948.	×	×	---
49° 117°	S.E.	Ore Hill Group..... Sheep Creek Gold Mines Limited. A. G. Pentland. July 5, 1947.	×	---	---
49° 117°	S.E.	Pactolus Group..... Arthur St. Clair Brindle. Alexander Smith. November 10, 1947.	×	---	---
49° 117°	S.E.	Ronald Group..... New Jersey Zinc Exploration Company (Canada) Ltd. E. Livingston and R. C. Macdonald. April 2, 1954.	---	---	×
49° 117°	S.W.	Rosland Claims..... Valley Mining Company. E. P. Kaiser, R. C. Macdonald, and H. C. Gunning. January 21, 1948.	×	×	---
49° 117°	S.E.	Sunshine No. 2 Mineral Claim..... Canadian Exploration Limited. James Crowe. August 12, 1947.	×	---	---

## REPORTS CREDITED FOR ASSESSMENT—Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Chemical	Geochemical
49° 117°	S.W.	Tiger Fractional Mineral Claim Rossland Mines Limited. S. G. Bruce and W. R. Baker. November 13, 1947.	X	X	
49° 117°	S.E.	Victory Group Canadian Exploration Limited. James Crowe. August 15, 1947.	X		X
49° 118°	S.W.	Attwood Claims Attwood Copper Mines Limited. W. H. White and R. H. Seraphim. March 13, 1952.	X	X	X
49° 118°	S.E.	Bruce Group Noranda Exploration Company, Limited. M. M. Menzies. January 28, 1957.	X	X	
49° 118°	S.E.	Copper Basin Groups A, B, and C. Noranda Exploration Company, Limited. M. M. Menzies. January 28, 1957.		X	
49° 118°	S.E.	Eholt Group Noranda Exploration Company, Limited. M. M. Menzies. February 8, 1957.	X	X	
49° 118°	S.W.	Eholt Copper Property Noranda Exploration Company, Limited. M. M. Menzies. February 8, 1957.		X	
49° 118°	S.W.	Greenwood Copper Greenwood Copper Corporation Limited. C. W. S. Tremaine. September 24, 1956.		X	
49° 118°	S.W.	Hardscrabble Fraction Attwood Copper Mines Limited. R. H. Seraphim. November 24, 1952.		X	
49° 118°	S.W.	Pat Group N. H. McDiarmid and E. M. Olts. R. E. Renshaw. April 3, 1957.	X	X	
49° 118°	S.W.	Ren Group Belcor Engineering Limited. F. J. Hemsworth. February 25, 1958.	X		
49° 118°	S.W.	Ren Mineral Claims Belcor Engineering Limited. F. J. Hemsworth. March 20, 1957.		X	
49° 118°	S.W.	Salamet Group Salamet Mines Ltd. E. B. Nicholls. September 26, 1956.		X	
49° 118°	S.W.	South End Group Attwood Copper Mines Limited. R. H. Seraphim. October 24, 1952.		X	
49° 119°	N.W.	Alocin Chrome Groups A and B. Noranda Exploration Company, Limited. M. M. Menzies. February 12, 1957.	X	X	
49° 119°	S.E.	Bellaclava Claims Silver Bounty Mines Limited. G. S. Eldridge. August 25, 1948.		X	
49° 119°	N.W.	Brenda Prospect Northwestern Explorations, Limited. C. S. Ney. October 23, 1957.	X	X	

REPORTS CREDITED FOR ASSESSMENT--Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
49° 119°	3.E.	Crater Lake Group Highland-Bell Limited. D. F. Kidd. October 11, 1947.	X		
49° 119°	3.E.	Fair Fraction Mineral Claim The Consolidated Mining and Smelting Company of Canada, Limited. C. O. Swanson. July 19, 1947.	X		
49° 119°	S.E.	Idaho and Washington No. 1 Mineral Claims Highland-Bell Limited. D. F. Kidd. October 17, 1947.	X		
49° 120°	1.W.	Bounty Group G. S. Eldridge. D. L. Hings. February 28, 1957.		X	
49° 120°	3.W.	Covellite Group The Granby Consolidated Mining Smelting and Power Company Limited. J. H. Parliament. March 28, 1951.			X
49° 120°	3.W.	Hope-Summit Group Deerhorn Mines Limited. L. B. Gatenby. December 13, 1956.	X	X	X
49° 120°	1.W.	Independence Group St. Eugene Mining Corporation Limited. Alexander Smith. October 17, 1951.	X		
49° 120°	1.W.	Nor A, B, C Groups Fidelity Uranium Mines Ltd. E. J. Wendeborne. March 18, 1958.	X		
49° 121°	3.W.	USS 1-7 James A. Noble. John C. Ruckmick. September 17, 1956.	X		
49° 123°	N.E.	M2, M3, M4, M5, and M2-4 Fractions Giant Mines and Metals Limited. A. R. Allen. July 31, 1947.	X		
49° 124°	N.W.	Clark Claim Groups George S. Clark. D. F. Coolbaugh. May 31, 1956.		X	
49° 124°	N.E.	Lyons, B.R., and L and M Claims Bernard McElroy. Duncan A. McNaughton. March 20, 1947.	X		
49° 125°	S.W.	Mocena Mines Group Mocena Mines Limited. W. I. Nelson. April 1, 1955.		X	
50° 114°	S.W.	Fording River Project Utah Co. of the Americas. L. C. Clark. April 17, 1958.	X		
50° 116°	N.E.	Alpine and O.K. Groups Silver Giant Mines Limited. A. R. Allen. October 7, 1948.	X		
50° 116°	S.W.	Art, Ken, and Don Groups Gibson Girl Mines Limited. F. J. Hemsworth. September 27, 1951.	X		
50° 116°	N.E.	Blue Bell and Silver Bell Groups Silver Giant Mines Limited. A. R. Allen. October 23, 1948.	X		

## REPORTS CREDITED FOR ASSESSMENT—Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
50° 116°	N.E.	Erin Group Silver Giant Mines Limited. A. R. Allen. June 11, 1948.	X		
50° 116°	N.E.	Europa, Venus, Mars, etc. Silver Giant Mines Limited. A. R. Allen. June 2, 1947.	X		
50° 116°	S.W.	Rosco Group The Granby Consolidated Mining Smelting and Power Company Limited. W. I. Nelson and L. Adie. January 26, 1953.	X		
50° 116°	N.W.	Warren Creek Mineral Claims Roger Le Beuf. Harvey H. Cohen. July 3, 1957.	X		
50° 117°	S.E.	Snowball Groups New Jersey Zinc Explorations Limited. W. H. Mathews. October 19, 1953.	X		
50° 118°	N.E.	Big Ledge Group The Consolidated Mining and Smelting Company of Canada, Limited. R. G. McEachern. September 25, 1947.	X	X	
50° 118°	N.E.	Big Ledge Group The Consolidated Mining and Smelting Company of Canada, Limited. D. C. Malcolm and L. Teifer. December 10, 1951.			X
50° 119°	N.E.	Bird and Brett Mineral Claims William E. Forbes and Associates. A. R. Allen. August 18, 1950.	X		
50° 120°	S.E.	Afton Group Kennco Explorations (Canada) Limited. H. V. Warren. October 1, 1951.			X
50° 120°	N.E.	Ajax, Neptune, Monte Carlo, Jacko 4 and 9, and Jacko Fractions 6 and 10 The Consolidated Mining and Smelting Company of Canada, Limited. J. Richardson and R. G. McEachern. January 21, 1955.		X	
50° 120°	S.W.	A1 1-12, GM 1-8, and GM 9-16 Mineral Claims B.C. Base Metal Developments Ltd. J. E. Betz and W. L. Young. August 22, 1957.		X	
50° 120°	N.W.	Alpha North and Northeast Groups The Cardiff Mining Company Ltd. F. J. Hemsworth. February 7, 1957.		X	
50° 120°	N.W.	Alpha North and Northeast Groups The Cardiff Mining Company Ltd. F. J. Hemsworth. February 7, 1957.			X
50° 120°	S.W.	Alpha-Scotty Group The Cardiff Mining Company Ltd. F. J. Hemsworth. November 30, 1956.		X	
50° 120°	S.W.	Alpha-Scotty Group The Cardiff Mining Company Ltd. F. J. Hemsworth. November 30, 1956.			X
50° 120°	S.W.	Bethlehem Copper Property Bethlehem Copper Corporation Ltd. W. H. White, R. M. Thompson, and K. C. McTaggart. October 25, 1955.	X		
50° 120°	S.W.	Bill, Frank, Nord, and Pat Mineral Claims Udd-Ramsay Syndicate. McPhar Geophysics Limited. February 1, 1957.		X	

REPORTS CREDITED FOR ASSESSMENT—Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
50° 120°	S.W.	Bill, Frank, Nord, and Pat Mineral Claims Udd-Ramsay Syndicate. B. M. Middleton. February 1, 1957.	X	---	---
50° 120°	S.W.	Bill, Frank, Nord, and Pat Mineral Claims Udd-Ramsay Syndicate. McPhar Geophysics Limited. February 1, 1957.	---	---	X
50° 120°	N.E.	Borup Group Meta Uranium Mines Limited. E. B. Nicholls. September 18, 1956.	---	X	---
50° 120°	S.W.	Buck Group Craigmont Mines Limited. C. C. Rennie. April 24, 1958.	---	X	---
50° 120°	S.W.	BX Claims Argyle Securities Limited. J. E. Betz and W. L. Young. April 17, 1957.	---	X	---
50° 120°	S.W.	C.J.S. Group Northwestern Explorations, Limited. C. S. Ney. November 12, 1958.	X	X	X
50° 120°	N.E.	Continental M.B. Groups Graham Bousquet Gold Mines Limited. E. B. Nicholls. November 16, 1956.	---	X	---
50° 120°	S.W.	Copperado Group Western Copperada Mining Corporation. J. E. Betz and W. L. Young. August 5, 1957.	---	X	---
50° 120°	N.E.	DM Group Graham Bousquet Gold Mines Limited. E. B. Nicholls. January 10, 1957.	---	X	---
50° 120°	N.W.	DM and Afton Groups Graham Bousquet Gold Mines Limited and Axel Berglund. H. W. Darling. December 13, 1957.	X	---	X
50° 120°	S.W.	Domino No. 1 Group Centennial Mines Limited. C. C. Rennie. December 17, 1958.	---	X	---
50° 120°	S.E.	Don and Jean Groups Mutual Mines and Metals Ltd. G. E. Midgley. February 27, 1958.	---	X	---
50° 120°	N.W.	D.W., Krain, and R.K. Groups Northwestern Explorations, Limited. D. A. Barr. August 1, 1958.	---	---	X
50° 120°	N.W.	D.W. and Krain Groups Krain Copper Limited, Farwest Tungsten Mines Limited, Beaver Lodge Uranium Mines Limited. G. E. Apps and W. M. Sirola. April 25, 1957.	---	X	---
50° 120°	S.W.	Farr Lake Property Noranda Exploration Company, Limited. M. M. Menzies. October 31, 1958.	X	---	---
50° 120°	S.W.	FB and Fiddler Claims Anuwon Uranium Mines Limited. J. A. Soles. January 9, 1957.	X	---	---
50° 120°	S.W.	Fiddler Group J. E. Betz and W. L. Young. August 5, 1957.	---	X	---

## REPORT OF THE MINISTER OF MINES, 1958

## REPORTS CREDITED FOR ASSESSMENT-Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
50° 120°	N.W.	Fran, Heather, and Giselle Groups Deerhorn Mines Limited. L. B. Gatenby. December 13, 1956.	X		X
50° 120°	S.W.	FRM 1-8 Group A. D. Wilmot. November 20, 1957.	X		
50° 120°	S.W.	Hat and Outrider Groups Farwest Tungsten Copper Mines Limited and Beaver Lodge Uranium Mines Limited. G. E. Apps and W. M. Sirola. April 25, 1957.		X	
50° 120°	S.W.	Hat and Outrider Groups Northwestern Explorations, Limited. D. A. Barr. December 30, 1958.		X	
50° 120°	S.W.	Hec North Group Craigmont Mines Limited. C. C. Rennie. June 17, 1958.		X	
50° 120°	S.W.	Hec South Group Craigmont Mines Limited. C. C. Rennie. June 17, 1958.		X	
50° 120°	N.W.	Highland Valley Property Noranda Exploration Company, Limited. M. M. Menzies. December 10, 1958.	X		
50° 120°	N.W.	Highland Valley Property Noranda Exploration Company, Limited. M. M. Menzies. December 10, 1958.		X	
50° 120°	N.E.	Hill Top Group W. C. Ditmars. Victor Dolmage. March 28, 1947.	X		
50° 120°	N.W.	Jan and E.D. Mineral Claims Tri-Side Mining Corporation Limited. C. Riley and A. C. Ogilvy. November 23, 1956.	X		X
50° 120°	S.W.	KL 1-6 Groups Rio Canadian Exploration Ltd. L. B. Gatenby. October 2, 1958.	X	X	X
50° 120°	S.W.	KL 7 and 8 Groups Rio Canadian Exploration Ltd. L. B. Gatenby. October 2, 1958.	X	X	X
50° 120°	S.W.	Loc Group Craigmont Mines Limited. C. C. Rennie. February 10, 1958.		X	
50° 120°	N.W.	Lodge Claims Northlodge Copper Mines Limited. McPhar Geophysics. June 22, 1956.			X
50° 120°	N.W.	Lodge Group Northlodge Copper Mines Limited. G. E. Apps and W. M. Sirola. April 4, 1957.		X	
50° 120°	S.W.	Lucky Jim Group Vanex Minerals Ltd. H. L. Hill. October 29, 1958.		X	
50° 120°	S.W.	Lynn, J, and CS Claims Sheba Copper Mines Limited. C. S. Ney. November 10, 1958.		X	X

REPORTS CREDITED FOR ASSESSMENT—Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
50° 120°	S.W.	Mac Group Jackson Mines Limited. D. R. Morgan and J. A. Soles. October 25, 1956.	X		
50° 120°	S.W.	Mer-Pay Group Birkett Creek Mine Operators Ltd. C. C. Rennie. August 12, 1958.		X	
50° 120°	S.W.	Merritt Group Noranda Exploration Company, Limited. M. M. Menzies. November 14, 1958.		X	
50° 120°	S.W.	Merritt Group Noranda Exploration Company, Limited. M. M. Menzies. September 18, 1958.	X		
50° 120°	S.W.	Nickl, Mel, and O'Leary Groups New Delhi Mines Limited. F. J. Hemsworth. November 18, 1958.		X	
50° 120°	S.W.	Ole, Pat, and Rudy Mineral Claims Udd-Ramsay Syndicate. W. O. J. G. Meijer. January 22, 1957.			X
50° 120°	N.W.	Patrick Group Green Bay Mining and Exploration Company Limited. V. B. Meen. March 27, 1957.			X
50° 120°	S.W.	P.C.M. and Cap Groups Centennial Mines Limited. C. C. Rennie. December 8, 1958.	X	X	
50° 120°	S.W.	PEC Group Birkett Creek Mine Operators Ltd. C. C. Rennie. September 29, 1958.		X	
50° 120°	S.W.	PL 1-48 Claims Georgia Leaseholds Limited. A. R. Allen. July 16, 1958.		X	
50° 120°	S.W.	Quartzite Group Birkett Creek Mine Operators Ltd. C. C. Rennie. August 1, 1958.		X	
50° 120°	N.W.	Raha Mineral Claims I. Shulman. A. E. Aho. December 23, 1958.	X	X	X
50° 120°	S.W.	Road and Brown Groups Noranda Exploration Company, Limited. M. M. Menzies. December 4, 1958.		X	
50° 120°	S.W.	Rod Group Deerhorn Mines Limited. L. B. Gatenby. August 10, 1956.	X		X
50° 120°	S.W.	Roscoe Lake Property Udd-Ramsay Syndicate. McPhar Geophysics Limited. February 6, 1957.		X	X
50° 120°	N.W.	Salmo Prince Groups Salmo Prince Mines Limited. B. I. Nesbitt. May 3, 1957.			X
50° 120°	S.E.	Stump Lake Group Amaco Development Corporation Limited. W. J. Elliott and J. A. Soles. September 12, 1956.	X		

## REPORTS CREDITED FOR ASSESSMENT—Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
50° 120°	S.W.	Sunshine Nos. 10, 11, 15, and 16 Vanex Minerals Ltd. H. L. Hill. November 25, 1958.		X	
50° 120°	N.W.	Trojan Group Trojan Consolidated Mines Ltd. F. J. Hemsworth. November 6, 1958.		X	
50° 120°	S.W.	Witches Brook Phelps Dodge Corporation of Canada, Limited. Franc R. Joubin. February 6, 1957.		X	
50° 121°	S.E.	B. J. Claims Northwestern Explorations, Limited. C. S. Ney. November 26, 1958.	X	X	X
50° 121°	N.E.	Baby's Own Group Ainsworth Base Metals, Limited. F. J. Hemsworth. March 28, 1957.		X	
50° 121°	N.E.	Beaver Group Farwest Tungsten Copper Mines Limited and Beaver Lodge Uranium Mines Limited. G. E. Apps and W. M. Sirola. June 24, 1957.		X	
50° 121°	S.E.	Bethsaida Copper Bethsaida Copper Mines Limited. G. E. Apps and W. M. Sirola. April 4, 1957.		X	
50° 121°	S.E.	Bethsaida Copper Bethsaida Copper Mines Limited. G. E. Apps and W. M. Sirola. April 4, 1957.			X
50° 121°	S.E.	Bill, Frank, Nord, and Pat Mineral Claims Udd-Ramsay Syndicate. B. M. Middleton. February 1, 1957.	X		
50° 121°	S.E.	Bill, Frank, Nord, and Pat Mineral Claims Udd-Ramsay Syndicate. McPhar Geophysics Limited. February 1, 1957.		X	
50° 121°	S.E.	Bill, Frank, Nord, and Pat Mineral Claims Udd-Ramsay Syndicate. McPhar Geophysics Limited. February 1, 1957.			X
50° 121°	N.E.	Divide Group Graham Bousquet Gold Mines Limited. H. W. Darling. February 1, 1957.			X
50° 121°	N.E.	Divide Group Graham Bousquet Gold Mines Limited. E. B. Nicholls. February 1, 1957.		X	
50° 121°	N.E.	Dominion Chromium Property J. W. Oakes. H. L. Banting. July 24, 1948.		X	
50° 121°	N.E.	E.D. and Jan Groups Tri-Side Mining Corporation Limited. C. Riley and A. C. Ogilvy. November 23, 1956.	X		X
50° 121°	S.E.	Eye Group Northwestern Explorations, Limited. C. S. Ney. November 26, 1958.	X	X	X



REPORTS CREDITED FOR ASSESSMENT—Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
50° 121°	N.E.	Fairview Group (no map) May Barnes. J. C. Rogers. May 5, 1947.	X	—	—
50° 121°	N.E.	Faith and H. S. Groups The Cardiff Mining Company Ltd. F. J. Hemsworth. February 7, 1957.	—	X	—
50° 121°	N.E.	Faith and H.S. Groups The Cardiff Mining Company Ltd. F. J. Hemsworth. February 7, 1957.	—	—	X
50° 121°	S.E.	Laco Group Laco Mines Limited. C. F. Wegener and F. J. Garbutt. April 8, 1957.	X	—	—
50° 121°	N.E.	Louise Group Graham Bousquet Gold Mines Limited. E. B. Nicholls. January 4, 1957.	—	X	—
50° 121°	S.E.	Ole, Pat, and Rudy Mineral Claims Udd-Ramsay Syndicate. W. O. J. G. Meijer. January 22, 1957.	—	—	X
50° 121°	S.E.	Pimainus Lake Phelps Dodge Corporation of Canada, Limited. Franc R. Joubin. February 6, 1957.	—	X	—
50° 121°	S.E.	Pimainus Lake Udd-Ramsay Syndicate. McPhar Geophysics Limited. February 6, 1957.	—	X	X
50° 121°	N.E.	R.K. 7-30 Mineral Claims Northwestern Explorations, Limited. D. A. Barr. July 30, 1958.	—	X	—
50° 121°	S.E.	Skeena Silver Group Skeena Silver Mines Ltd. C. Rutherford. August 22, 1957.	—	—	X
50° 121°	N.E.	Tofin Property New Hamil Silver-Lead Mines Limited. A. R. Allen. December 3, 1958.	—	X	—
50° 121°	S.E.	Toketic Group New Jersey Zinc Exploration Company (Canada) Ltd. R. C. Macdonald. February 15, 1957.	—	X	X
50° 121°	S.E.	W.P. Group Noranda Exploration Company, Limited. M. M. Menzies. December 4, 1958.	X	—	—
50° 121°	S.E.	W.P. Group Noranda Exploration Company, Limited. M. M. Menzies. December 4, 1958.	—	X	—
50° 121°	S.E.	W.P. Group Highland Valley Mining Corporation Ltd. C. W. S. Tremaine. October 30, 1957.	—	X	—
50° 121°	S.E.	W.P. Group Highland Valley Mining Corporation Ltd. C. W. S. Tremaine. December 13, 1957.	—	X	—
50° 122°	N.E.	Chalco Mrs. D. C. Noel. W. H. Patmore. January 4, 1955.	X	—	—

## REPORTS CREDITED FOR ASSESSMENT—Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Chemical	Geochemical
50° 126°	S.W.	Mac Group New Jersey Zinc Exploration Company (Canada) Ltd. R. C. Macdonald. December 30, 1958.	—	X	—
50° 126°	S.E.	Magnet Groups No. 2 and No. 1 Noranda Exploration Company, Limited. M. M. Menzies and B. O. Brynensen. February 16, 1954.	X	X	—
50° 127°	N.W.	H.P.H. and Larch Groups Western Mining and Development Syndicate. Hans Lundberg. April 2, 1948.	—	X	—
50° 127°	S.E.	Quatsino Copper-Gold Quatsino Copper-Gold Mines Limited. D. A. Bourne and S. M. Manning. January 15, 1953.	X	—	—
51° 116°	N.W.	King David Group International Germanites Ltd. H. H. Cohen. August 20, 1957.	—	—	X
51° 119°	S.W.	Bel, Pip, and Bet Groups Pioneer Gold Mines of B.C. Limited. F. H. Mylrea. October 14, 1949.	X	—	—
51° 119°	S.W.	Dip, R D, and Elk Groups Westville Mining Company. D. H. James. October 21, 1949.	X	—	—
51° 119°	S.W.	Johnson Property Kennco Explorations (Canada) Limited. S. H. Ward. April 10, 1952.	—	X	—
51° 119°	S.W.	Johnson Property Kennco Explorations (Canada) Limited. D. A. Barr and J. S. Scott. April 10, 1952.	—	—	X
51° 119°	N.W.	Trophy Mountain Property New Athona Mines Limited. A. G. Hodgson. October 12, 1956.	X	—	—
51° 119°	S.E.	Westville Property Plateau Metals Limited. S. J. Pedley and C. Riley. December 28, 1951.	X	—	—
51° 119°	S.E.	Westville Property Plateau Metals Limited. S. J. Pedley and C. Riley. December 28, 1951.	—	X	—
51° 121°	S.W.	Venus Group New Jersey Zinc Exploration Company (Canada) Ltd. E. Livingston and R. C. Macdonald. March 12, 1958.	—	X	—
52° 122°	N.W.	Jig Mineral Claims Ian Bain. Ian Bain. July 25, 1958.	X	—	—
52° 131°	S.E.	Elva No. 4 Mineral Claim St. Eugene Mining Corporation Limited. C. M. Campbell Jr. November 8, 1957.	—	X	—
52° 131°	S.E.	Ikeda No. 7 Mineral Claim St. Eugene Mining Corporation Limited. C. M. Campbell Jr. November 8, 1957.	—	X	—
52° 131°	S.E.	Magnetite Group St. Eugene Mining Corporation Limited. C. M. Campbell Jr. November 8, 1957.	—	X	—

REPORTS CREDITED FOR ASSESSMENT—*Continued*

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
53° 121°	S.E.	Antler Creek Placer Leases Horace Fraser. Victor Dolmage. September 7, 1949.	X	—	—
53° 121°	N.W.	Fraser River Copper Mrs. M. Simon. A. C. Skerl. January 7, 1952.	—	X	—
53° 121°	S.W.	Lightning Creek Leases Lightning Creek Gold Alluvials Ltd. P. D. Brown and J. Robertshaw. November 12, 1947.	X	X	—
53° 121°	S.E.	Lower Antler Creek Gold Placers Horace Fraser. Victor Dolmage. September 7, 1949.	X	—	—
53° 127°	S.E.	Harrison Group C. V. and B. R. Harrison and W. Harrison, Jr. Franc R. Joubin. August 21, 1950.	X	—	—
53° 129°	N.E.	Gunnysack Group Ecstall Mining Company Ltd. W. R. Bacon and McPhar Geophysics Limited. September 12, 1958.	—	X	—
53° 129°	N.E.	Packsack Group Ecstall Mining Company Ltd. W. R. Bacon and McPhar Geophysics Limited. September 12, 1958.	—	X	—
54° 126°	S.E.	Copper Island Group Kennco Explorations (Canada) Limited. H. V. Warren. December 18, 1951.	X	—	X
54° 128°	S.W.	Wedeeene Quebec Metallurgical Industries Ltd. Alexander Smith. November 25, 1958.	—	X	—
55° 125°	S.E.	Dorothy and Elizabeth Groups Kennco Explorations (Canada) Limited. D. A. Barr and H. V. Warren. June 26, 1952.	—	—	X
55° 125°	N.E.	Pole Group Totem Minerals Limited. Hans Lundberg. September 3, 1958.	X	X	X
55° 127°	S.W.	Ace, Hazelton, Jack, Joe, John, Rib, Star, Sun Groups National Explorations Limited. J. T. Mandy and G. L. Oates. May 31, 1951.	—	X	—
55° 127°	S.W.	Peg Group Silver Standard Mines Limited. W. St. C. Dunn. February 9, 1955.	—	—	X
55° 127°	S.W.	Sultana Group G. Parent and Associates. C. H. Macdonald. September 5, 1953.	X	—	—
55° 129°	S.W.	Barite Group, Hematite Group, James Varden Mineral Claims Torbrit Silver Mines Limited. J. Botelho. July 22, 1947.	X	—	—
55° 129°	N.W.	Gold Drop Group Gold Drop Mines Limited. E. G. Langille. November 4, 1947.	X	—	—
55° 129°	S.W.	L.B. Claims The Consolidated Mining and Smelting Company of Canada, Limited. G. Neely Moore. March 18, 1955.	—	X	—

## REPORTS CREDITED FOR ASSESSMENT—Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
55° 129°	S.W.	N.H. Claims The Consolidated Mining and Smelting Company of Canada, Limited. G. Neely Moore. March 18, 1955.	---	×	---
55° 129°	S.W.	Sax Claims The Consolidated Mining and Smelting Company of Canada, Limited. G. Neely Moore. October 7, 1954.	---	×	---
55° 129°	N.E.	Seabee Claims Spes Explorations Limited. R. B. Elver and J. A. Soles. September 24, 1956.	×	---	---
55° 129°	N.W.	Woodland Mineral Claim Northwestern Explorations, Limited. C. S. Ney. June 15, 1956.	---	---	×
56° 124°	S.E.	Davies and Gordon Groups Keneco Explorations (Canada) Limited. D. A. Barr and H. V. Warren. June 26, 1952.	×	---	×
56° 125°	N.E.	Dell Group The Consolidated Mining and Smelting Company of Canada, Limited. R. G. McEachern. February 1, 1957.	---	×	---
56° 125°	N.E.	Gen (1-2) Mineral Claims The Consolidated Mining and Smelting Company of Canada, Limited. R. G. McEachern. February 1, 1957.	---	×	---
56° 125°	N.E.	Gen (6-11) Mineral Claims The Consolidated Mining and Smelting Company of Canada, Limited. L. Telfer. February 1, 1957.	---	---	×
56° 125°	S.W.	Totem Group Totem Minerals Limited. Hans Lundberg. July 23, 1958.	×	×	---
56° 130°	N.W.	Blue-Belle Group Granduc Mines, Limited. J. J. Crowhurst. January 6, 1954.	×	---	---
56° 130°	S.W.	Lehto Group Newmont Exploration Limited. A. H. Lange and P. M. Cannon. December 28, 1956.	---	×	---
56° 130°	N.W.	Marg Group Granduc Mines Limited. J. J. Crowhurst. January 6, 1954.	×	---	---
56° 130°	N.W.	McK Group Granduc Mines Limited. J. J. Crowhurst. February 13, 1954.	×	---	---
56° 130°	S.E.	Vaughn K Group The Granby Consolidated Mining Smelting and Power Company Limited. J. J. Crowhurst. March 23, 1953.	×	---	---
57° 125°	S.W.	Tor Group Totem Minerals Limited. Hans Lundberg. September 3, 1958.	×	×	---
57° 130°	N.W.	Kakiddi, Klastine, Skyline Groups Torbrit Silver Mines Limited. G. R. Kent and R. W. Burton. February 27, 1958.	×	---	---
57° 131°	S.E.	Buy and Hab Mineral Claims Hudson Bay Mining and Smelting Co., Limited. J. A. Haskin. June 12, 1957.	---	×	---

REPORTS CREDITED FOR ASSESSMENT—Continued

Geographic Position		Property Owner or Principal Author of Report Date of Submission of Report	Kind Of Work		
1° Quadr.	Quarter		Geological	Geophysical	Geochemical
57° 131°	S.W.	Pan 1-32 Mineral Claims Triana Exploration Limited. L. J. D'Aigle and L. G. White. March 18, 1957.	X	-	-
58° 131°	N.W.	Ace Group Consolidated Northland Mines Limited. A. G. Hodgson. September 25, 1957.	X	-	-
58° 131°	N.W.	N.W. Group Consolidated Northland Mines Limited. A. G. Hodgson. September 25, 1957.	X	-	-
58° 133°	N.E.	Erickson-Ashby Claims The Consolidated Mining and Smelting Company of Canada, Limited. W. T. Irvine. November 12, 1952.	X	-	-
58° 135°	N.W.	Spec Claims The Consolidated Mining and Smelting Company of Canada, Limited. W. T. Irvine. October 15, 1952.	X	-	-
59° 126°	S.E.	Liard Fluorite, Gem Conwest Exploration Company Ltd. J. R. Woodcock and W. V. Smitheringale. December 6, 1954.	X	-	-
59° 129°	S.W.	Blue River, White, and Serpentine Cassiar Yukon Gold Mines Limited. J. S. Koski. October 2, 1953.	X	-	-
59° 129°	S.E.	Dorreen and Par Groups Dorreen Gold Mines Limited. W. N. Plumb and H. L. Hill. August 12, 1953.	X	-	-
59° 129°	S.W.	Low Grade St. Eugene Mining Corporation Limited. James J. McDougall and A. Smith. May 30, 1955.	X	-	-
59° 129°	S.E.	Zinc Groups Yukon Ranges Exploration Limited. D. R. Derry. September 1, 1949.	X	-	-
59° 130°	N.E.	Gem 1-38 Hudson Bay Mining and Smelting Co., Limited. J. A. Haskin. September 15, 1949.	X	-	-
59° 133°	N.W.	Heli and Copter Mineral Claims Helicopter Exploration Co. Ltd. D. M. Cannon. May 23, 1951.	X	-	-
59° 133°	N.E.	Trailer Special Placer-mining Lease Northern Resources Ltd. Clyde H. Wilson. June 5, 1946.		<	-
59° 136°	N.W.	Maid of Erin Property St. Eugene Mining Corporation Limited. Alexander Smith. April 8, 1949.	X	-	-

# Placer

## CONTENTS

	PAGE
ATLIN—	
Spruce Creek .....	78
McKee Creek .....	78
Boulder Creek .....	78
Pine Creek .....	78
OMINECA—	
Lorne Creek .....	78
CARIBOO—	
Hixon Creek .....	78
Willow River .....	78
Lightning Creek .....	79
Peters Creek .....	79
Keithley Creek .....	79
Quesnel River .....	80
Quesnel Lake .....	80
FRASER RIVER—	
Lillooet Area .....	80
McGillivray Creek .....	80
Kanaka Bar .....	80
North Bend .....	80
BRIDGE RIVER .....	80
SIMILKAMEEN—	
Tulameen River .....	80
Similkameen River .....	80
VERNON—	
Mission Creek .....	81
Harris Creek .....	81
Monashee Creek, South Fork .....	81
McIntyre Creek .....	81
SALMO—	
Erie Creek .....	81
COLUMBIA RIVER—	
Kirbyville Creek .....	81
Old Camp Creek .....	81
LARDEAU—	
Lardeau Creek .....	81
FORT STEELE .....	82
CRANBROOK .....	82

## ATLIN\*

## SPRUCE CREEK (59° 133" N.W.)

**Noland** Mines Limited.-This underground placer mine is at the confluence of Dominion Creek with Spruce Creek and is 12 miles by road from Atlin. During 1958 A. Mattson, of Atlin, reworked old tailings. The property is being kept in good standing.

D. K. Falconer worked alone on a drift on his lease.

Enterprise Placers employed nine men for a short period of operation.

## MCKEE CREEK (59" 133° S.W.)

Three placer-mining leases on McKee Creek, about 10 miles south of Atlin, are owned by Joe and Louis Piccolo and George Watt. A shortage of water restricted operations at this hydraulic.

## BOULDER CREEK (59" 133° S.W.)

Seven placer leases owned by N. Fisher and Ole Olson are under option to W. S. Weber. A crew of five started work in May and finished in October.

## PINE CREEK (59" 133° N.W.)

Fred Giesen and Karl Sieger worked three placer leases near Discovery. Fred Giesen was killed in an unfortunate accident when a run of sand and gravel broke into the drift in which he was working alone.

## OMINECA\*

## LORNE CREEK (54° 128° N.E.)

An attempt was made to clean up the creek bed in the gap 1 mile above the junction with the Skeena River. A late flash flood destroyed the work of several months in a matter of hours.

## CARIBOO†

## HIXON CREEK (53° 122" S.W.)

Company office, 2032 Third Avenue, Seattle, Wash.; mine office, Hixon Placers Inc. **Hixon**, H. W. Hargood, president; C. J. Norris, superintendent.

This property, consisting of twenty-one placer leases, is 3 miles up Hixon Creek from Hixon P.O. Some hydraulicking was completed in the fall after sufficient rainfall had filled the supply reservoir.

Government Creek.-Harry **Schmalz** had a diesel-operated shovel digging pits on his lease. The gravel was washed through sluice boxes and gold and black sand recovered.

## WILLOW RIVER (53" 121" S.W.)

Lowhee **Creek**.—R. E. MacDougall continued to hydraulic in the Lowhee pit. Four men were employed.

**Downie** Creek.-Nick Bird sank six shafts, each about 20 feet deep on his lease.

Red Gulch.-Jack **Gunn** completed a ditch and sluice box on his lease.

**Rizona** Mining Corporation Limited.-This company, under the supervision of W. M. Hong, hydraulicked some gravel on W. E. North's lease on Kwong Foo Creek and on Hickman's lease on **Beaverpass** Creek. Water for hydraulicking was pumped to the pits by large diesel-driven pumps. The gravel was washed through sluice boxes and the tailings were stacked by crawler tractor. Four men were employed.

\*BYD Smith.

†BYR.B. King.

**Kumhila** Exploration Co. Ltd.-Dudley Davis, engineer in charge; Ray Wallace, dredge master. In 1958 this company operated a dredge and **washing** plant on its lease on Williams Creek. A **4½-cubic-yard** dragline, two crawler tractors, and three **carry-alls** were used to dig a drainage ditch and remove about 40 feet of overburden. After the area was cleared of overburden, a **3½-cubic-yard** dragline was used to dig an additional 40-foot depth of gravel to bedrock. This gravel was washed in a floating steel-pontoon **washing** plant. Production: 185,000 yards of gravel, 2,343 ounces of gold.

Jack of Clubs Lake.-R. E. **MacDougall** drove a short tunnel on his lease on the north shore of this lake.

#### LIGHTNING CREEK (53° 122" S.E.)

Lightning Creek.-W. R. **Woodman** did some work on his lease just below the first bridge on Swift River Forest road project.

**Mostique** Creek.-Mr. and Mrs. P. J. **Macdonald** hydraulicked gravel from a bank about 75 feet high.

**Gagen** Creek.-N. Klapatiuk ground-sluced some gravel from his lease near the mouth of **Gagen** Creek.

Snoqboo Exploration, a partnership of H. B. Wallace, J. Clarke, W. J. **McAuley**, *et al.*, tested some ground on a lease originally staked by G. S. **Gagen**.

**Urquhart** Gulch.-D. H. Wells drove some tunnel through unconsolidated material.

Grub Gulch.-Frank Freeman and John Hind sluced about 2,000 cubic yards of gravel on their lease.

Oregon Gulch.-James Williams sank a shaft 10 feet deep and did **some** drifting on his lease.

#### PETERS CREEK (53° 1219 S.W.)

**Bassford** Creek.-Thomas Crawford ground-sluced a small amount of gravel on his lease.

Campbell **Creek**. — Ed Johnston erected 1,000 feet of pipe-line and did some ground-slucing on his lease.

#### KEITHLEY CREEK (52° 121° N.E.)

Keithley Creek.-Lee **Fournier** ground-sluced on his lease in the Placer Engineers Pit at Four Mile Creek.

Thomas Payne ground-sluced for a short period on his lease north of Four Mile Creek.

G. A. Goldsmith drove some tunnel through rock to explore remnants of gravel. This lease is about a mile below the junction of Keithley and Little Snowshoe Creeks.

E. Lang, working just below the junction of the Keithley and Little Snowshoe Creeks, drove a tunnel about 75 feet through glacial till to explore some gravel found by chum drilling.

Nigger Creek.-Jack Monet did some trail work and assessment work on his lease.

**Rollie** Creek.-Roy MacDonald and partners advanced a rock tunnel about 75 feet to explore a gravel zone located by drilling. This work was started by A. E. **Sandberg** in 1957.



**QUESNEL RIVER (52° 121° N.W.)**

**Spanish Creek.-Mrs. R. A. Dunsire** and partners operated a placer lease near the mouth of Spanish Creek. Gravel was mined by a 1 M-cubic-yard diesel shovel, loaded, and trucked to sluice boxes at Spanish Creek. About 26,000 cubic yards of gravel were sluiced.

**Lawless Creek.-Steven Wlad** completed some hydraulicking on his lease near Quesnel Forks.

**QUESNEL LAKE (52° 121" N.W.)**

Cedar Creek.-Peter Ogden continued hydraulicking on his lease near Cedar Creek.

**FRASER RIVER\*****LILLOOET AREA (50° 121" N.W.)**

**Fountainview** The lease is on the Fraser River opposite the Pacific Great Eastern Railway station at Fountain. The property is 13 miles by road from the Lillooet-Bridge River road. The lease was assigned to J. H. McKee. A bulldozer was used to push gravel into a hopper at the top of a washing plant. The gravel then is passed through a trommel which discards all material over three-eighths inch. The gravel then passes to a bank of four Yuba jigs for concentration. Concentrates from these are reconcentrated in smaller jigs and a final black sand and gold concentrate is stored in boxes to be shipped to a recovery plant in Burnaby. Operations ceased at the end of the year.

**MCGILLIVRAY CREEK (50" 121" N.W.)**

Robert Black and T. C. **McAlpine** did some work on leases on Foster Bar. A shaft was sunk 16 feet on the bar and several small pits were excavated.

**KANAKA BAR (50" 121" S.W.)**

G. **Carlson** worked during the winter on his leases at **Kanaka Bar**. Gravel was scraped from the bar by a hoist-scraper arrangement.

**NORTH BEND (49° 121° N.E.)**

**The Yukon Consolidated Gold Corporation Limited.-Company office**, 1919 Marine Building, Vancouver. W. A. Arbuckle, president; C. E. **McLeod**, managing director. This company explored placer leases on the bank of the Fraser about 2 miles south of North Bend. Seven shafts were sunk to test the area for gold. Work **ceased in May**. Six men were employed.

**BRIDGE RIVER\***

**Hurley River.-(50" 122° N.W.)** W. **Haylmore** and one man did some work on his lease on **Hurley River** near Gold Bridge.

**SIMILKAMEEN†****TULAMEEN RIVER (49° 120° N.W.)**

M. O. Heap moved 2,500 cubic yards of gravel in the **course** of exploration on his placer lease No. 1317, 4 miles upstream from Princeton.

**SIMILKAMEEN RIVER (49° 120° S.W.)**

The Burr interests of Princeton removed from 4,000 to 5,000 cubic yards of gravel in exploration work on their placer leases on the **Similkameen** River near the mouth of Whipsaw Creek.

\* By R. B. King.  
† By A. R. C. James.

## VERNON\*

## MISSION CREEK (49" 119" N.E.)

Michael Martin hydraulicked a small amount of gravel on his placer claim.

Ervin, Ella, and Robert Wiedemeyer sluiced a total of 1,080 cubic yards of gravel on their three separate claims.

Rex Bruch sluiced 100 cubic yards of gravel on his claim.

## HARRIS CREEK (50" 118° S.W.)

The Schultz brothers, of **Lavington**, bulldozed 10,000 cubic yards of gavel to uncover the bedrock on P. H. V. Fosbery's placer leases.

## MONASHEE CREEK, SOUTH FORK (50° 118° S.E.)

L. R. Callahan hydraulicked 400 cubic yards of gravel on his lease.

## MCINTYRE CREEK (50° 118" S.W.)

F. W. Walter sluiced 150 cubic yards of gravel on his placer lease at the fork of McIntyre Creek and Kettle River.

## SALMO†

## ERIE CREEK (49" 117" S.E.)

**Erie Creek** J. P. O'Donnell and J. Stenwall, of **Salmo**, did a small amount of sluicing on a hitherto unworked point of ground on the east bank of Erie Creek, immediately below its junction with Hooch Creek. Many large boulders and an adverse bedrock grade hampered progress.

## COLUMBIA RIVER†

## KIRBYVILLE CREEK (51" 118" N.W.)

West **Columbia Gold Placers** Ltd.-Company office, 2360 Abbott Street, **Kelowna**. J. H. Buckland, president. This company owns Special Placer Mining Lease No. 462, an area of 3.9 square miles on the west side of the Columbia River at the confluence of **Kirbyville** Creek and opposite the mouth of Goldstream River. The property is reached by boat from Mile **56** on the Big Bend Highway, north of Revelstoke. Further exploratory test drilling was done in 1958.

## OLD CAMP CREEK (51° 118° N.W.)

**Old Camp Placers** J. B. Grieve, of **Armstrong**, holds four placer leases on Old Camp Creek, the first south-flowing tributary of **Goldstream** River, east of its confluence with the Columbia River. The recent workings are approximately three-quarters of a mile above the Goldstream River. A small dam and 100 feet of sluice boxes were installed. Some bulldozing and a small amount of sluicing was done in a gravel bank on the east bank of the creek.

## LARDEAU†

## LARDEAU CREEK (50" 117" N.E.)

W. Hladinec and A. Bobicki, of **Beaton**, own Placer Mining Lease No. 465 at the main falls on **Lardeau** Creek, 5 miles by road from **Ferguson**. A short access road leads

\*By A. R. C. James.

† By J. E. Merrett.

from the main road to living quarters erected near the falls. A small tunnel 40 feet long was driven to divert the creek around the falls. A well-constructed log dam was erected immediately above the falls and directs the water through the diversion tunnel. A **rammed-mud** sealing dam was being erected across the creek above the tunnel discharge in order to prevent back seepage. When completed the falls pothole will be pumped out.

#### FORT STEELE\*

**Boreas Mines Limited** (49° 115° N.W.) Company office, 525 Seventh Avenue West, Calgary, **Alta.**; J. E. **Treacy**, president. This company acquired the property of the Fort Steele Gold and Silver **Mines Limited** on **Wild** Horse River in October, 1958. The property is near the mouth of Fisher Creek, a tributary of the river, 5 miles northeast of Fort Steele. Activities since the transfer were confined to exploratory drilling.

#### CRANBROOK\*

**Nero** (49° 116° S.W.) The Nero claim is owned by D. J. Oscarson, of **Kimberley**, and is located at the falls on **Moyie** River, 17 miles southwest of Cranbrook. The claim was sub-leased to two parties of men during 1958. T. O. Bloomer and partner drove a tunnel (Nero No. 1) 135 feet toward the bed of an old course of the river. They also drove a **35-foot** tunnel and 20-foot raise to divert the river and lower the height of water in a pool above the falls.

P. R. Kotush and **two** partners drove a tunnel (Nero No. 2) for a distance of 165 feet toward the old bed of the river.

---

\* By D. R. Morgan.

# Structural Materials and Industrial Minerals

## CONTENTS

	PAGE
ASBESTOS.....	83
BARITE.....	84
BUILDING-STONE.....	86
CLAY AND SHALE.....	88
GYPSUM.....	89
LIMESTONE.....	90
MAGNESITE.....	98
MARL.....	98
SAND AND GRAVEL.....	98
SILICA.....	104

### ASBESTOS

Cassiar Asbestos Corporation Limited\* Mount **McDame** (59° 129" S.W.). Head office, 1001, 85 **Richmond** Street West, Toronto; mine office, Cassiar. F. M. **Connell**, president; J. D. Christian, general manager; N. F. Murray, general superintendent. This property is 86 miles by road southwesterly from Mile 648.8 on the Alaska Highway. It consists of forty-two claims, of which **thirty-nine** are Crown-granted. The mine is on Mount **McDame** at an elevation of 6,300 feet. The modern company town of Cassiar and the mill are in the valley of Troutline Creek at an elevation of 3,540 feet.

Ore was mined from the 6170, 6140, and 6110 levels during 1958. The ore, **high-grade chrysotile** asbestos, occurs in fractures in a serpentine dyke which strikes north 15 degrees west and dips 45 degrees east.

In 1958 mining was carried on from March 12th to October 12th. During that time 361,154 tons of ore and **1,222,134** tons of waste were broken. The **aerial** tram-line operated from March 24th to September 28th and carried 311,701 tons of ore; a further 40,401 tons of ore was carried by trucks. Underground exploration was carried out on two levels. On the 6000 level a further 980 feet of drifting and some cross-cutting was done. On the 5700 level in the **cirque** basin an **adit** 1,417 feet in length was driven.

At an average daily rate of 1,072 tons, the mill processed 359,921 tons of ore to produce the following **fibre**:—

	Tons
Spinning grades .....	5,824
Cement grades .....	25,605
Total .....	31,429

The mill operated for 335 days.

Plant expansion in 1958 included completion of a heavy-duty garage, construction of a **20-** by **65-foot** addition to the power-house, and completion of a **72-** by **120-foot** Ebre storage shed. Ten privately owned frame dwellings were erected on the townsite. The company assisted in this project by advancing loans to the total cost of the building materials. A trailer park was cleared, and water, electrical, and sewage service were provided for eight trailers.

\* By D. Smith.

## BARITE

Company office, **Meech** Building, P.O. Box 273, Lethbridge, **Alta.**; Mountain Minerals quarry office, Brisco. R. A. Thrall, managing director; William Limited\* **MacPherson**, superintendent. This company operates quarries on barite deposits at Parson and Brisco and a processing plant at Lethbridge. The Parson deposit (51° 116' S.W.) is 5 miles from Parson siding and is reached by means of the **Cranbrook** Sawmills logging-road. The deposit consists of barite in two parallel, north trending, irregular fissure veins about 300 feet apart. The west vein is exposed for 200 feet and has a maximum width of 30 feet. It was worked by a single quarry. The east vein is exposed for 450 feet and has a maximum width of 35 feet. It was worked by two quarries, the southern one being 75 feet higher than the other.

Recent work at the deposit has consisted chiefly of driving an **adit** drift south along the east vein from a portal in the upper part of the face of the north quarry. The drift followed the vein for more than 250 feet under the south quarry. A 50-foot raise from the drift reached surface.

During 1958 the company shipped 730 tons of barite from the deposit. The ore was obtained from the excavation of the drift.

The Brisco deposit (50° 116' N.E.) is on ground covered by five Crown-granted mineral claims—the Wamineca, Canyon, Salmon, Carmine, and Northisle—located in a north to south line in the order named. The claims are between Templeton River and **Dunbar** Creek 2½ miles due west of Brisco. Access is by 4.3 miles of good gravel road from Brisco.

On the property barite is found in a breccia zone in dolomite associated with limestone and **quartzite**. Outcrops of bedrock are relatively scarce and to date barite has been uncovered in only four scattered locations—one near the north end of the Wamineca mineral claim, one adjoining the Templeton River near the south end of the Canyon mineral claim, one in the north half of the Salmon mineral claim, and the fourth near the **centre** of the Carmine mineral claim. Overburden in the intervening areas is deep. The rocks appear to be in the steeply dipping east limb of a major **syncline** and are cut by numerous faults of varying magnitudes.

The main showings and the working quarry **are** on the Salmon claim. Barite has been exposed across an average width of 25 feet for 780 feet along a northerly striking breccia zone. The west **wallrock** is highly fractured dark **grey** to black dolomite with a few scattered lenses or horses of brown **quartzite**. Mountain leather is abundant as films on fracture surfaces and a few small barite veins are present. The east **wallrock** is light grey weathering buff to flesh-coloured dolomite. It is brecciated, and near the main barite body contains barite in the matrix. The **orebody** is brecciated. Much of the barite is white, but the white sections are irregularly shaped and are usually edged or cut by zones of variable width that consist of a fine-grained black matrix enclosing angular fragments of white barite a fraction of an inch to several inches in diameter. The black coloration is due to carbon. Some pyrite is present, and it results in yellow to brown iron staining in parts of the quarry. A 4-foot-diameter mass of thin-bedded black shale unlike any rock seen elsewhere in the claim area was noted in a face near the north end of the quarry.

The barite is mined by **what** is essentially a single quarry with five benches having a 130-foot vertical range between the floor of the lowest bench, at the north end of the exposure, and the top of the face of the highest bench, at the south end. The barite body pinches and swells erratically both horizontally and vertically. The walls are normally undulating fault surfaces but not of the same fault through the length of the exposure. The barite is apparently cut off by a right-hand fault at the north end of the quarry, and it pinches out to the south.

\* By J. W. McCammon and D. R. Morgan.

To explore the deposit at depth an **adit** was started from the edge of Templeton River 60 feet below and 300 feet north of the north end of the quarry. At the end of August, 1958, the **adit** was 420 feet long. For the first 70 feet from the portal the **adit** passes through glacial drift. The rest of the workings are in closely fractured dark dolomite with mountain leather on the fracture surfaces. Except for small amounts in one or two thin shears, no barite was encountered until the last 90 feet of the **adit** was driven. This section of the **adit** is roughly parallel to the north end of the quarry and 40 to 60 feet east of it. In the **adit** a shear striking slightly east of north and containing black barite breccia was met and followed. Two **raises**—one at the **adit** face and the other 90 feet back from the face—were driven to the surface following the barite. One raise broke through into the most northerly bench of the quarry and the other broke through into the next bench to the south.

A second **adit**, 40 feet long, was driven into the south bank of the Templeton River below a small barite showing 600 feet downstream from the main **adit**. A few feet above the portal of the **adit** 4 feet of white barite is exposed. Within the **adit**, however, only a small amount of black barite breccia was found in shears. The rock exposed in the **adit** is highly fractured dark dolomite with mountain leather. Many shears are visible. Barite is exposed discontinuously on the surface for 140 feet south from this **adit**. A lens of white barite 70 feet long and 15 feet wide is exposed at water level on the opposite side of the river 100 feet north of the **adit** portal. This lens is apparently terminated at the north end by a shear. Geological relations indicate this zone of barite is part of the main zone offset by faulting.

About 2,500 feet north of the main quarry, barite has been exposed near the centre of the **Wamineca** claim. An area 200 feet long and 60 feet wide has been stripped. The barite, white in colour, occurs as irregular masses forming the matrix around brecciated fragments of light-coloured dolomite. Scattered quartzite fragments are included in the breccia.

Stripping near the centre of the Carmine claim 1,800 feet south of the main quarry exposed a small amount of barite. The barite, mixed white with black breccia, forms irregular discontinuous masses in a zone of shearing.

During 1958 the Brisco quarry was operated for nine months. A five-man crew quarried and crushed 10,350 tons of barite and shipped it to Lethbridge. Most of the ore came from the central part of the quarry.

[Reference: **Minister Of Mines, B.C.**, Ann. Rept., 1952, pp. 243–248.]

Spillimacheen (50° 116° N.E.). Company office, 908 Royal Silver Giant (Giant Bank Building, Vancouver; mine office, Spillimacheen. W. C. Mascot Mines Gibson, president. A management contract is held by H. L. Hill Limited)\* and Associates, consulting mining engineers, Vancouver. Clarence Major, property superintendent. This operation is at the Silver Giant property, which prior to its abandonment in June, 1957, was mined for silver, lead, and zinc. Present operations are confined to the recovery of barite from the old tailings dump. The barite is concentrated at the mill, and sold to **McPhails** Engineering Company, of Tacoma, Wash. This company has erected a drying and bagging plant at the railway siding at Spillimacheen.

Production of barite commenced in August, 1958, but was discontinued in December following a fire which destroyed the drying plant at Spillimacheen. During this period 4,325 tons of barite was produced from the mill by a crew of ten men. It is reported that definite plans have been made to resume milling operations in the future but the date of reopening has not been set.

\* By D. R. Morgan.

**Larrabee** Mining and Exploration Ltd.\* Invermere (50" 116" S.E.). Company office, 500 Petroleum Building, Calgary, Alta. L. R. Gardener, manager. This Company owns a group of four claims on the south side of Toby Creek adjoining the Bunyan property, 8 miles west of Invermere. Access is by means of a dirt road leading from Invermere. The company engaged a firm of contractors from Calgary to work on the property in 1958. Six men were employed for three months. They stripped approximately 200 feet of overburden and exposed what appears to be a fairly large deposit of barite, ranging from 10 to 25 feet wide. A small face was formed preparatory to quarrying, and a 50-ton-capacity bin was built on the site to facilitate loading operations. Other activities included the construction of 3½ miles of roadway to connect to the Sampson road for trucking purposes, and the building of a loading-ramp at Goldie Creek railway siding, south of Invermere. Approximately 200 feet of diamond drilling was completed. It is reported the property has now been leased to the Barite Company of Canada, but the latter company had not commenced work on the property at the end of 1958.

#### BUILDING-STONE

Sirdar (49" 116" S.W.). Company office, 1410 Fourth Street Kootenay Granite S.W., Calgary, Alta.; quarry office, Sirdar. R. Staal, superintendent. This company operates a quarry and processing plant on the Creston-Kootenay Bay Highway, 2 miles north of Sirdar. With the exception of the storage building, the complete plant was revised and reconstructed. The underground quarry workings were filled and a new surface quarry was started immediately north of the 66,000-volt transmission-line of the West Kootenay Power and Light Company Limited. A wide bulldozer scraping channel 150 feet long was excavated through a small granite knoll under the transmission-line to connect the quarry floor with a grizzly and 60-ton storage bin.

Most of the equipment has been installed in the crushing, screening, and bagging areas of the plant, and when completed the flow circuit will be as follows: A 15- by 24-inch Traylor jaw crusher followed by a 3- by 8-foot single-deck Allis-Chalmers shaking screen. The oversized material is conveyed to a 2-foot Symons cone crusher. The product from this crusher, united with the undersized material from the Allis-Chalmers screen, is conveyed to a 3- by 8-foot Dillon double-decked screen placed in closed circuit with the cone crusher. Some products may be removed at this point and the undersized material is conveyed to a 3- by 8-foot Niagara screen employing four screen decks. The sized products are discharged into seven steel storage bins having attachments for a portable bagging and sewing machine at their discharge outlets.

Five sizes of grits will be produced. Their sizes and use are as follows: +10 mesh to -⅓-inch chick, sander, and monumental grit; +½-inch to -⅜-inch chicken grit; +¾-inch to -⅝-inch turkey grit; +1-inch to -⅞-inch roofing and stucco grit; +1½-inch to -1-inch construction grit. Larger-sized material can be produced on demand.

Compressed air was supplied by a Fuller rotary compressor. A large concrete-based, steel-framed, and plyboard-covered building was constructed to house the milling equipment. A crew of nine men was employed in addition to a small construction contracting crew. A trial shipment of four carloads of grit was sent to Calgary for distribution to various prairie points.

Valley Granite Products Ltd.‡ Cheam View (49" 121" S.W.). Company office, 410 Mayfair Avenue, Chilliwack; plant, Bridal Falls. Kenneth Jessiman, general manager. The quarry is on the Trans-Canada Highway 11 miles east of Rosedale. Rock is mined by drilling vertical

\* By D. R. Morgan.  
 † By J. E. Merrett.  
 ‡ By R. B. King.

blast-holes with jackhammers. During the year the coarse jaw crusher was moved and a rotary kiln for drying broken rock was installed. This eliminated piling the rock and drying it with open-flame kerosene burners. The plant produces turkey, chicken, and bird grits, stucco dash, sand-blasting materials, and filler for asphalt roofing. Fourteen men were employed.

**Little Mountain Quarry.\***—Chilliwack (49° 121" SW.). This pit is on the north slope of Mount Shannon about 1 mile northeast of **Chilliwack**. It is operated intermittently by the Chilliwack Dyking District Board. Rock is blasted in the quarry by municipal employees as required for dyke repairs. The broken rock is hauled under contract to the river bank as needed. In 1958 the quarry produced 7,750 tons of rubble.

**Gilley Bros. Limited** Pitt River (49° 122° SW.). Company office, 902 Colombia Street, New Westminster. J. H. Gilley, general manager; James C. Gilley, production supervisor; Francis J. MacDonald, superintendent. Quartz-diorite is quarried to obtain rock for jetties, dykes, and concrete aggregate. The mining method has been changed from a **coyote-hole** to a benching system. Benches are at 40-foot intervals.

Vertical blast-holes, spaced 14 feet apart, are drilled about 4 feet below the **grade-line** or berm. Broken rock is loaded by diesel-driven shovels into 1a-cubic-yard trucks and is transported to a crushing plant. The crushing plant consists of a 42- by 60-inch jaw crusher which discharges crushed rock over an inclined **6-inch** grizzly to a conveyor belt for loading scows. Undersized material (—**6-inch**) is stockpiled. Hydro-electric power to run the plant is produced on the property. Twenty-five men were employed.

**Indian River Quarries Limited.** Granite Falls (49° 122" SW.). Company office, 1255 West **Pender** Street, Vancouver; quarry office, Granite Falls. John M. **Carnsew**, superintendent. During the year some rock which had been broken during previous mining operations was removed from the quarry. Operations were intermittent.

**Nelson Island** (49° 124" N.E.). Company office, 744 West Vancouver Granite Hastings Street, Vancouver; quarry, Nelson Island. W. C. **Dit-** Co. Limitedt mars, president. Rock for building purposes, monuments, jetty rock, and rubble are mined at this quarry. The mining is done by drilling the rock to size, following a mineral lineation pattern, and blasting and wedging for removal. Derricks are used to move the stone to scows, by which it is transported to Vancouver for cutting and finishing. Approximately 2,000 tons of stone was produced during the operating year. Six men were employed.

### SLATE†

**McNab Creek Slate Quarry** Howe Sound (49° 123" N.E.). Head office, **Richmix** Clays Limited, 2890 East Twelfth Avenue, Vancouver; quarry, **McNab** Creek. G. W. Richmond, manager. Slate is quarried for flagstones, roofing granules, and filler. Rock is broken from a 30-foot quarry face by drilling and blasting horizontal holes. Broken slate is hand-loaded into scows. The product is shipped to Vancouver for grading and sizing. The quarry is operated intermittently.

**Jervis Inlet** (50° 123° S.W.). Philip Graham, president; J. Ehlers, British Columbia quarry superintendent. This property is on an Indian reservation west of Deserted Bay on the south side of Princess Royal Reach in **Jervis Inlet**. Slate is mined by slashing it from the quarry face. Broken slate is hand-sorted, and marketable sizes are split to **1/2-inch** thickness. Some of the **stone** is trimmed with a diamond saw.

In 1958 approximately 460 tons of slate was produced and shipped to Vancouver.

\* By J. W. McCammon.

† By R. B. King.



## CEMENT\*

British Columbia Cement Company Limited.-Bamberton (48° 123" N.W.). Head office, 540 **Burrard** Street, Vancouver. Gordon Farrell, president; B. Franklin Cox, vice-president and general manager; R. E. **Haskins**, general superintendent.

This company operates a cement plant with a rated capacity of  $3\frac{1}{2}$  million barrels per year at **Bamberton**. During 1958 the plant produced 307,650 tons of cement.

Lafarge Cement of North America Ltd.-Lulu Island (49° 123" SE.). This company operates a cement plant on **Lulu** Island. First production began early in 1958. The plant has a rated capacity of 1% million barrels per year. Production for 1958 was 99,200 tons.

## CLAY AND SHALE

(49° 122" S.E.) Head office, 850 West Hastings Street, Vancouver; plants, Kilgard and Abbotsford. Gordon Farrell, president; R. M. Hungerford, general manager; G. H. Peterson, manager. In 1956, Canadian Refractories Limited, a subsidiary of **Harbison-Walker** Refractories Company, purchased a substantial interest in **Clayburn-Harbison** Ltd. Clayburn-Harbison Ltd. was formerly known as **Clayburn** Company Limited.

Two plants are operated by this company: One, in which sewer-pipe, flue-linings, and light-weight aggregate is manufactured, is at Kilgard; the other, in which **facebrick** and refractories are made, is at Abbotsford.

In the Kilgard plant, clay is pre-dried in a 150-foot rotary kiln and stockpiled. The dried clay is mixed with water and grog and extruded through dies to form sewer-pipe and flue-lining. The formed ware is dried and burned in down-draught beehive kilns fired with **natural** gas.

In the Abbotsford plant, bricks are dry-pressed or extruded through dies, hand set on cars, and passed through a drier. From the drier the bricks pass into a tunnel kiln 300 feet long. **Some** shale used in the manufacture of refractories is pre-calcined in the rotary kiln at Kilgard. This kiln is also used for the bloating of certain shales.

Clay and shale are mined from three open pits and two mines on **Sumas** Mountain. A room-and-pillar method of mining is used in the underground mines, and extensive use is made of roof-bolting for ground support. Holes are drilled with **tungsten-carbide**-tipped augers which are driven by air-operated drills. Stumping powder is used in blasting down the shale. Scrapers operated by **30-horsepower** electrically driven hoists are used to **move** broken shale directly to mine cars. In the open pits, shale is mined in 40-foot benches by drilling and blasting vertical and horizontal holes. Broken shale is hauled to the plants by truck.

Clay and shale mined during 1958 **totalled** 58,491 tons. Twenty men were employed in the mining operation and 138 were employed in the plant.

Fort Langley (49° 122° SE.). This company opened a clay pit about 8 miles east of Fort Langley on River Road. A large electrically powered scraper is used to scrape clay from the deposit to a bin. Clay is fed into large tanks, where it is mixed with water to form a slurry. The slurry is pumped to barges for **transporta-**  
**Ltd.†** tion to the company cement plant on Lulu Island.

Bear Creek Brick **Company.†**—**Surrey** (49° 122" SW.). Head office, Victoria Tile & Brick Supply Co. Ltd., Vancouver; plant, Archibald Road, Surrey Municipality. James **McBeth**, plant manager. During 1958 there was some production of drain-tile from this plant.

\* By I. W. McCammon.

† By R. B. King.

Haney (49" 122" SW.). Company office, 846 Howe Street, Haney Brick and Vancouver; plant, Haney. E. G. Baynes, president; J. Hadgkiss, Tile Ltd.\* managing director. Plastic clay is mined from a low pit face adjacent to the plant by a %-cubic-yard gasoline-driven shovel and is transported by truck to a covered air-drying area. The clay is dried in a rotary wood-fired kiln and conveyed to a dry pan for grinding. Brick and tile are formed by a stiff-mud extrusion process and dried in a controlled-temperature drying-room. The products are burned in down-draught beehive kilns. During 1958, 7,500 tons of clay products were produced. Forty men were employed.

Mainland Clay Products Limited\* **Barnet** (49" 122" SW.). Head office, 8699 Angus Drive, Vancouver; plant, **Barnet**. Surface clay is mined from a pit adjacent to the plant and is transported to a covered air-drying area. Some fireclay is obtained from **Kilgard**. Bricks are formed and dried in a heated drying building. Common brick, Roman brick, and firebrick are burned in rectangular oil-tied kilns. The production in 1958 was 1,020,391 building bricks. Six men were employed.

**Deeks-McBride** Ltd. (Clay Division)† **Bazan Bay** (48" 123" N.E.). K. Bruce, plant manager. This company operates a clay pit and brick and tile plant at Bazan Bay near Sidney, Vancouver Island. Surface clay is mined by scrapers and stockpiled for drying. It is then ground in a dry pan and elevated to a storage hopper. Brick and tile are formed by a stiff-mud extrusion process and dried in a temperature- and humidity-controlled drying-room. An oil-fired shuttle-type kiln and a down-draught beehive kiln are used to burn the ware. Common brick, building-tile, and drain-tile are produced. When the plant is operating, an average crew of nine men is employed.

Baker Brick & Tile Company Limited.†—**Victoria** (48" 123" S.E.). Office and works, 3 191 Douglas Street, Victoria. Surface clay is mined near the plant and transported by truck to storage bins. The clay is air-dried, ground, and formed into shapes by the soft-mud extrusion process and then dried with waste heat from the kilns. Down-draught kilns are used to burn the ware.

## GYPSUM

Windermere (50° 155° SW.). Company office, 306 Electric Western Gypsum Railway Chambers, Winnipeg 2, Man.; quarry office, Athalmer. Products Limited‡ A. E. Portman, superintendent. This property is at **Windermere** Creek, 10 miles by road from Lake **Windermere** railway station. The gypsum is crushed near the quarry-site and trucked to the railway siding at Athalmer for shipment.

During 1958 a crew of twelve men produced 71,432 tons of gypsum, of which 69,755 tons was shipped from Athalmer. Most of the production was obtained from the No. 1 quarry, which has been in operation for many years. This quarry was abandoned in October, 1958, and the present operations are confined to a new quarry that was started approximately half a mile farther north. Diamond drilling completed during 1958 included eighty-nine holes at **Windermere** Creek totalling 8,411 feet, forty-four holes at **Burnais** Draw totalling 4,766 feet, and fourteen holes at Stoddart Creek totalling 1,317 feet.

Road work included the building of 1 mile of roadway from the crusher plant to the new quarry, and the relocation of 2 miles of the roadway below the plant to improve

\* By R. B. King.  
 † By R. B. Bonar.  
 ‡ By D. R. Morgan.

the grade. Approximately 1,500 feet of pipe-line was installed to supply water to the new quarry.

## LIMESTONE

### LIMESTONE DEPOSITS IN THE ASHCROFT-CLINTON AREA\*

Except for small scattered lenses, limestone in the Ashcroft-Clinton area is confined to the Permian Marble Canyon formation of the Cache Creek group. The Marble Canyon formation constitutes a northwest-trending band of limestone that extends for more than 60 miles from a point 2 miles northwest of **Martel** to north of Jesmond. The band has a maximum width of 8 miles. It is crossed by roads along Oregon Jack Creek, through Marble Canyon between Carquille and Pavilion, and between Clinton and Kelly Lake, and by the Pacific Great Eastern Railway between Clinton and Kelly Lake. The road from Kelly Lake to Jesmond runs parallel to and within a mile of the southwest edge of the Marble Canyon limestone for more than 25 miles northwest from Kelly Lake.

The Marble Canyon formation consists chiefly of medium- to fine-grained crystalline limestone that varies in colour from dark blue-black through creamy to white. Most of it is massive, and well-bedded exposures are uncommon. Stringers, pods, and **blebs** of **chert**, some dolomite, and pyrite occur in parts of the formation, but elsewhere the limestone is very pure.

During an examination made in 1958 six samples of the Marble Canyon formation were taken from exposures where the limestone is readily accessible to roads.

Sample No. 1 came from an outcrop 13.1 miles northwest of the Kelly Lake junction on the road to Jesmond. The sample consisted of random chips taken across the base of a steep bluff that forms the end of a small ridge 300 feet northeast of the roadway. The limestone is light-grey, medium- to fine-grained, crystalline rock. Most of it appears quite pure, but some shows small scattered grains of **chert** on weathered surfaces. Rock of similar appearance forms a **200-foot-high** bluff a quarter of a mile northeast of the road along the east bank of a large creek 7.8 miles to the southeast.

The second sample was taken across the face of a small abandoned quarry by a creek one-quarter mile east of the road and railway 5% miles southwest of Clinton. The limestone is light coloured. A high steep face 200 feet wide has been opened up in the quarry.

Sample No. 3 was made up of random chips taken across 400 feet of limestone exposed in bluffs 400 yards northwest of and 200 feet above the **tufa** quarry 2% miles southwest of Clinton. The rock here is variably coloured from light to dark **grey**. On most weathered surfaces scattered small wart-like protrusions of **chert** are visible. The remains of a small pot kiln lie on the flat **at** the base of the bluffs.

There are numerous exposures of limestone along the road from Carquille up Hat Creek and through Marble Canyon to Pavilion. The first outcrop near the road is 10 miles west of Carquille. At this point a bluff which forms the side of a ridge rises abruptly from an open grassy slope 800 feet northwest of the road. Limestone in the bluff is **poor**-looking, dark blue to black, highly fractured material. Veins of calcite and knobs and patches of chert and dolomite are abundant in it. Sample No. 4 was taken across 150 feet at the base of the bluff. Half a mile farther west this **same** ridge is crossed by the road and the rock is well exposed to the south.

The road runs beside another limestone bluff 11.6 miles west of Carquille. The rock here is lighter coloured and smoother weathering than at the last point, but it does contain **thin** criss-crossed stringers of silica. One mile and a half farther west 100 feet of light cream-coloured limestone **breccia** is exposed. This is next to dark-grey **medium-grained** crystalline limestone beds that strike 40 degrees west of north and dip 58 degrees to the southwest.

---

\*BYJ.W, McCammon.

At 13.4 miles the road forks, one branch going south to Upper Hat Creek and the other northwest through Marble Canyon. Just north of the road at the forks is a large bluff of creamy **fine-grained** limestone. Sample No. 5 was taken across 100 feet at the base of the bluff.

Through the canyon between the forks and Crown Lake the rock is mostly light coloured. Some contains chert nodules and **veinlets** and dolomite. A **clean-looking** bluff 2.6 miles northwest of the forks was sampled across 100 feet. This was sample No. 6.

No samples were taken along the Oregon Jack Creek road. Outcrops are plentiful and the rock is very similar to that exposed elsewhere in the Marble Canyon formation. This road is narrow, steep, and in poor condition.

A rounded hummock of limestone half a mile to the west is visible from Highway No. 1, three-quarters of a mile south of the northern cut-off to Ashcroft. The base of the hummock is 600 feet above the highway and the hummock itself is about 250 feet high and 500 feet in diameter. The rock is medium-grained, **light-grey** to mottled rather uniform-looking limestone. It weathers to a light colour with usually a smooth surface, although in some places small scattered raised lumps of chert and dolomite are visible. Sample No. 7 consisted of chips taken at random across 250 feet on top of the hummock.

About a quarter mile to the southeast similar limestone outcrops in a low knoll 400 feet long and 300 feet wide. Volcanic rocks are exposed in the intervening area. A **third** limestone knoll about 100 feet in diameter outcrops 600 feet farther to the southeast.

One-quarter mile west of Highway No. 1 directly opposite the south cut-off to Ashcroft at Cornwall Creek, a double-crested hill of limestone projects 350 feet above a flat field. The hill is roughly 1,300 feet long in a north-south direction and 600 feet wide. In the trough of the saddle between the two crests a band of brown weathering cherty argillite is exposed across 150 feet. This band strikes north 55 degrees west and dips 65 degrees northeast. The remainder of the hill consists of rather uniform medium-grained light-gray to mottled limestone. On weathered surfaces scattered streaks of chert, **irregular** patches of dolomite, and some rusty areas are visible. Sample No. 8 was taken at random **across** the top of the north crest, and sample No. 9 was taken across 500 feet on the top of the south crest.

Two bodies of limestone are cut by Highway No. 1 north of **Martel**, 7 miles north of **Spences** Bridge. The **first** is a small triangular patch half a mile north of the **Martel** section house. This body is exposed for 300 feet along the highway and for 300 feet north from the road to its apex 200 feet higher. The limestone is bounded on the west by white **cherty quartzite**, on the northeast by **skarn**, and on the south by gravel. Most of the rock is dark grey to black and weathers light. It is veined by **numerous** small calcite stringers and cut by one dyke. Few impurities are visible on outcrop surfaces. Sample No. 10 consisted of chips taken along 150 feet in the road cut.

The second and much larger limestone body is exposed by a continuous road cut starting one-fifth of a mile north of the outcrop just described and extending northward for four-fifths of a mile. The limestone forms a bare ridge a mile long that trends 25 degrees west of north from the road cut and reaches a maximum elevation of 900 feet above the highway. The limestone continues southeast of the highway to the Thompson River and is exposed in a small showing on the opposite bank. The rock is uniform black fine-grained limestone with a few scattered interbeds of argillite and some porphyry dykes. Faults and fractures are numerous and considerable folding has taken place. Many white calcite veins are present. Sample No. 11 consisted of random chips taken along 1,000 feet at the south end of the road cut.

Northward up the highway the rocks are a heterogeneous mixture containing some limestone, but none of the limestone is in large quantity or pure.

A large cliff of light weathering limestone is visible along the northeast side of **Venables** Creek starting about 1 mile above the highway.

Along the east bank of the Thompson River between **Spatsum** and Basque are several small limestone lenses one-quarter to one-half mile east of the railway. All would have to be mined largely by underground methods.

Several limestone lenses outcrop in the small valley southwest of the Canadian Pacific Railway station at **Walhachin**, 13 miles northeast of Ashcroft. The first one is one-quarter mile from the tracks directly south of the Walhachin road bridge. The lens is about 200 feet long and 50 to 75 feet wide. It consists of **dark-grey** badly fractured limestone with **chert** and dolomite inclusions. Sample No. 12 was taken along 200 feet on the side of the lens. A second small limestone mass is exposed around the hillside half a mile to the south and east. Three more lenses 100 to 200 feet in diameter form bare mounds on a bench south across the creek from this last exposure. **The** largest limestone body, about 800 feet long and 400 feet wide, forms the top of the steep east side of a gully just **south** of the last-mentioned outcrop.

In the first 10 miles along the Cariboo Highway north of Cache Creek several lenses of limestone outcrop in road cuts and beside the road. All of these are small.

The only serious attempt in recent years to produce lime rock in this entire area was made on a large **travertine** or tufa deposit on Lot 268, about  $2\frac{1}{2}$  miles southwest of Clinton. The Pacific Great Eastern Railway passes through the northwest side of the tufa in a cut 600 feet long and 25 feet deep. The main mass of the deposit is on the slope southeast from the tracks. The tufa forms a mound with a maximum exposed length parallel to the tracks of 850 feet and a width of 500 feet. The deepest exposure is in the railway cut, which does not reach the bottom of the deposit. Most of the rock is pale buff to white porous material containing abundant casts of leaves and twigs but some is fairly massive. Between 1947 and 1953 Clinton Lime Holdings Limited attempted to develop the property. Some diamond drilling was done, the deposit was almost completely stripped, two small quarries were opened up, and a crushing and screening plant was built. A small amount of agricultural **lime** was shipped. There has apparently been no activity lately. Two samples of the **tufa** were **analysed**: Sample No. 13 was taken up the **15-foot-high** face of the upper quarry; sample No. 14 was taken up the 10-foot face of the bottom quarry.

#### Ashcroft-Clinton Limestone Analyses

Sample	Insol.	R <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	MnO	MgO	CaO	P <sub>2</sub> O <sub>5</sub>	S	Ig. Loss	H <sub>2</sub> O
1.....	0.18	0.10	0.05	0.002	0.55	55.16	0.027	0.01	43.87	0.02
2.....	0.46	0.30	0.04	0.030	0.30	55.24	0.071	Tr.	43.57	0.03
3.....	0.34	0.08	0.03	0.025	1.15	54.35	0.022	Tr.	44.02	0.04
4.....	1.02	0.38	0.18	0.013	0.47	54.51	0.034	Tr.	43.54	0.04
5.....	0.36	0.58	0.06	0.021	0.33	55.03	0.123	Tr.	43.58	0.03
6.....	0.08	0.16	0.02	0.009	0.27	55.53	0.071	Nil	43.81	0.02
7.....	0.20	0.30	0.03	0.005	0.32	55.34	0.079	Nil	43.79	0.03
8.....	0.46	1.58	0.04	0.006	0.27	54.77	0.368	Tr.	42.95	0.01
9.....	0.34	0.52	0.03	0.011	0.31	55.12	0.135	Nil	43.55	0.01
10.....	2.62	0.50	0.11	0.031	0.56	53.68	0.031	0.02	42.50	0.11
11.....	1.34	0.22	0.08	0.036	0.89	54.12	0.031	0.02	43.38	0.03
12.....	3.76	1.16	0.37	0.543	0.61	52.40	0.040	0.03	42.01	0.03
13.....	0.10	0.10	0.02	0.007	0.54	54.92	0.018	0.11	44.22	0.03
14.....	0.12	0.06	0.03	0.001	0.33	55.16	0.020	0.07	44.21	0.06

[References: *Bureau of Mines, Canada*, Publ. No. 811, 1944, pp. 181-184, 221-225; *Geol. Surv., Canada*, Mem. 262 and map, 1952, pp. 15-22, 111; *Geol. Surv., Canada*, Mem. 118, 1920, pp. 49-51; *Geol. Surv., Canada*, Ann. Rept., New Series, Vol. VII, Rept. B, 1894; Minister of Mines, B.C., Ann. Repts., 1947, p. 218; 1948, p. 189; 1953, p. 191.1

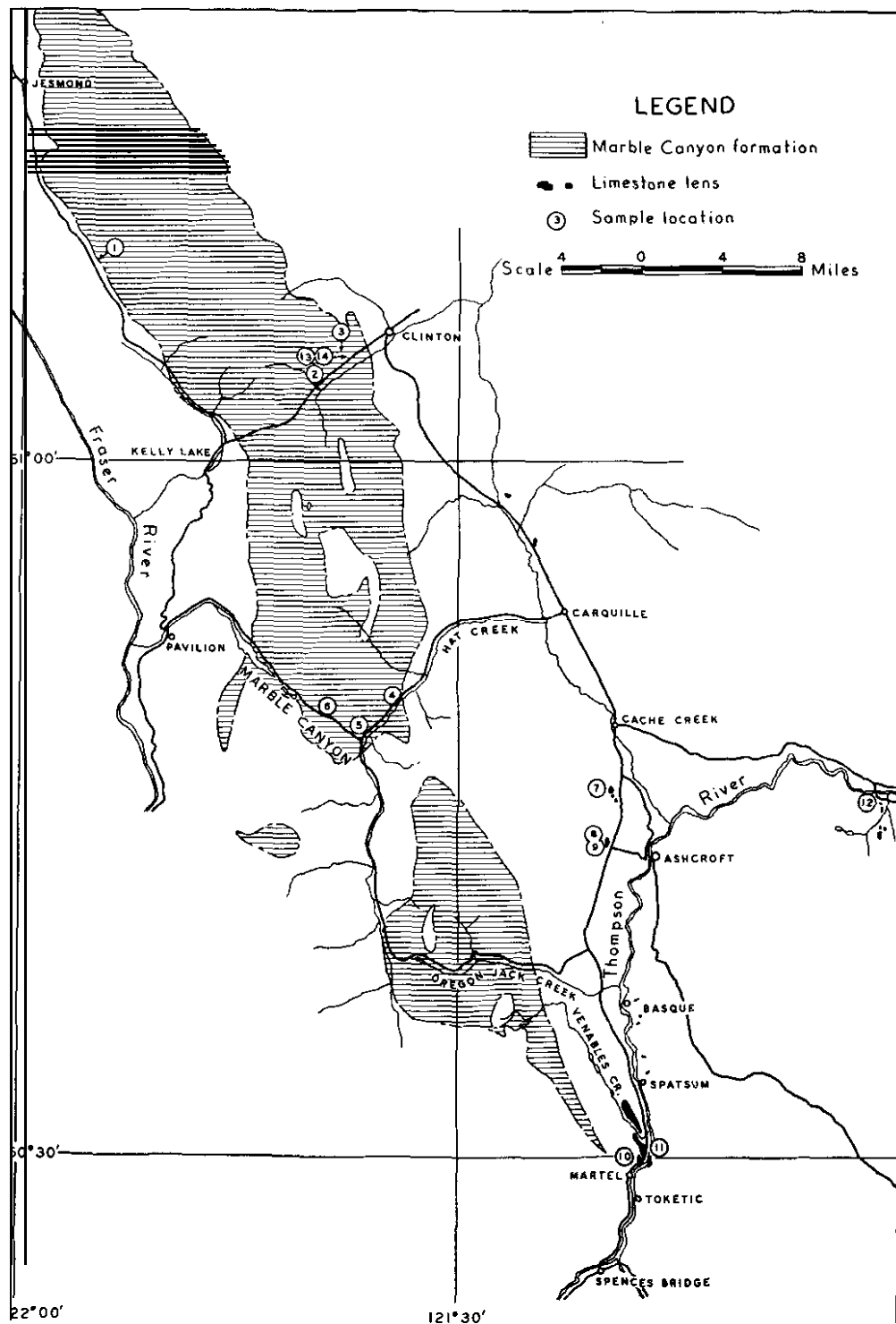


Figure 2. Limestone in the Ashcroft-Clinton area.

## LIMESTONE IN THE MERRITT AREA\*

In the vicinity of Merritt, limestone **occurs** in the Triassic Nicola group of rocks. During a reconnaissance made in 1958 no extensive beds of limestone were found. Except for those on Swakum Mountain, the Promontory Hills, and north of **Harmon** Lake, the deposits seen consisted of insignificant pods and lenses.

The road from Nicola via **Clapperton** Creek to the mining claims on top of Swakum Mountain passes close to two elongate masses of limestone. The first one is at 5,300 feet elevation by the abandoned workings on the Thelma group. Here a 100-foot-wide band of dark-grey limestone is exposed for 350 feet in a north-south direction. The exposure is covered by overburden at both ends. The rock is massive and contains scattered thin stringers of white calcite, some **chert** nodules, and vague shapes that may be fossils. Sample No. 1 was taken across 100 feet at the **centre** of the exposure. The second lens is at 5,600 feet elevation near Swakum peak on the Alameda No. 4 claim about a mile north of the Thelma. The lens averages 150 feet wide and is exposed for one-quarter mile along a line trending north 20 degrees east. The rock is light buff to **grey** with brown grains of dolomite, white calcite stringers, and some thin **shaly** interbeds. A **shallow** pit has been dug on some sparse **sulphide** mineralization near the **centre** of the lens. Sample No. 2 was taken across the width of the limestone 100 feet south of the pit. Several other lenses of similar material have been reported in the same general area.

On the hillside 2 miles northeast of Merritt a 50-foot-wide band of limestone extends for 600 feet up the slope. It strikes 10 degrees east of north and dips 70 **degrees** east. The limestone is light **grey** in colour and contains considerable silica and dolomite in small irregular grains. The ruins of an old pot kiln lie near the base of the exposure some 500 feet higher than the road. Near the top of the exposure are some old pits and trenches on sparse copper mineralization.

Several limestone lenses are exposed on the south slope of Promontory Hills directly north of **Canford**. The lowest one found forms the top of a steep bluff 1,100 feet above the highway. Here siliceous dark-grey limestone veined **with** white calcite is exposed across 70 feet for 200 feet along a strike of north 40 degrees east. Sample No. 3 was taken across the width of the exposure. A second lens was found 300 feet higher up the hill; a third one, 500 feet higher still; and a fourth one, 300 feet above the third. AU lenses form bare northeast-trending mounds on flat terraces that break the general slope of the hill. More lenses of a similar type are reported on the crest of the hills.

Cockfield (Mem. 249) reported several limestone lenses on the hills south of Nicola Lake. Only two of these were found. The largest was 2,200 feet above and 1½ miles south of the highway 5 miles east of **Nicola**. It is readily accessible from ranch and logging roads to the south and west. The limestone forms a rounded ridge extending down an open grassy slope. The exposure is 500 feet **long** in a north-south direction and 200 feet wide. The rock is dark-grey rough weathering siliceous material. Sample No. 4 consisted of random chips taken across the surface. The other lens seen was very small.

A single insignificant lens of limestone was found in a creek bed southwest of Iron Mountain. Three limestone deposits were seen north of the road that passes Harmon Lake and 5 miles west of Highway No. 5. One forms a prominent white bluff readily visible from the road and about 2,000 feet north of and 350 feet above it. The limestone is light creamy **grey**. It is exposed across 200 feet for a length of 500 feet in a northerly direction. The second and largest deposit is 2,000 feet northwest of the one just described and 400 feet higher in elevation. This one forms bluffs 100 feet high, has a maximum width of 400 feet, and is exposed for one-quarter mile along a northeast strike. The rock is light creamy **grey** and weathers light blue **grey** with a rough surface. The roughness is due to small protruding lumps and grains of dolomite and silica. Sample No. 5 was

---

\* By J. W. McCammon.

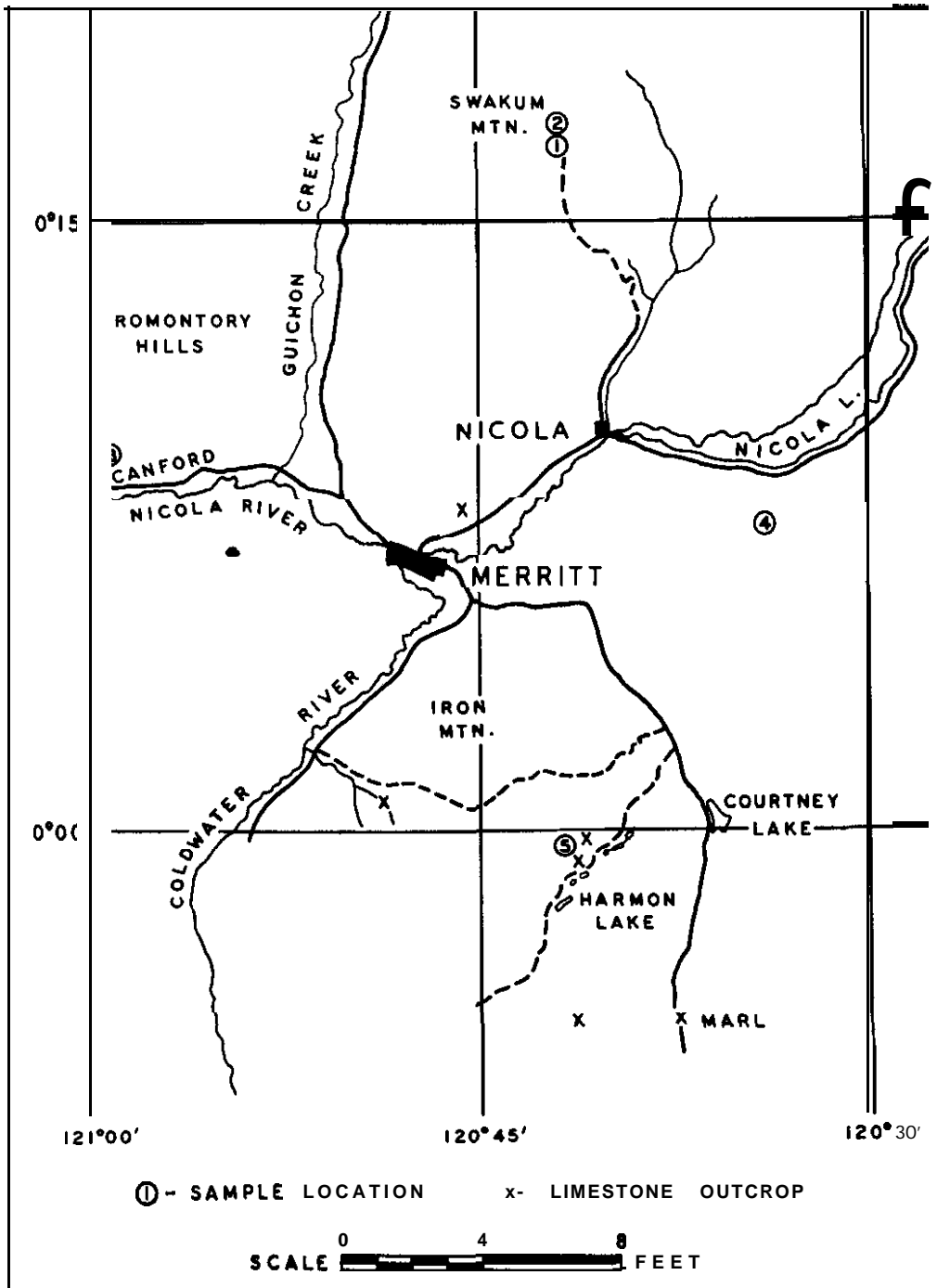


Figure 3. Limestone in the Merritt area

made up of random chips taken across the lens near its centre. The third deposit is half a mile northeast of the second one. It consists of a lens 300 feet long and 130 feet wide associated with fossiliferous tuff and sandstone. The limestone is dark grey and contains stringers of white calcite with some dolomite and silica.



Marl of undetermined thickness forms a wide zone around the southwest end of a small lake adjacent to the east side of Highway No. 5 about 6 miles south of Courtney Lake. It was too water-saturated to be examined on foot.

A small lens of light-grey limestone was found 2¾ miles west of the marl deposit. It is too small and inaccessible to be of value.

#### Merritt Limestone Analyses

Sample	Insol.	R <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	MnO	MgO	CaO	P <sub>2</sub> O <sub>5</sub>	S	Ig. Loss	H <sub>2</sub> O
1 .....	7.08	0.46	0.28	0.07	0.44	51.22	0.026	0.03	40.80	0.04
2 .....	11.16	1.08	0.67	0.047	0.63	48.00	0.056	0.02	38.99	0.03
3 .....	13.32	2.84	0.92	0.107	1.06	45.92	0.042	0.04	36.85	0.08
4 .....	2.62	0.28	0.20	0.015	0.46	53.67	0.038	0.01	42.80	0.04
5 .....	1.92	0.26	0.12	0.023	0.23	54.40	0.026	Tr.	43.08	0.02

[References: *Geol. Surv.*, Canada, Mem. 243, 1947; Mem. 249, 1948.1

**Agassiz** Lime Quarry.\*-Agassiz (49° 121" SW.). Hiram Cutler, owner. This pit and plant ceased operation in May, 1958, and stockpiled limestone was sold. Limestone produced: 950 tons. Five men were employed.

Popkum (49° 121° S.W.). Head office, 905 Edmonds Street, Fraser Valley Lime Burnaby. Thomas Mairs, manager; John Isaacs, superintendent.

Supplies\* John Isaacs replaced Arthur Isaacs as superintendent in June.

Limestone is quarried to produce agricultural limestone and industrial filler. The quarry is being worked in benches nearly 25 feet high. Rock is blasted from the quarry face, loaded onto trucks by a 1-cubic-yard front-end loader, and transported to the crushing plant. About 4,000 tons of limestone was quarried during 1958. Ten men were employed.

**Beale** Quarries Vananda (49° 124" N.W.). Head office, 744 West Hastings Street, Vancouver; quarry office, Vananda. Lafarge Cement of North America Ltd., owner; W. D. Webster, superintendent. Limestone

is quarried to produce pulp rock for paper mills, agricultural limestone, crushed limestone, and cement rock. The quarry is worked on levels with faces about 40 feet high, Vertical blast-holes are drilled with a Joy Heavy-weight Champion drill. Broken rock is loaded by a 3-cubic-yard Bucyrus shovel onto Euclid 63T trucks and transported to the crushing plant. This plant is equipped with an Allis-Chalmers 60- by 48-inch primary jaw crusher, an Allis-Chalmers 36- by 48-inch secondary jaw crusher, and a Pennsylvania impactor. Screens and belt-conveyors are installed to accommodate two main sizes of rock-pulp rock from 6 to 12 inches and cement rock which is minus three-quarters of an inch.

Limestone produced: 212,619 tons. Twenty-four men were employed.

**Ideal Cement Company Ltd.\*** Vananda (49° 124" N.W.). British Columbia office, 1155 West Georgia Street, Vancouver; quarry office, Vananda. W. S. Beale, manager, Rock Products Division. This company purchased the assets of W. S. Beale (1955) Ltd. and assumed control in February, 1958. The rock quarry is on Lot 25, Texada Island. and is about 2 miles south of Vananda. The crushing plant is at Marble Bay, adjacent to Vananda. During the year a new crushing plant was built which can crush and screen 6,000 tons of limestone per day. Rock is broken from low quarry faces, loaded onto trucks by a ¾-cubic-yard Marion 372 shovel, and is transported to the crushing plant. The plant consists of a Pioneer bar feeder which feeds rock to a fixed grizzly that scalps out all —14-inch

\* By R. B. King.

material. Oversized rock is conveyed to a 30- by 42-inch Pioneer jaw crusher. Rock from the grizzly and the crusher is passed over a triple-deck Allis-Chalmers screen which produces four products: 6-inch to 14-inch, 1½-inch to 6-inch, ¾-inch to 1x-inch, and —¾-inch. These sizes are each conveyed to separate stockpiles.

As required, the material is loaded by a belt-conveyor, at the rate of 500 tons an hour, into barges for shipment. Marble Bay has been dredged to provide a suitable **harbour** for ocean-going barges having a capacity of 5,000 tons. A new dock has been constructed to accommodate and load these barges. Seven men were employed.

**McKay Quarry\*** Vananda (49° 124° N.W.). Don McKay, owner. This quarry is on the main road about 2 miles south of Vananda. White limestone is mined and sold for stucco dash and whiting. The white, bleached limestone occurs as irregular masses in a blue-grey limestone. Open-pit mining with low benches allows a selective recovery of the white limestone. Grey limestone is sold for pulp rock and also exported for use in the glass industry.

During 1958, 2,000 tons of white limestone and 15,000 tons of blue-grey limestone were produced. Three men were employed.

**Gypsum Lime and Alabastine, Canada, Limited\*** Blubber Bay (49° 124° N.W.). Head office, 50 Maitland Street, Toronto 5, Ont.; British Columbia office, 1105 West Pender Street, Vancouver; quarry office, Blubber Bay; lime plants, Blubber Bay and Vancouver. W. M. Tully, British Columbia area manager; Arthur Pitt, Blubber Bay, plant manager. Limestone is quarried approximately 2 miles from the Blubber Bay plant. The quarry is worked in benches with faces nearly 25 feet high. Horizontal and vertical blast-holes are drilled with wagon drills and Gardner-Denver rotary drills. Broken rock is loaded by diesel-driven shovels onto trucks and hauled to the Blubber Bay plant. There limestone is crushed, sized, and stockpiled for use in lime-burning facilities at Blubber Bay and Vancouver, and also for sale.

Products are crushed stone, including sized rock, spalls, and fines or screenings, quicklime (lump, crushed, and pulverized), and hydrated lime.

Stone is supplied to such industries as pulp and paper, cement, smelting and refining, iron and steel, agriculture, etc.; lime is supplied for building, mining, pulp and paper, chemicals, agriculture, steel, and sugar industries.

The total number of men employed at Blubber Bay in 1958 was forty-five.

**Koeye Limestone Co. Ltd.†** Koeeye River (51° 127° N.W.). P. O. Christensen, president; A. A. Christensen, secretary-treasurer. This company operates a limestone quarry on Koeeye River, less than a mile from its mouth on Fitz Hugh Sound, 6 miles south of Namu. The limestone is mined by drilling vertical holes with a small portable drill. Broken rock is hand-loaded into narrow-gauge cars and hand-trammed to a scow-loading ramp. The 1958 production was 7,000 tons, which was shipped to the Crown-Zellerbach pulp plant at Ocean Falls.

**Alaska Pine & Cellulose Limited.†**—Jeune Landing (50° 127° SW.). Head office, 1111 West Georgia Street, Vancouver. Nils Erickson, quarry superintendent. This quarry is on the east shore of Neroutsos Inlet about 1¼ miles north of Jeune Landing. Limestone is quarried for pulp rock for the Port Alice pulp-mill. In 1958 the quarry produced 11,350 tons of limestone.

**The Granby Consolidated Mining Smelting and Power Company Limited.\***—Harbledown Island (50° 126° N.W.). This company drilled a limestone property under lease from R. H. Chestnut. Seventeen holes totalling 308 feet were diamond drilled.

\* By R. B. King.  
† By I. W. McCammon.

British Columbia Cement Company Limited.\*-Head office, 540 Burrard Street, Vancouver. Gordon Farrell, president; B. Franklin Cox, vice-president and general manager; R. E. Haskins, general superintendent. Limestone is mined at Cobble Hill (48° 123" N.W.) on Vancouver Island. The quarry face is about 80 feet high and churn drills are used to drill vertical blast-holes which have a 26-foot spacing and burden. Broken rock is loaded by diesel-driven shovels into 15- and 30-cubic-yard-capacity trucks and transported over 7 miles of private road to the plant at Bamberton.

In 1958, 445,259 tons of raw material was mined.

#### MAGNESITE

**Harbour** (49° 115" N.W.). Company office, 811.4 Seventeenth Avenue S.W., Calgary, Alta.; Reuben Bond, president. A management Natural Resources contract is held by Millar, Hannigan and Associates Limited, consulting mining engineers, Calgary. This property is in Perry Creek valley, between Antwerp and Lisbon Creeks, 9 miles south of Kimberley. Access is by means of a road leading southwest from Wycliffe.

The property is operated under an option obtained in 1958. Activities to the present have been confined to surface stripping and drilling to test the orebody. The removal of approximately 1,400 cubic yards of overburden from the outcrop has exposed the magnesite for a length of 735 feet. Drilling has increased this length to 1,990 feet. Six holes, totalling 1,150 feet, were completed, and these together with the surface stripping indicated a width of 50 feet for the "high grade" magnesite core. In addition, widths of as much as 60 feet in the footwall show disseminated magnesite as blobs and stringers visually estimated at 30 to 50 per cent magnesite.

It is reported a large-scale sample is being prepared for a pilot run, and the result of the test will provide the basis for decision as to the plant design.

#### MARL‡

**Cheam Marl** Popkum (49° 121" S.W.). Office, Chilliwack. A. M. Davidson, manager. Marl and overlying humus are mined from a post-Glacial deposit which has accumulated on the floor of Cheam Lake. This material, on the north shore of the lake, is as much as 12 feet thick and is dug by dragline and loaded onto trucks. Wet and semi-dry humus and marl are produced for agricultural purposes. Two men were employed.

**Popkum Marl** Popkum (49° 121" S.W.). W. A. Munro, managing director. Marl and humus are mined from a post-Glacial deposit on the east shore of Cheam Lake. Draglines working on heavy wooden-plank roadways are used to dig marl and humus. These products are sold locally. The production in 1958 was 14,360 tons of marl and 6,000 cubic yards of humus. Six men were employed.

#### SAND AND GRAVELS

Louis Salvador and Son.¶—Creston (49° 116" S.W.). This Company operates a gravel crushing, screening, and washing plant on Goat River, immediately south of Creston. Approximately 6,000 cubic yards of sand and gravel were produced for the local construction industry in 1958.

\* By R. B. Bonar.

† By D. R. Morgan.

‡ By R. B. King.

§ By R. B. King, except as noted.

¶ By J. E. Merrett.

Merriam and **Peskor**.\*—Wynndel (49° 116" SW.). F. Merriam, owner. This pit is on the **Creston-Kootenay** Bay Highway, 4½ miles north of Wynndel. In addition to supplying a small amount of gravel for building construction, gravel was also provided for the Peskor Paving Ltd. plant of Carl Peskor. The tar mixing plant was established at the quarry.

**Scaman's** Gravel Pit.\*-Wynndel (49° 116" SW.). George Scaman, Creston, owner. This pit is at the north end of Duck Creek road, 1 mile north of Wynndel. Approximately 2,000 cubic yards of road gravel was excavated from a low bench by a front-end loader.

Premier Sand and Gravel Company Limited.\*-Nelson (49° 117" S.E.). Albert **Shrieves**, president and manager; D. Norcross, superintendent. This property is located on the east side of the City of Nelson in the vicinity of Anderson Creek. This property was purchased from the former owners and operated in conjunction with Nelson **Ready-Mix** Concrete Ltd. concrete plant. Gravel is removed by dragline and then crushed and sized.

Production in 1958 was 31,276 cubic yards. Five men were employed.

Feeney Pit\* (49° 117" SE.). Associated Enterprises Limited, of **Salmo**, installed a portable screening plant at this pit, 5 miles south of Salmo on the **Salmo-Nelway** Highway. Approximately 1,000 cubic yards of ½-inch and ¾-inch gravel was produced and trucked to the cement-tile manufacturing plant of Valley Concrete Limited located 1 mile west of Salmo.

Trail (49° 117" S.W.). This pit, owned by **Korpack** Cement Ferraro Gravel Pit\* Products Company Limited, of Trail, is located between Casino Road and the Columbia River, 2 miles south of Trail. Gravel excavated from low benches is loaded directly into a portable crushing and screening plant. The products are sold to the public, to **McGauley** Ready-Mix Concrete Company, or shipped to the owner's concrete, cinder, and chimney-block plant in Trail. A crew of three men was employed.

Abbotsford Gravel Sales Ltd.-Abbotsford (49° 122" S.E.). This pit is 7 miles west and 6 miles south of Abbotsford. Gravel is mined by shovel and scraper. A plant, adjacent to the pit, crushes, washes, and sizes the gravel. The products are used as aggregate in a ready-mix concrete plant or are sold locally. Four men were employed.

Clearbrooke (49° 122" S.E.). **Dueck** Building Supplies Ltd., **Dueck's** Gravel Pit owner. This pit is about 1 mile north of Clearbrooke. Sand and gravel are dug from low gravel faces by an overhead loader and transported to a bucket elevator, by which they are elevated to a crushing, washing, and sizing plant. Pit-run, washed, and sized gravel are produced. A ready-mix plant furnishes concrete for local sales. Seven men were employed.

Foster's Gravel Pit.-Aldergrove (49° 122" S.E.). C. N. Foster, owner. This pit is about 3 miles south of Aldergrove. Sand and gravel are mined from low faces by a front-end loader. Pit-run gravel is sold locally. The production in 1958 was 4,084 cubic yards. One man was employed.

Border Sand and Gravel Company.-White Rock (49° 122" S.W.). Office and plant, Boundary Road, R.R. 4, White Rock. T. **Lapierre**, manager. Gravel is dug from low faces by an overhead loader. It is transported for washing and sizing to a plant or is sold as pit-run gravel. Three men were employed.

---

\* By J. E. Merrett.

**Cloverdale** (49° 122" SW.). Office and plant, 12311 Fifty-third **Colebrook & Gravel** Sand Avenue, R.R. 1, Cloverdale. F. Bray, president and general Company manager. Sand and gravel are mined by an overhead loader, Limited loaded onto trucks, and hauled to a semi-portable washing and screening plant. Washed and sized products or pit-run gravel are sold locally. The production in 1958 was 5,293 cubic yards of pit-run and 16,630 cubic yards of washed and sized products. Two men were employed.

**Newton** (49° 122" SW.). **Linton's Construction Co. Ltd.**, operator; Thomas A. **Linton**, managing director. This pit is about 1 mile south and 3 miles west of Newton on the British Columbia Electric Railway. Gravel is mined from low faces by three diesel-driven shovels. It is either crushed and screened in a portable crusher or is sold as run-of-pit. Production in 1958 was 213,664 cubic yards of run-of-pit and 64,642 cubic yards of crushed material. Six men were employed.

Corporation of the District of Surrey.-**Cloverdale** (49° 122" S.W.). Several gravel pits are operated within the township for the purpose of road maintenance and construction. Gravel is mined by diesel-driven shovels and is transported to crushers by trucks or is used directly as pit-run gravel.

Corporation of the Township of Langley.-**Murrayville** (49° 122" SW.). Several gravel pits are operated within the township for the purpose of road maintenance and construction. Gravel is mined by diesel-driven shovels and is transported to crushers by trucks or is used directly as pit-run gravel.

**Hornby** General Machinery Company.-Langley Municipality (49° 122° S.W.). Office, Cloverdale; pit, **Gobsell** Road. Harry **Hornby**, owner. Run-of-pit gravel is mined by two small diesel shovels from low pit faces. A portion of the production is crushed and sized in a portable plant. The remainder is sold as run-of-pit. Production in 1958 was 20,519 cubic yards. Three men were employed.

S.U.B. Quarries Ltd.-Port Mann (49° 122" S.W.). Office, 611 No. 3 Road, Brighthouse. Gravel is mined by digging low gravel faces with diesel-driven shovels. Most of the production is supplied as pit-run gravel to a crushing plant and ready-mix plant adjacent to the pit. Five men were employed.

**Trouton** Excavating Ltd.-New Westminster (49° 122" S.W.). Office and plant, 10987 Sandell Road, New Westminster. W. R. **Trouton**, manager. In 1958 some gravel was mined from the floor of the pit and sold as run-of-pit. Three men were employed.

**Elderkin's** Excavating Ltd.-Port Mann (49° 122° SW.). Office, **Burnaby**. Lawrence Elderkin, manager. This company operates a small pit near Port Mann. Gravel is mined by overhead loader or a small shovel and is sold locally as pit-run. One man was employed.

**Barker Construction Co. Ltd.**-Ladner (49° 123" SE.). C. E. Barker, president; W. H. Greene, manager. This company operates a pit on Boundary Bay Road. Gravel is mined from low faces by diesel-driven shovels and is crushed and screened or sold locally.

Corporation of the District of **Coquitlam**.—**Coquitlam** (49° 122" SW.). Several gravel pits are operated within the township for the purpose of road maintenance and construction. Gravel is mined by a small diesel shovel. Gravel is either crushed in a portable crusher or used as pit-run.

Coquitlam (49° 122' S.W.). Jack **Cewe**, owner and manager.  
 Jack **Cewe** This pit is about 3 miles north of Coquitlam on Pipe Line Road.  
 Blacktop Ltd. The deposit, being part of the Mary Hill **outwash**, is of a **glacio-fluvial** origin and represents **outwash** of sand and medium to coarse gravel with minor interbedded lenses of till.

Gravel is mined from **30-foot** faces by a 1 -cubic-yard-capacity diesel-driven shovel. It is loaded onto trucks for transportation to local markets as pit-run gravel or is crushed and sized for use by an adjacent asphalt road-materials plant. **Nine** men were employed.

Coquitlam (49° 122' S.W.). Company office, 902 Columbia Gilley **Bros.** Limited Street, New Westminster. J. H. Gilley, general manager; James (**Maryhill** Division) C. Gilley, production supervisor; E. Johnston, superintendent.

This pit and its plant are on the Fraser River near Coquitlam. Sand and gravel are mined from **30-foot** faces by a **2½-cubic-yard** diesel-driven shovel and trucked by **12-cubic-yard** trucks to a crushing plant. Crushed rock is distributed to two washing plants. Sand, gravel, and crushed products produced from this property are transported by scows to markets. Forty-five men were employed.

**S.** and **S.** Gravel **Pit.**—Coquitlam (49° 122' S.W.). N. P. **Stromgren** and C. B. Scott, owners. This pit is on Pipe Line Road north of Coquitlam. Gravel is mined from low gravel faces by a diesel-driven shovel or an overhead loader and is either crushed in a portable crusher or sold locally as run-of-pit. Four men were employed.

Coquitlam (49° 122' SW.). Company office, Coquitlam. This Scott **Bros.** Ltd. company operates several small pits near Coquitlam. The Lucas pit on Pipe Line Road, the **Jacoby** pit on the Coquitlam River about 2 miles north of the Dewdney truck-road, and from several areas along the banks of the Coquitlam River. Gravel is mined by overhead loader onto trucks and sold as pit-run or is crushed and screened. Four men were employed.

Corporation of the Municipality of **Burnaby.** — **Burnaby** (49° 122° S. W.). S. Thompson, works superintendent. The pit, on Stride Avenue, is operated by E. R. Taylor Construction Co. Ltd. for the Municipality of Burnaby. Gravel is mined by a 1-cubic-yard diesel-driven shovel. It is loaded onto trucks and transported to a portable crusher or is used as run-of-pit gravel.

Indian Arm (49° 122' S.W.). Office, Port Mellon. T. Enemark, Enemark **Construc-** president. This pit is on the south half of Lot 1, District Lot 1027, tion Limited Township 6, Range 7, west of the 7th meridian. It is on the west shore of Indian Arm near **Clementine** Creek. Coarse gravel and rock is mined from talus slopes and creek bottoms by **1½-** and **2½-cubic-yard-capacity** diesel-driven shovels. It is then trucked and dumped directly on scows for shipment to local markets. While operating, fourteen men are employed and production is at the rate of 25,000 cubic yards a month.

Company office, 1051 Main Street, **Vancouver**; George B. **McKeen**, Deeks-**McBride** president; H. W. Rhodes, vice-president, production and develop- Ltd. ment; J. W. **Sharpe**, general manager. Two **gravel** pits and crushing plants were operated during 1958 by this company. One pit is near Coquitlam (49° 123' S.E.), and the other is near the mouth of Seymour Creek (49° 123' S.E.). At the Coquitlam pit, gravel is mined with a 1-cubic-yard-capacity electrically operated dragline and is transported by a conveyor belt to a jaw crusher and then to a washing plant. The washed and sized gravel is stored in steel bunkers and is sold locally or used in a ready-mix cement plant. Twelve men were employed.

At the Seymour plant, gravel is mined by a 7-cubic-yard dragline at the edge of **Burrard** Inlet. Gravel is transported by conveyors to a washing plant. Crushed, washed, and sized gravel is shipped by scow or truck or is used in a ready-mix plant. Twenty men were employed.

Lynn timer (49° 123' SE.). Company office, Lynn timer. W. J. Highland Sand and Barrett-Leonard, president and general manager; D. F. Spankie, Gravel Company director. This company operates two plants—one on East Keith Road, Lynn timer, and one at 2962 **Lambert** Road, Langley Municipality. At the Lynn timer plant, sand, gravel, crushed products, and road materials are produced. Material is mined from low gravel faces by a 7-cubic-yard diesel-driven shovel and is transported to a crushing, screening, and washing plant. Gravel purchased from local supplies is also prepared in this plant. Eleven men were employed.

At the Langley plant, gravel is mined from low gravel faces by shovel and trucked to a plant, where it is washed, crushed, and sized. Seven men were employed.

During 1958, 163,810 cubic yards of material was handled by these plants, which involved the following products: Crushed rock, 25,892 cubic yards; sand and gravel, 50,321 cubic yards; crushed fills, 77,781 cubic yards; bank-run fill, 29,866 cubic yards.

**Maclynn** Gravel Co. Ltd.-Lynn timer (49° 123' S.E.). Company office, Keith Road, Lynn timer. A. D. MacMillan, owner and operator. Gravel is dug by dragline from the bottom of Lynn Creek. The run-of-pit gravel is sold locally. Three men were employed.

West Vancouver Municipality (49° 123' S.E.). C. W. Bridge, Capilano Crushing general manager. This company operated two crushing and washing plants—plant No. 1 at 606 Marine Drive, West Vancouver, and plant No. 2 at 33 East First Avenue, Vancouver. Gravel is mined by dredging the foreshore near the mouth of the Capilano River. Two diesel-driven draglines are used to remove the gravel. One of these loads gravel onto trucks for transport to plant No. 1; the other loads gravel onto scows for transport to plant No. 2. Total 1958 production from both plants was approximately 330,000 cubic yards.

West Vancouver Municipality (49° 123' SE.). Office, Capilano Post Office. T. C. Routledge, president. This company operates two pits—No. 1 on the Indian reservation at the lower end of Lower Capilano Road and No. 2 at the mouth of Lynn Creek at the lower end of Brooksbank Avenue, North Vancouver. In both pits, gravel is scraped by a 7-cubic-yard scraper from underwater deposits and is conveyed to crushing, screening, and washing plants. The production in 1958 was 70,000 cubic yards of run-of-pit and 150,000 cubic yards of screened and crushed material. Twenty men were employed.

Construction Aggregates Ltd. **Britannia** Beach (49° 123' N.E.). Company office, 628 **Carnarvon** Street, New Westminster. Gravel is mined by scraping material from a high bank into a large hopper. The oversized rock is removed and the finer sizes of gravel are conveyed by an inclined belt to a washing and screening plant. The fine sand is treated in an Aitkens classifier to remove fine deleterious material. The sand and gravel are shipped by scow or railroad to markets. Eight men were employed.

Hillside (49° 123' S.E.). Company office, 1075 Main Street, Hillside Sand & Gravel Limited Vancouver; plant, Hillside. J. E. Buerk, manager; Ray Kehoe, superintendent. This pit is on the west shore of Howe Sound and is accessible by road from **Gibsons** Landing. Gravel is mined by washing with a constant flow of water cascading over the high pit face. Gravel is

loaded by a %-cubic-yard diesel-driven shovel into 15-cubic-yard Euclid trucks and transported to a crushing and washing plant. Washed and sized gravel is loaded onto scows for transportation. The plant was equipped with individual electric motors. These replaced the water-powered drives formerly used in screening, conveying, and washing the gravel.

Butler Brothers  
Supplier Ltd.\*  
Royal Oak (48° 123° S.E.). Office and plant, Keating Cross-road. Gravel is blasted or is dug from gravel faces by diesel-driven shovels and an overhead loader. It is transported to a washing and sizing plant or sold as pit-run. A ready-mix plant furnishes concrete for local sales. In 1958, 156,802 yards of gravel was mined. Six men were employed.

McIntyre & Harding  
Gravel Company  
Limited\*  
Saanich (48° 123° N.E.). Company office and plant, Royal Oak Post Office, Saanich. Gravel is dug from gravel faces by ½-cubic-yard diesel-driven shovels and is transported by trucks to a chute and grizzly. It is then conveyed to a washing and cleaning plant where sand, gravel, and washed and sized products are produced. A concrete plant for making concrete bricks, building-blocks, and drain-tile is also operated. In 1958, 45,479 cubic yards of gravel was produced. Sixteen men were employed.

Evans, Coleman &  
Johnson Bros. Ltd.\*  
Albert Head (48° 123° SE.). Company office, 900 Wharf Street, Victoria; plant, Royal Bay. D. E. Smith, manager; B. W. Parker, plant superintendent. Two plants are operated by this company, both of which are in the vicinity of Royal Bay. At plant No. 1, sand and gravel are mined by using a scraper on a slack-lie cableway to loosen packed gravel from the high face. Gravel is loaded by a 1 %-cubic-yard shovel into a hopper, where it discharges onto a conveyor belt and is conveyed to the plant. Gravel is crushed, screened, washed, and classified, and the products are shipped by scow to markets.

At plant No. 2, gravel is dug by a diesel-driven shovel from a low face, loaded onto trucks and transported to a washing and cleaning plant.

Sand, gravel, and crushed products are sold locally. The production from both pits was 354,905 cubic yards in 1958. Twenty-two men were employed.

S. H. Marriott  
Sand and Gravel\*  
Courtenay (49° 124° N.W.). Office, Courtenay. S. H. Marriott, manager and operator. This pit is beside the Courtenay-Cumberland road, 2½ miles from Courtenay, and is operated on a lease from Canadian Collieries Resources Limited. Gravel is mined from a high face with a ¾-cubic-yard gasoline-driven mobile loader. The gravel is fed to a small rotary screening plant, where it is sized into two products-under 2 inches and over 2 inches. Three men are normally employed at the quarry.

A. V. Richardson  
Ltd.\*  
Duncan (48° 123° N.W.). Company office, Duncan. This property is owned and operated by Butler Brothers Supplies Ltd. The pit is 4 miles from Duncan on the Lake Cowichan Road. Pit-run gravel and washed and screened sand, gravel, and rock are produced. Gravel is mined by an overhead loading machine and also by scraping. Pit-run gravel that is not used directly as fill or road dressing is washed and sized in an adjoining plant. A ready-mix plant uses the washed products as aggregate in concrete for local sales. During the year 15,500 cubic yards of gravel was produced. Three men were employed.

\*BYR. B. Bonar.



## SILICA

**Mountain Minerals Limited\*** Golden (51° 116" S.W.). Company office, **Meech Building**, P.O. Box 273, Lethbridge, Alta.; R. A. **Thrall**, managing **director**; William **MacPherson**, superintendent. This company holds two leases on a silica property at **Moberly Mountain**, 5 miles north of Golden. A **crew** of four men was employed for intermittent periods during 1958 trenching and drilling along the outcrop. Six open-cuts of various sizes were made, and four diamond-drill holes totalling 500 feet **were** completed.

**Queen†** Sheep Creek (49° 117" SE.). F. Rotter, of **Salmo**, leased the Queen mine dump near the junction of Sheep and **Waldie** Creeks from Sheep Creek Mines Limited. The quartzitic dump rock was loaded onto trucks by a front-end loader and trucked to the Trail smelter for use as silica flux.

**Quartzite Point Quarry‡** Shuswap Lake (50° 119" N.E.). A bed of massive white **quartzite** outcrops along the beach on the east shore of Shuswap Lake at **Quartzite** (Marble) Point, about 7 miles north of **Sica-mous**. One small knob of the **quartzite** is exposed at the edge of the water below two cabins on the point. About 300 feet north of this outcrop the main **quartzite** exposure is visible. It is about 80 feet wide and can be traced for 500 feet along the shore. The **quartzite** forms a bed between layers of gneiss striking northward and dipping flatly to the east. There is an old quarry 40 feet long and 15 feet wide near the south end of the main exposure.

The **quartzite** is milky white and contains few visible impurities. One sample consisting of chips taken across the entire width of the exposure at the quarry contained 97.48 per cent **SiO<sub>2</sub>**, 0.59 per cent **Al<sub>2</sub>O<sub>3</sub>**, and 0.02 per cent Fe.

It is reported that in 1923 a shipment of 100 tons of **quartzite** was made from this deposit to Trail to make hydrofluosilicic acid.

[References: *Minister Of Mines, B.C., Ann. Rept., 1923, p. 172; Mines Branch, Ottawa, Publ. No. 686, 1928, p. 38.*]

**Oliver Silica Quarry§** Oliver (49° 119" SW.). Pacific Silica Limited. Registered office, 717 West **Pender** Street, Vancouver; quarry office, Box 397, Oliver. Ivan A. Hunter, manager. The Oliver silica quarry is on the Gypo mineral claim, owned by The Consolidated Mining and Smelting Company of Canada, Limited, and leased to Pacific Silica Limited. This claim is less than a quarter mile west of Highway No. 97, almost 1 mile north of Oliver.

The Gypo claim has been Crown-granted for many years. Apparently the first interest in it **centred** on a small vein containing scattered sulphides. In 1926 the Consolidated Mining and Smelting company carried out exploratory work and made a small shipment from the claim. The shipment was of value chiefly because it provided siliceous flux. Between 1941 and 1944 R. C. McKay shipped approximately 800 tons of **fine-grained** mica for grinding from a lens alongside a large quartz vein on another part of the claim. Later Interior Contracting Company Limited leased the claim from the Consolidated Mining and Smelting company and intermittently quarried small amounts of quartz from the large quartz outcrop. The quartz was used for **flux** and stucco dash. In July, 1953, Stucco Supply Company, of Vancouver, subleased the quarry from Interior Contracting Company. Stucco Supply Company operated the quarry until April, 1955,

\* D. Morgan.

† E. Merrett.

‡ J. McCammon.

§ W. McCammon and James.

when the sublease was taken over by Pacific Silica Limited, originally of Seattle. In 1956 this latter company opened a second quarry and built a separate plant to produce coarse lump silica for the metallurgical industry, meanwhile maintaining production of stucco dash, roofing rock, and other fine-sized products from the original plant and quarry. Operation of the new No. 2 plant and quarry was carried out by Interior Contracting Company under contract. In September, 1957, Pacific Silica took over the entire operation and now runs both plants and both quarries.

The quarries are in a large lens of barren quartz exposed up the front of a bluff that rises at the edge of the valley floor. The lens is vertical, strikes west, is 500 feet long and 200 feet wide, and has a vertical exposed height of 278 feet. To the east the lens plunges under the drift of the valley floor, to the north and south it is enclosed by walls of granite porphyry, and to the west it lenses out abruptly in the granite. Two small quartz outcrops 100 and 200 feet to the west probably are faulted segments of the main mass.

The quartz in the lens is mostly milky white, although some patches are subtranslucent pale bluish grey and other small patches, around scattered clots of pyrite, are rusty. Some parts of the quartz body are highly fractured and others are massive. In the fractured zones parting planes one-thirty-second to one-quarter inch apart are strongly developed. In some places two sets of planes approximately at right angles are present, and in others three sets not at right angles and yielding rhombohedral fragments have formed. In the quarry face flat striated surfaces as large as 10 feet long and 3 feet wide are visible. These are thought to be faces of incompletely formed quartz crystals.

Impurities are scarce in the quartz. A few small patches of pyrite were seen and small amounts of copper sulphide have been reported. Near the centre of the lens a small patch of granular sea-green fluorite was noted. This is reported to be the remnant of a lens from which about 32% tons of fluorite was shipped to markets in Washington in 1958. A small inclusion of granite was exposed in the north part of the face of the second bench in the quarry.

The rock enclosing the quartz is a coarse-grained granite porphyry containing rectangular feldspar crystals 1 inch long.

The contact between the quartz and granite varies. In some places the contact is faulted or sheared. In other places the contact is gradational from granite through highly quartzose granite to pure quartz within 3 or 4 inches. In still other places a zone 6 inches to as much as 5 feet wide consisting largely of fine flakes of mica lies between the quartz and the granite.

The quartz is cut by several small faults.

Quarrying is carried on by means of three main benches. The lowest bench, the old No. 1 quarry, is at the base of the exposure; the second bench, the old No. 2 quarry, is 135 feet above No. 1; and the third bench is 25 feet above No. 2. The lip of the quarry and top of the bluff is 118 feet above the third bench. Two small sub-benches have been started around the northwest corner between the third bench and the quarry lip.

The quartz is blasted from the quarry face, loaded onto trucks by a diesel-driven shovel, and hauled to the two crushing plants. Selected white rock is treated in No. 1 plant, which is adjacent to No. 1 quarry. Here the rock is crushed to -- $\frac{1}{2}$ --inch size, screened, and sacked. It is sold as stucco dash, roofing rock, and similar products, chiefly in British Columbia and Alberta. At No. 2 plant, located on a small flat 1,200 feet northwest of the quarries, the crushed rock is separated into four sizes ranging from 5-inch to -- $\frac{1}{4}$ --inch. This rock is shipped in bulk to metallurgical plants in Washington and Oregon for making ferro-silicon and silicon carbide.

During 1958 the average crew employed, including office staff, was sixteen. Estimated production was 9,745 tons from No. 1 plant, 32,820 tons from No. 2 plant, and 15,000 tons stockpiled. Approximately 200,000 tons of quartz has been mined from this deposit to date.

The analyses of four samples taken across the quarry faces as indicated in Figure 4 are tabulated below :—

Sample	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe
	Per Cent	Per Cent	Per Cent
1.....	97.40	0.70	0.03
2.....	97.48	0.75	0.04
3.....	98.12	0.86	0.03
4.....	98.78	0.61	0.02

NOTE.—Samples were prepared for analysis by grinding in a porcelain ball mill so some contamination by alumina is represented in the above results.

[References: *Minister of Mines, B.C., Ann. Repts., 1953, p. 198; 1955, p. 102; 1956, p. 159.*]

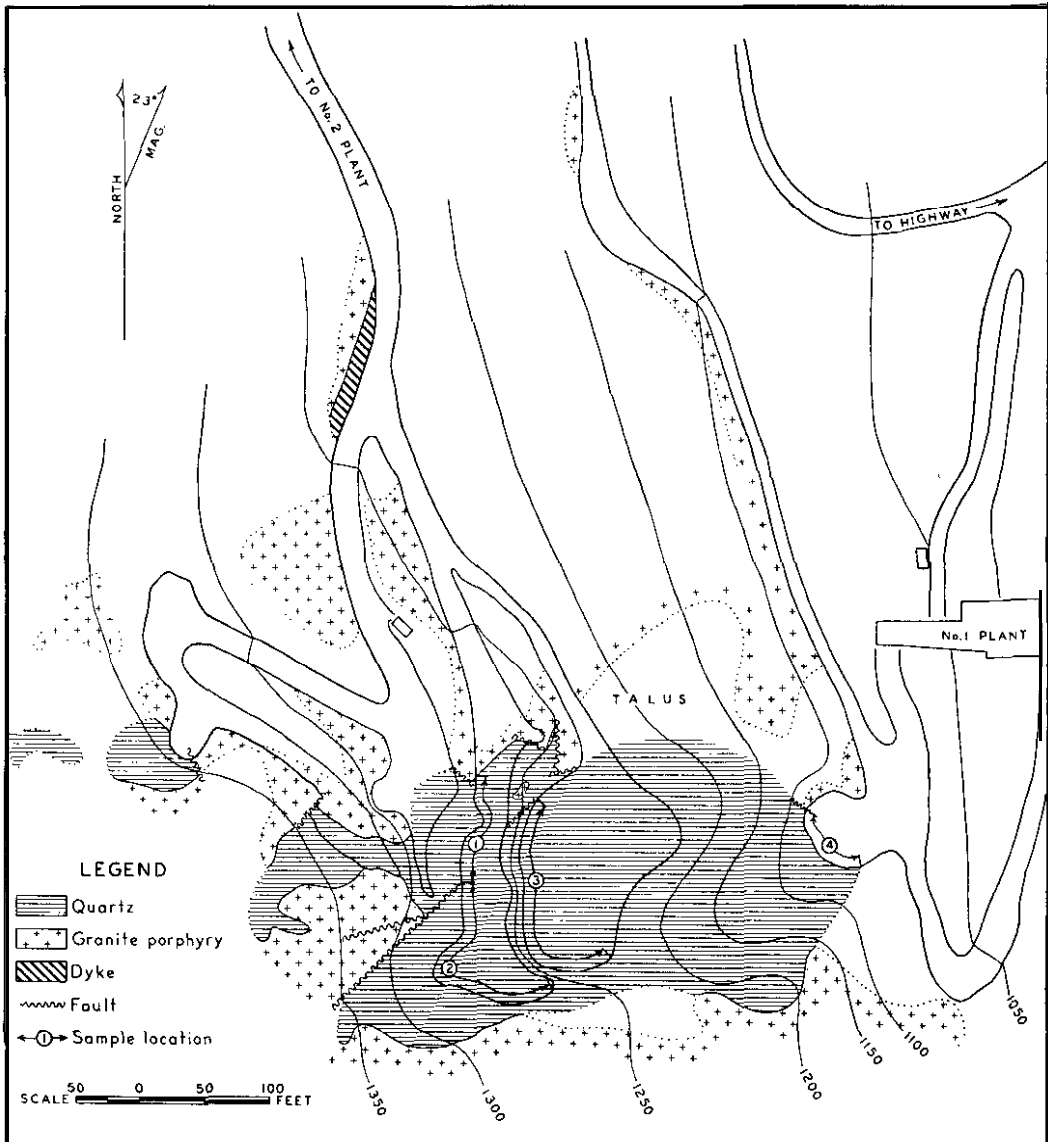


Figure 4. Oliver Silica Quarry.

# Petroleum and Natural Gas

By J. D. Lineham

## CONTENTS

	PAGE
EXPLORATION.....	107
DEVELOPMENT .....	108
RESERVES .....	108
PRODUCTION.....	108
Gas-gathering System .....	108
Pipe-lines .....	111
WELL RECORDS, WELL INFORMATION, AND STATISTICS .....	111
Well Records .....	111
Well Information .....	111
Statistics .....	111
Field Office .....	111
Well Samples .....	111

## EXPLORATION

Twenty-one seismic parties did work during 1958. Although a few profiles were shot in the Flathead River area south of Fernie and on Graham Island, the most northerly of the Queen Charlotte Islands, most of the surveys were made in northeastern British Columbia and consisted of reflection shooting.

Surface geological mapping and some structure test-drilling programmes in northeastern British Columbia were continued by various oil companies. Geological surveys were made also in other sedimentary basins. Photogeological studies were used extensively to supplement the surveys.

Exploratory drilling was concentrated in northeastern British Columbia, where sixty wildcat wells were operated, of which two were completed as oil discoveries and nine as gas discoveries.

A well suspended in 1957, Union-Hudson's Bay Milligan Creek No. 73-G, was completed as a successful oil discovery in 1958. A new oilfield was discovered in the Beatton River area, north of the Milligan Creek field, when Triad Beatton River No. J-38-b was completed as an oil well in the Triassic Halfway formation. Late in the year a good show of oil in the Lower Cretaceous Bluesky formation was obtained in Triad Beatton River K-39-d well, about 5 miles west of the Triassic discovery. The well was being tested at the end of the year.

The following wells, all discoveries, were completed as gas wells:—

Well Name	Zone
Dome Basco Laprise Creek No. 35-H-94-G-8.....	Triassic, Baldonnel formation.
Fargo <i>et al.</i> Blueberry No. 17.....	Mississippian, Rundle group.
Gulf States Clarke Lake No. 1A.....	Devonian, Slave Point formation.
Pacific Fort Nelson No. 1 .....	Mississippian, Rundle group.
Pacific Imperial Jedney No. 99-J. ....	Triassic, Halfway formation.
Phillips Town 'A' No. 1 .....	Mississippian, Rundle group.
Sinclair Canadian Atlantic No. B-5-1.....	Triassic, Baldonnel formation.
Sinclair Canadian Atlantic B-13-2.....	Triassic, Baldonnel and Halfway formations.
Texaco N.F.A. Boundary Lake No. 7 .....	Permo-Pennsylvanian.

At the close of 1958, development of the **Beaton** River and Milligan Creek oil areas was progressing actively while the general search for oil and gas continued, mainly along a trend from the Buick Creek field to the Fort Nelson area.

Wells operated in other parts of the Province were **Hercon** Key Evans No. 1 in the Vancouver area, Charter et al. **Saturna** No. 1 on **Saturna** Island, and five wells drilled by Richfield Oil Corporation on Graham Island.

#### DEVELOPMENT

Nineteen drilling contractors operated over forty rigs during 1958. The maximum number of rigs active in any month was thirty-two during the month of January.

Of the 112 wells operated, twenty-three were completed as gas wells, seventeen were completed as oil wells, fifty-one were abandoned, one was suspended, and twenty were drilling at the end of the year. In addition, ten approved locations were awaiting rigs. During August ten wells, previously classified as potential gas wells, were **abandoned**.

A total of 484,287 feet was drilled during the year, with February and July accounting for the greatest and least monthly totals of 76,385 feet and 19,273 feet, respectively. A summary of wells drilled during 1958 is shown in Table I.

Completions made during the year increased the total potential producers to 148 gas wells and thirty-nine oil wells.

Eighteen areas were designated as oil or gas fields, and the descriptions of the Blueberry and of the previously designated Boundary Lake, **Pouce** Coupe, and Fort St. John fields were amended. Information concerning all fields designated to date is given in Table II. The number of development wells completed within these fields were: **Nine** oil wells in Boundary Lake, three oil wells in Milligan Creek, three gas wells in **Kobes-Townsend**, two gas wells each in East Blueberry and Blueberry, and one gas well each in Boundary, Buick Creek, Dawson Creek, Gundy Creek, Halfway, and Fort St. John Southeast.

#### RESERVES

A summary of the reserves, together with explanatory notes, is given in Table III.

The gas reserve has not increased as much as anticipated, but this situation is considered merely a temporary one in the development of northeastern British Columbia. On the other hand, the oil reserve has increased substantially, and the time is fast approaching when an oil pipe-line will be justified.

#### PRODUCTION

Sixty-nine gas wells produced 64,051,785,000 cubic feet of gas and twenty-eight oil wells produced 512,359 barrels of crude oil during the year. The highest monthly production was in December, when 6,642,643,000 cubic feet of gas and 68,180 barrels of oil were produced.

Westcoast Transmission Company Limited purchased the gas production. The crude oil was delivered to refineries at Dawson Creek and **Grande** Prairie, Alta.

A summary of the monthly production of gas, oil, and products recovered at the **McMahon** plant is given in Table IV.

#### GAS-GATHERING SYSTEM

The gas-gathering system, owned and operated by Westcoast Transmission Company Limited, extends from the plant at Taylor southeast to the Peace River area of northwestern Alberta and northwest along the Alaska Highway, tapping one of the largest

potential gas-producing areas in Canada. The wet, sour gas part of the system supplies the McMahon gas-processing plant. The main, part of the system consists of 3.9 miles of **12¾-inch** line to the Fort St. John Southeast field and 8 miles of **18-inch** line to the Fort St. John field; 38 miles of **26-inch** line, 17.8 miles of 20-inch line, 18 miles of **18-inch line**, and 11 miles of **12¾-inch** line extend to the Highway field just beyond Mile-post 121 on the Alaska Highway.

The laterals, which service the gas-producing areas, consist of 2.9 miles of **4½-inch** line to the Red Creek field, 6.4 miles of **8⅝-inch** line and an extension of 7.4 miles of **4½-inch** line to the Stoddart area and Montney field, 15.7 miles of **20-inch** line to the Buick Creek field, 20 miles of **12¾-inch line** to the Halfway and Kobes field and an extension of 5.5 miles of **8⅝-inch** line to the Townsend wells, 6 miles of **8⅝-inch** line to the Blueberry and West Blueberry fields, and 6 miles of **10¾-inch** line to the Gundy Creek field.

This gathering system is designed to transport between 300 and 400 millions of cubic feet of raw gas plus several thousand barrels of liquid hydrocarbons per day.

The dry-gas part of the system in British Columbia is located south of the Peace River. It delivers dry gas from two British Columbia fields and from Alberta to the **30-inch** main transmission-line near the McMahon plant. The main 26-inch **gathering-line** extends 37 miles to the British Columbia-Alberta boundary, and from it **8⅝-inch** laterals extend 5.45 miles to the Dawson Creek field and 6.7 miles to the Kiskatinaw field.

#### *Gas Plant and Refinery Installations in the Peace River District*

The McMahon gas scrubbing and refining plant, one of the world's largest of its kind, is at Taylor on the banks of the Peace River about 36 miles northwest of Dawson Creek. The final unit of the plant went into operation in mid-February, 1958. The purpose of the plant is to separate the condensate from the sour, wet natural gas gathered from wells in the area, sweeten and dehydrate the gas, extract recoverable liquid hydrocarbons, and convert them into final products including propane, butane, finished motor and aviation fuels, kerosene, and diesel oil.

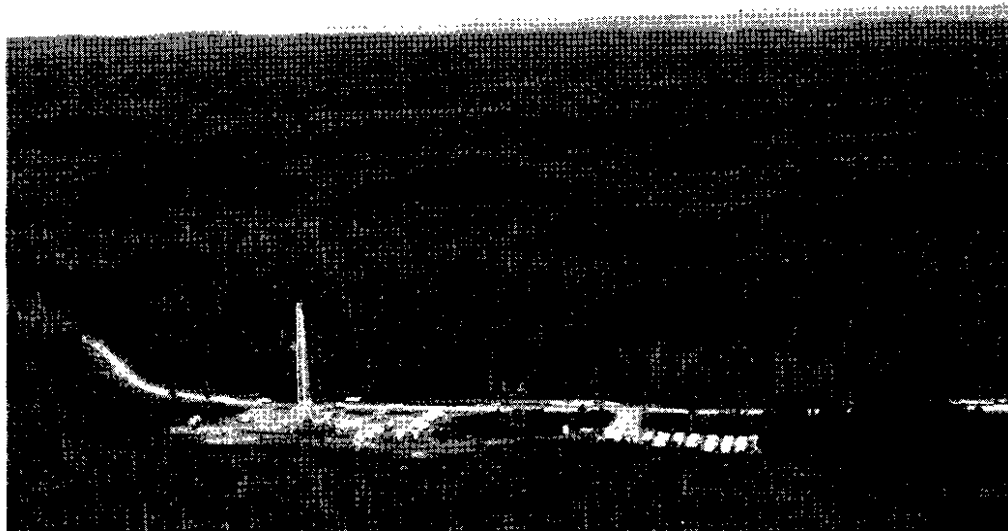
The major processing facilities are: Amine-treating and solid absorbent type dehydration, absorption, and distillation, light ends fractionation, condensate stabilization and fractionation, and hydrogen treating and catalytic reforming.

The scrubbing plant, owned by Westcoast Transmission Company Limited and operated by Pacific Petroleum Ltd., has a capacity sufficient to treat some 345 million cubic feet of raw gas per day to produce 300 million cubic feet of pipe-line gas. The plant capacity can be increased with only minor alteration to produce 400 million cubic feet of pipe-line gas per day.

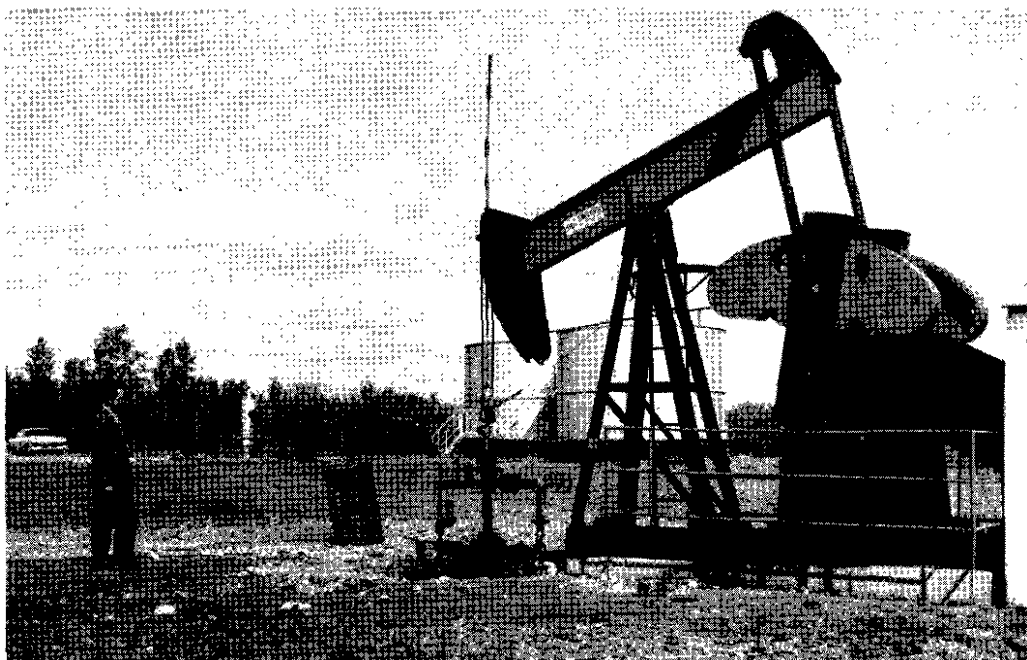
The adjacent refinery, owned jointly by Phillips Petroleum Company, of Bartlesville, Oklahoma, and Pacific Petroleum Ltd., and operated by Pacific Petroleum Ltd., has a capacity of approximately 3,000 barrels per day. The refining plant takes the liquid fractions from the gas scrubbing plant and refines them to make the finished products.

The sulphur recovery plant, with a capacity of 425 tons per day, is owned and operated by Jefferson Lake Petrochemicals of Canada, Ltd., a subsidiary of Jefferson Lake Sulphur Company of the United States.

The refinery at Dawson Creek, owned by Pacific Petroleum Ltd. and Phillips Petroleum Company, has a capacity of approximately 2,500 barrels per day that will be increased to 3,500 barrels per day by the end of 1959. This refinery processes asphaltic crude to supply the local market with asphalt paving for the Alaska Highway.



Richfield Mic-Mac-Homestead Nadu River No. 1 well drilling on Graham Island.



Well head with pump in operation, Fort St. John oilfield.

## PIPE-LINES

The initial daily capacity of Westcoast Transmission Company's 650-mile-long 30-inch pipe-line is reported to be 400 million cubic feet of natural gas, with four compressor stations. A maximum capacity of 660 million cubic feet per day can be obtained with the addition of more compressor stations,

Natural gas is distributed in British Columbia chiefly by Inland Natural Gas Co. Ltd. and British Columbia Electric Company Limited. The former company has 360 miles of main transmission-line, branch lines, and distribution systems, extending from Savona to Kamloops, Salmon Arm, Vernon, Kelowna, Penticton, Rossland, Trail, and Nelson. Communities adjacent to the line draw natural gas from it.

Natural gas for export to the United States is delivered at Huntington to Pacific Northwest Pipeline Corporation.

## WELL RECORDS, WELL INFORMATION, AND STATISTICS

## WELL RECORDS

The Petroleum and Natural Gas Branch maintains complete records of all exploratory and development wells drilled within the Province. Daily drilling reports on every well drilled are submitted each week by the operator and, on the completion of the well, a formal well-history report, including copies of all logs, drill-stem test results, analyses, and general well information, as well as geological, engineering, and completion summaries are required. The information is condensed and recorded on well cards.

The production of crude oil, natural gas, liquefied petroleum gas products and sulphur is reported monthly by producers and plant operators on forms provided by the Department. The information is recorded on a card system and indexed according to well, pool, and field.

## WELL INFORMATION

One of the main functions of the Branch is the collection, compilation, and classification of data concerning the exploration, drilling, and production phases of the oil and gas industry in the Province. All non-confidential data are made available at a nominal charge to interested persons, by opening records for examination, by reproduction of records, or by publication. Certain information remains confidential for a specific period of time to afford reasonable protection to the operator.

## STATISTICS

The Branch publishes monthly the Drilling and Land Report and also the Monthly Oil and Gas Report comprising summaries on drilling and production.

## FIELD OFFICE

The Department maintains a field staff at Dawson Creek to enforce the regulations under the "Petroleum and Natural Gas Act" in northeastern British Columbia. Inspections are made of all phases of the drilling and production activity, which includes drilling rigs, completed oil and gas wells, tank batteries, gas meters, and abandoned locations. Production tests, sampling procedures, and various pressure tests are also witnessed or carried out by the Department personnel.

## WELL SAMPLES

Unless otherwise directed, any operator who drills a well for petroleum or natural gas is required to take a sample of bit cuttings at least every 10 feet of depth.



All material from core samples must be preserved in **labelled** boxes not more than 36 inches long and must be delivered to the Department when required. Normally all cores from wells drilled in northeastern British Columbia are stored in the Department of Mines core-storage depot in **Pouce Coupe**. However, since the depot became filled in September, 1957, each operator has been required to provide temporary core storage. Cores taken during 1958 from wells drilled in the Vancouver area, on **Saturna** Island, and on Graham Island are stored at Victoria.

Samples of all well cuttings are forwarded by the operator to the stratigraphic laboratory in Victoria. A part of each 10-foot sample is washed, dried, and filed in a **labelled** glass bottle in sequence with **other** samples from the same well. A complete set of samples from each well is available for examination at Victoria. Two additional sets of samples are bottled and shipped—one to the laboratory of the Geological Survey of Canada at Calgary and one, since January, 1958, to the Petroleum and Natural Gas Branch field office at 1805 One Hundred and Eighth Avenue, **Dawson** Creek. During 1958, 30,938 samples were washed and bottled in Victoria.

STATISTICS

Table I.—Wells Drilled or Operated, 1958

Well Name	Date Spudded	Date Rig Released	Total Depth	1958 Footage	Status at Dec. 31, 1958
<i>Northeastern British Columbia</i>					
B.A.-Shell Klua Creek No. 2	Jan. 19, 1958	Mar. 7, 1958	7,400	7,400	Dry and abandoned.
Calvan Trutch Creek No. 1	Dec. 9, 1958			3,410	Drilling.
Decalta Boundary Lake No. 14-32	May 27, 1958	June 20, 1958	4,580	4,580	Triassic (Bdy. L. Zone), oil well.
Dome Basco Laprise Creek No. 35-H-94-G-8	Dec. 26, 1957	Mar. 9, 1958	5,138	4,497	Triassic (Baldonnel), gas well.
Dome Prosper Martin Creek No. 1	Sept. 28, 1958	Nov. 8, 1958	4,697	4,697	Dry and abandoned.
Fargo <i>et al.</i> Blueberry No. 19	Dec. 20, 1957	Feb. 7, 1958	4,362	1,234	L. Cretaceous (Cad.-Nik.), gas well.
Fargo <i>et al.</i> Blueberry No. 21	Mar. 26, 1958	May 7, 1958	4,400	4,400	L. Cretaceous (Cad.-Nik.) and Triassic (Baldonnel), multi-zone gas well.
Fargo <i>et al.</i> Blueberry No. 22	May 12, 1958	June 22, 1958	5,721	5,721	Dry and abandoned.
Fargo <i>et al.</i> East Blueberry No. 7	Aug. 24, 1954	Sept. 19, 1954	4,430		Dry and abandoned.
Fargo <i>et al.</i> East Blueberry No. 7 deepened	Apr. 14, 1958	June 20, 1958	6,995	2,565	Triassic (Baldonnel and Halfway), multi-zone gas well.
Fargo <i>et al.</i> East Blueberry No. 17	Feb. 9, 1958	May 26, 1958	7,152	7,152	Mississippian (Rundle), gas well.
Fargo <i>et al.</i> East Blueberry No. 25	Dec. 12, 1958			4,082	Drilling.
Fargo <i>et al.</i> East Blueberry No. 26	Dec. 22, 1958			1,854	Drilling.
Fargo <i>et al.</i> Halfway No. 4	Feb. 16, 1958	Mar. 22, 1958	3,718	3,718	Triassic (Baldonnel), gas well.
Fargo <i>et al.</i> South Blueberry No. 24	July 30, 1958	Dec. 16, 1958	6,983	6,983	Dry and abandoned.
Fargo <i>et al.</i> West Blueberry No. 20	Jan. 6, 1958	Feb. 2, 1958	4,300	4,300	Dry and abandoned.
FPC-Richfield Brenot Creek No. 1	Nov. 9, 1957	July 30, 1958	7,796	7,095	Dry and abandoned.
FPC-Richfield North Daiber No. 1	Oct. 14, 1958			5,670	Drilling.
Gulf States Bonnie Creek No. 1	Dec. 9, 1958			4,360	Drilling.
(Gulf States) Chuatse Creek No. 1	Feb. 20, 1958	Mar. 5, 1958	2,306	2,306	Dry and abandoned.
(Gulf States) Clarke Lake No. 1	Dec. 27, 1957	Jan. 28, 1958	2,500	1,990	Dry and abandoned.
Gulf States Fort Nelson No. 2	Mar. 11, 1958	May 7, 1958	7,889	7,889	Dry and abandoned.
Gulf States Gundy Creek No. 7	June 6, 1958	July 16, 1958	5,038	5,038	L. Cretaceous (Cad.-Nik.) and Triassic (Baldonnel), multi-zone gas well.
Gulf States-Imperial Clarke Lake No. 1-A	Jan. 31, 1958	Mar. 27, 1958	6,438	6,438	Devonian (Slave Point), gas well.
Gulf States-Imperial Clarke Lake No. 2	Nov. 8, 1958			6,565	Drilling.
(Gulf States) Kotcho Lake No. 2	Dec. 20, 1957	Feb. 12, 1958	7,240	5,055	Dry and abandoned.
Gulf States Kotcho Lake No. 3	Dec. 16, 1958			2,465	Drilling.
Gulf States Petitot River No. 1	Dec. 30, 1958			258	Drilling.
Gulf States Poplar Hills No. 1	Aug. 25, 1958	Oct. 24, 1958	7,291	7,291	Dry and abandoned.
Honolulu Imperial Progress No. 7-34	June 1, 1958	Sept. 14, 1958	8,374	8,374	Dry and abandoned.
Hudson's Bay-Union-Imperial Paddy No. 2	Jan. 17, 1958	Mar. 18, 1958	8,216	8,216	Dry and abandoned.
Imperial Calvan Altares 83-A-94-B-8	Dec. 15, 1958			3,179	Drilling.
Imperial Pacific Alces East No. 16-31-84-13	July 15, 1958	Aug. 6, 1958	4,746	4,746	Triassic (Bdy. L. Zone), oil well.
Imperial Pacific Boundary No. 6-3-85-14	June 1, 1958	June 19, 1958	4,024	4,024	Triassic (Bdy. L. Zone), oil well.
Imperial Pacific Boundary No. 8-3-85-14	Aug. 23, 1958	Sept. 12, 1958	4,061	4,061	Triassic (Bdy. L. Zone), oil well.
Imperial Pacific Boundary No. 8-10-85-14	May 12, 1958	May 30, 1958	4,145	4,145	Triassic (Bdy. L. Zone), oil well.
Imperial Pacific Boundary No. 14-3-85-14	June 21, 1958	July 6, 1958	4,021	4,021	Triassic (Bdy. L. Zone), oil well.
Imperial Pacific Boundary No. 14-11					Location.

Table I.—Wells Drilled or Operated, 1958—Continued

Well Name	Date Spudded	Date Rig Released	Total Depth	1958 Footage	Status at Dec. 31, 1958
Imperial Pacific Boundary No. 16-3-85-14.....	May 11, 1958	May 30, 1958	4,095	4,095	Triassic (Bdy. L. Zone), oil well.
Imperial Pacific Boundary No. 16-11-85-14.....	Mar. 28, 1958	Apr. 26, 1958	4,695	4,695	Triassic (Bdy. L. Zone), oil well.
Imperial Pacific Boundary East No. 14-7-85-13.....	June 2, 1958	July 7, 1958	4,708	4,708	Triassic (Bdy. L. Zone), oil well.
				+1,525	(Crooked hole.)
Imperial Pacific Golata No. 8-29-83-15.....	June 21, 1957	Jan. 1, 1958	12,287	-----	Dry and abandoned.
Imperial Pacific Jedney No. 25-H-94-G-1.....	Aug. 21, 1958	Nov. 30, 1958	7,225	7,225	Dry and abandoned.
Imperial Pacific Windy Creek No. 11-23-81-72.....	Aug. 21, 1958	Nov. 19, 1958	5,400	5,400	Dry and abandoned.
Imperial Pan American Tattoo No. 26-B-94-0-11.....	Jan. 15, 1958	May 15, 1958	7,505	7,505	Dry and abandoned.
Pacific Boundary No. 12-10.....	Mar. 19, 1958	June 2, 1958	6,913	6,913	Triassic (Halfway), gas well.
Pacific Buick Creek No. 14.....					Location.
Pacific Buick Creek No. 16.....	July 1, 1958	July 20, 1958	3,922	3,922	Dry and abandoned.
Pacific Buick Creek No. 17.....	Sept. 11, 1958	Oct. 5, 1958	3,711	3,711	Buick Creek Sandstone, gas well.
Pacific Buick Creek No. 18.....	Oct. 9, 1958	Nov. 3, 1958	3,855	3,855	Dry and abandoned.
Pacific Fort Nelson No. 1.....	Feb. 1, 1958	April 21, 1958	7,477	7,477	Mississippian (Rundle), gas well.
Pacific Fort Nelson No. 2.....	Mar. 20, 1958	April 17, 1958	2,998	2,998	Dry and abandoned.
Pacific Fort Nelson No. 3.....	Nov. 5, 1958			6,485	Drilling.
Pacific Fort St. John No. 59.....					Location.
Pacific Fort St. John No. 70.....					Location.
Pacific Fort St. John No. 89.....					Location.
Pacific Fort St. John No. 98.....	Dec. 4, 1957	Jan. 17, 1958	5,030	699	Triassic (Halfway), gas well.
Pacific Imperial Cache Creek No. 1.....	Dec. 8, 1957	Feb. 7, 1958	5,564	1,352	Dry and abandoned.
Pacific Imperial Highway No. 1.....	Jan. 1, 1958	Apr. 2, 1958	7,763	7,763	Dry and abandoned.
Pacific Imperial Jedney No. 99-J.....	Sept. 9, 1958	Nov. 25, 1958	5,375	5,375	Triassic (Halfway), gas well.
Pacific Imperial Medana No. 47-G.....	Nov. 30, 1958			5,028	Drilling.
Pacific Scurry Dawson Creek No. 4.....	Dec. 10, 1957	Jan. 1, 1958	2,935	-----	L. Cretaceous (Cadotte), gas well.
Pacific Scurry Dawson Creek No. 6.....	Jan. 2, 1958	Jan. 17, 1958	2,923	2,923	Dry and abandoned.
Pacific Two Rivers No. 99.....	May 26, 1958	June 18, 1958	4,139	4,139	Dry and abandoned.
Pan American Beaver River No. A-1.....	Jan. 21, 1958			8,519	Drilling.
(Phillips) Beaton "A" No. 1.....	Jan. 5, 1958	Mar. 2, 1958	4,040	4,040	Dry and abandoned.
(Phillips) Blair "A" No. 1.....	Sept. 3, 1957	Jan. 4, 1958	8,700	-----	Dry and abandoned.
(Phillips) Kobes No. 2.....	Dec. 6, 1957	Mar. 14, 1958	5,247	2,235	Triassic (Charlie Lake), gas well.
(Phillips) Kobes No. 3.....	Nov. 23, 1957	Feb. 23, 1958	5,770	1,223	Dry and abandoned.
(Phillips) Kobes No. 4.....	July 24, 1958	Nov. 13, 1958	5,675	5,675	L. Cretaceous (Cadomin), gas well.
(Phillips) Kobes "A" No. 2.....					Location.
(Phillips) Kobes "A" No. 4-A.....	Nov. 8, 1957	Mar. 1, 1958	7,167	2,051	Dry and abandoned.
(Phillips) Kobes "B" No. 1.....	Mar. 13, 1958	June 29, 1958	7,472	7,472	Triassic (Charlie Lake) and Mississippian (Rundle), multi-zone gas well.
(Phillips) Milligan "A" No. 1.....	Feb. 15, 1958	Mar. 9, 1958	3,800	3,800	Dry and abandoned.
(Phillips) Puggins No. 1.....	Jan. 28, 1958			14,702	Drilling.
(Phillips) Town "A" No. 1.....	Dec. 5, 1957	Mar. 31, 1958	7,400	3,372	Mississippian (Rundle), gas well.
(Phillips) Town "A" No. 2.....	Aug. 30, 1958	Nov. 13, 1958	7,400	7,400	Dry and abandoned.
(Phillips) Umbach No. 1.....	Nov. 29, 1957	Jan. 27, 1958	6,010	1,809	Dry and abandoned.
(Phillips) Umbach No. 2.....	Dec. 10, 1958			4,446	Drilling.
Richfield Decalta-A. P. Con. Big Arrow Creek No. 2.....	Feb. 28, 1958	Mar. 14, 1958	3,805	3,805	Dry and abandoned.

Richfield Prespatou Creek No. 1	Jan. 14, 1957	Feb. 8, 1958	4,761	-----	Jurassic-Triassic, gas well.
Richfield Prespatou Creek No. 2	Jan. 23, 1958	Feb. 19, 1958	4,284	4,284	Dry and abandoned.
Sinclair Canadian Atlantic Calvan XB18 No. 1	Oct. 17, 1958	-----	-----	6,048	Drilling.
Sinclair Canadian Atlantic No. B-5-1	Feb. 5, 1957	May 30, 1958	8,957	2,722	Triassic (Baldonnel), gas well.
Sinclair Canadian Atlantic No. B-8-1	Jan. 26, 1958	May 27, 1958	10,447	10,447	Dry and abandoned.
Sinclair Canadian Atlantic No. B-13-1	Jan. 1, 1955	June 26, 1958	5,745	-----	Dry and abandoned.
Sinclair Canadian Atlantic No. B-13-2	Oct. 23, 1957	Sept. 17, 1958	13,734	7,595	Triassic (Baldonnel and Halfway), multi-zone gas well.
Sun Fort St. John No. 8-14	Oct. 29, 1958	Dec. 30, 1958	6,215	6,215	L. Cretaceous (Gething), oil well.
Texaco NFA Boundary Lake No. 6	Feb. 11, 1957	Feb. 16, 1958	4,192	-----	Dry and abandoned.
Texaco NFA Boundary Lake No. 7	Dec. 24, 1957	Feb. 6, 1958	5,346	2,920	Permian-Pennsylvanian, gas well.
Texaco NFA Boundary Lake No. 8	Feb. 12, 1958	Mar. 24, 1958	5,365	5,365	Dry and abandoned.
Texaco NFA Boundary Lake No. 9	Feb. 7, 1958	Mar. 5, 1958	4,328	4,328	Dry and abandoned.
Texaco NFA Buick Creek No. 15	Dec. 19, 1957	Jan. 17, 1958	4,508	1,022	Dry and abandoned.
Texaco NFA Nig Creek No. 8	Feb. 22, 1958	Mar. 27, 1958	4,764	4,764	Dry and abandoned.
Texaco NFA Nig Creek No. 9	Sept. 25, 1958	Oct. 20, 1958	4,562	4,562	Triassic (Baldonnel), gas well.
Triad Beaton River J-28-d	-----	-----	-----	-----	Location.
Triad Beaton River No. J-29-d	Nov. 10, 1958	Dec. 2, 1958	3,800	3,800	Triassic (Halfway), oil well.
Triad Beaton River J-37-D	-----	-----	-----	-----	Location.
Triad Beaton River No. J-38-b	Jan. 30, 1958	Mar. 1, 1958	4,684	4,684	Triassic (Halfway), oil well.
Triad Beaton River No. J-39-d	Dec. 5, 1958	Dec. 24, 1958	3,785	3,785	Triassic (Halfway), oil well.
Triad Beaton River K-39-d	Dec. 19, 1958	-----	-----	3,592	Drilling.
Triad Bush Mountain No. 1	July 16, 1958	-----	-----	8,534	Drilling.
Triad Prairie Creek No. 1	Dec. 18, 1957	Feb. 6, 1958	535	241	Dry and abandoned.
Triad Prairie Creek No. 1-A	Nov. 18, 1958	-----	-----	1,840	Drilling.
Union Aitken Creek No. 3	Nov. 27, 1958	-----	-----	4,695	Drilling.
Union-H.B. Milligan Creek No. D-42-G	Dec. 21, 1958	-----	-----	3,760	Drilling.
Union-H.B. Milligan Creek No. D-53-G	Nov. 12, 1958	Nov. 29, 1958	3,760	3,760	Triassic (Halfway), oil well.
Union-H.B. Milligan Creek No. D-54-G	Dec. 1, 1958	Dec. 18, 1958	3,782	3,782	Triassic (Halfway), oil well.
Union-Hudson's Bay Doig River 23-D	Feb. 2, 1958	Mar. 2, 1958	5,222	5,222	Dry and abandoned.
Union-Hudson's Bay Milligan Creek No. 16-H	Jan. 6, 1958	Jan. 28, 1958	3,939	3,939	Dry and abandoned.
Union-Hudson's Bay Milligan Creek No. 73-G	Feb. 27, 1957	Jan. 4, 1958	3,800	-----	Triassic (Halfway), oil well.
Union-Hudson's Bay Milligan Creek D-62-G	-----	-----	-----	-----	Location.
Union-Hudson's Bay Milligan Creek No. D-64-G	Jan. 31, 1958	Feb. 21, 1958	3,764	3,764	Triassic (Halfway), oil well.
Union-Hudson's Bay Milligan Creek No. D-82-G	Feb. 22, 1958	Mar. 9, 1958	3,738	3,738	Dry and abandoned.
Union-Hudson's Bay Milligan Creek D-84-G	-----	-----	-----	-----	Location.
Union Richfield Scot Point No. 77-I	Jan. 6, 1958	Jan. 28, 1958	3,829	3,829	Dry and abandoned.
<i>Queen Charlotte Islands</i>					
Richfield Mic-Mac-Homestead Gold Creek No. 1	Nov. 25, 1958	Dec. 7, 1958	3,855	3,855	Dry and abandoned.
Richfield Mic-Mac-Homestead Masset No. 1	Aug. 8, 1958	Aug. 18, 1958	1,840	1,840	Dry and abandoned.
Richfield Mic-Mac-Homestead Nadu River No. 1	Oct. 23, 1958	Nov. 19, 1958	4,710	4,710	Dry and abandoned.
Richfield Mic-Mac-Homestead Tlell No. 1	Dec. 11, 1958	Dec. 18, 1958	4,120	4,120	Dry and abandoned.
Richfield Mic-Mac-Homestead Tow Hill No. 1	Sept. 1, 1958	Oct. 15, 1958	6,015	6,015	Dry and abandoned.
<i>Vancouver Area</i>					
Hercon Key Evans No. 1	Feb. 12, 1956	Aug. 29, 1958	7,862	16	Suspended.
<i>Victoria Area</i>					
Charter et al. Saturna No. 1	Oct. 30, 1957	May 9, 1958	3,948	2,373	Dry and abandoned.

Table II.—Oil and Gas Fields Designated at December 31st, 1958

Field	Date Designated	Date Revised	Pools <sup>1</sup>	General Classification	Field Location	Number of Wells in Field
Blueberry.....	Feb. 7, 1958	Dec. 22, 1958	4, 6, 10	Gas and oil	N.T.S. 94-A-12	11
East Blueberry.....	Dec. 22, 1958	_____	6, 8, 10	Gas	N.T.S. 94-A-13	2
West Blueberry.....	Feb. 7, 1958	_____	4, 6	Gas	N.T.S. 94-A-12	3
Boundary Lake.....	Oct. 30, 1956	Feb. 7, 1958	7, 8	Gas and oil	Tp. 85, R. 14	22
Buick Creek.....	Feb. 7, 1958	_____	5, 8	Gas	N.T.S. 94-A-11	4
West Buick Creek.....	Feb. 7, 1958	_____	2, 5, 6, 8	Gas and oil	N.T.S. 94-A-14	14
Dawson Creek.....	Feb. 7, 1958	_____	1	Gas	Tp. 79, R. 15	4
Fort St. John.....	Aug. 22, 1955	Feb. 7, 1958	3, 6, 7, 8, 1	Gas and oil	Tp. 83, R. 18	33
Fort St. John Airport.....	Feb. 7, 1958	_____	3, 6, 8	Gas	Tp. 83, R. 17	3
Fort St. John Southeast.....	Feb. 7, 1958	_____	3, 6, 8, 9	Gas	Tp. 83, R. 17	15
Gundy Creek.....	Feb. 7, 1958	_____	4, 6, 7	Gas	N.T.S. 94-B-16	4
Halfway.....	Dec. 22, 1958	_____	6, 8	Gas	Tp. 87, R. 25	3
Highway.....	Feb. 7, 1958	_____	4, 6, 10	Gas	N.T.S. 94-B-16	5
Kiskatinaw.....	Feb. 7, 1958	_____	11	Gas	Tp. 81, R. 15	1
West Kiskatinaw.....	Feb. 7, 1958	_____	7	Gas	Tp. 81, R. 17	1
Kobes-Townsend.....	Feb. 7, 1958	_____	3, 7, 8, 10	Gas	N.T.S. 94-B-9	7
Milligan Creek.....	Feb. 7, 1958	_____	8	Oil	N.T.S. 94-H-2	4
Montney.....	Feb. 7, 1958	_____	2, 7, 8, 9	Gas	Tp. 86, R. 19, 20	5
Pouce Coupe.....	Aug. 22, 1955	Feb. 7, 1958	1	Gas	Tp. 80, R. 13	2
Red Creek.....	Feb. 7, 1958	_____	8, 9	Gas	Tp. 85, R. 21	2
Sunrise.....	Feb. 7, 1958	_____	1	Gas	Tp. 79, R. 16	3

<sup>1</sup> Pools listed numerically:—

1—Cadotte.

2—Gething.

3—Cadomin.

4—Nikanassin.

5—Buick Creek Sandstone.

6—Triassic (Baltonnel).

7—Triassic (Charlie Lake).

8—Triassic (Halfway).

9—Permo-Pennsylvanian.

10—Mississippian.

11—Devonian.

Table III.—Proved Reserves of Recoverable Oil, Gas, and Gas By-products at December 31st, 1958

	Crude Oil <sup>1</sup>	Raw Gas	Disposable Gas	Gas Liquids	Sulphur
	Barrels	Million Cu. Ft.	Million Cu. Ft.	Barrels	Short Tons
Reserves remaining at end of 1957.....	21,266,800	1,735,000	1,555,098	39,228,350	1,494,321
Production during 1958.....	512,359	64,052	58,040	1,543,525 <sup>2</sup>	62,986 <sup>2</sup>
Adjustments made during 1958 <sup>3</sup> .....	_____	—228,448	—202,158	—5,688,503	—99,425
Reserves found during 1958.....	20,297,400	463,900	421,700	11,030,200	283,763
Reserves remaining at end of 1958.....	41,051,841	1,906,400	1,716,600	43,026,522	1,615,673

<sup>1</sup> The reserve of crude oil is based on an average recovery factor of 23.2 per cent. Where justified by structural conditions, the proved reserve in some instances is taken as 50 per cent of the probable reserve.

<sup>2</sup> The production of gas liquids and sulphur are the quantities estimated from gas analyses to have been produced with the raw gas, both sweet and sour, and are not the quantities actually extracted.

<sup>3</sup> Reserves are continually under revision as data are provided by additional drilling and production.

Table IV.—Well Operation and Production Statistics, 1958

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
<i>Well Data</i>													
Drilling authorities issued .....	14	12	3	2	10	2	4	7	6	5	10	23	98
Wells spudded .....	16	11	5	.....	5	5	5	7	5	5	8	13	85
Rigs operated .....	32	31	31	16	15	13	12	13	16	16	22	25	.....
Footage drilled .....	66,940	76,385	48,402	23,817	27,591	30,782	19,273	21,594	33,302	28,238	36,707	70,756	484,287
Wells dry and abandoned .....	8	7	12	2	4	3	2	1	1	2	6	3	51
Reclassified wells .....	.....	.....	.....	.....	.....	.....	.....	10	.....	.....	.....	.....	10
<i>Oil Wells</i>													
Completed .....	1	1	.....	1	2	2	2	1	1	.....	2	4	17
Capable of production .....	23	24	24	25	27	29	31	32	33	33	35	39	39
Operated .....	19	19	19	9	20	22	24	26	25	24	25	28	.....
Production (bbl.) .....	37,965	32,715	54,068	11,904	35,323	38,589	42,885	40,025	49,682	59,649	41,374	68,180	512,359
Average daily production (bbl.) .....	1,266	1,091	1,806	397	1,177	1,286	1,430	1,334	1,656	1,988	1,379	2,273	.....
<i>Gas Wells</i>													
Completed .....	2	3	5	1	3	3	1	.....	1	2	2	.....	23
Capable of production .....	137 <sup>1</sup>	140	145	146	149	152	153	143	144	146	148	148	148
Operated .....	43	44	50	49	50	41	41	42	45	67	67	65	.....
Production (M s.c.f.) .....	5,798,299	5,285,924	5,864,137	5,378,633	5,496,514	4,455,060	4,342,781	4,270,836	4,481,287	5,575,481	6,460,190	6,642,643	64,051,785
Average daily production (M s.c.f.) .....	193,277	176,197	195,471	179,288	183,271	148,502	144,759	142,361	149,376	185,849	215,340	221,421	.....
<i>Plant By-products</i>													
Propane (bbl.) .....	4,988	5,653	6,433	237	5,297	3,551	6,058	3,678	6,445	9,276	6,200	11,279	69,095
Butane (bbl.) .....	2,955	1,101	498	374	11,554	6,747	10,511	9,197	10,030	4,318	5,093	19,231	81,609
Sulphur (short tons) .....	5,074	5,052	5,805	5,738	5,954	5,225	5,201	4,875	4,656	4,845	4,985	5,195	62,605

<sup>1</sup> Revised total at December 31st, 1957, 135.

# Inspection of Lode Mines, Placer Mines, and Quarries

By J. W. Peck, Chief Inspector of Mines

## CONTENTS

	PAGE
PRODUCTION.....	118
FATAL ACCIDENTS .....	118
FATAL ACCIDENTS AND ACCIDENTS INVOLVING LOSS OF TIME.....	121
DANGEROUS OCCURRENCES.....	123
PROSECUTIONS.....	125
EXPLOSIVES USED IN MINES.....	125
UNDERGROUND DIESEL EQUIPMENT.....	126
DUST CONTROL AND VENTILATION .....	126
MINE-RESCUE, SAFETY, AND FIRST AID.....	128
JOHN T. RYAN TROPHY.....	131
BRITISH COLUMBIA MINING ASSOCIATION, SAFETY DIVISION.....	131
WEST KOOTENAY MINE SAFETY ASSOCIATION TROPHY.....	131

## PRODUCTION

The output of metal mines for 1958 was 6,402,198 tons. This tonnage was produced from forty-seven mines, of which twenty-eight produced 100 tons or more.

## FATAL ACCIDENTS

During 1958 there were four fatal accidents connected with mining operations in metal mines and quarries. This was four less than in 1957. There were 3,728 persons employed below and above ground in metal mines, and 625 person employed in concentrators in 1958.

The ratio of fatal accidents per 1,000 persons employed in mines and concentrators was 0.92, as compared with 1.41 in 1957.

Tonnage mined per fatal accident during the last ten-year period was 813,275 tons.

The following table shows the mines at which fatal accidents occurred during 1958, with comparative figures for 1957:—

Mine	Mining Division	Number of Fatal Accidents	
		1958	1957
Birkett Creek .....	Nicola .....	1	---
Britannia .....	Vancouver .....	---	3
Emerald .....	Nelson .....	1	---
Pine Creek Placer .....	Atlin .....	1	---
Texada Mines .....	Vancouver .....	1	---
Granduc .....	Skeena .....	---	1
Tulsequah .....	Atlin .....	---	2
Violamac .....	Slocan .....	---	1
Western Nickel .....	Vancouver .....	---	1
Totals .....		4	8

The following table classifies fatal accidents as to cause and location:-

Cause	Number	Location
Fall of ground .....	2	Underground.
Struck by rolling rock .....	1	Underground.
Drowned .....	1	Surface.
	4	
Total	4	

A description of all fatal accidents follows.

John Daniel MacDonald, aged 52, Canadian, married, and employed as a miner at Canadian Exploration Limited, Salmo, was killed by a rolling rock in the 3556 scam drift in the Emerald mine on July 27th, 195X, at about 11.35 a.m.

The 3556 scam drift rises to the north for about 150 feet at an angle of about 25 degrees. An open stope, above and to the east, provides the ore for the scam drift. A 10-horsepower air slusher hoist is set up at the south end of the drift, and it moves a 36-inch scraper down the slope to the grizzly in front of the hoist.

There were no witnesses to the accident. MacDonald was operating the slusher at lunch time, and when his partner returned one-half hour later, MacDonald was found slumped over the controls with the motor running. The top of his skull was crushed. A disk-shaped rock weighing about 400 pounds was lying at his side. It is assumed the rock tumbled into the scraping channel and then rolled down the slasher trench, gaining sufficient momentum to continue across the grizzly to strike MacDonald with considerable force.

An inquest was held at Salmo on July 31st and the coroner's jury returned the following verdict:-

" We, the jury, duly sworn and empaneled July 28th, 1958, to enquire into the death of John Daniel MacDonald do find that the deceased John Daniel MacDonald of Salmo, B.C., came to his death from a fractured skull caused by a flying rock received while working underground at the Emerald mine. He died between 11.35 a.m. and 12.05 p.m. July 27th, 1958. We feel that no blame is attached to anyone. We do however feel that the Company management give consideration to placing of guards in front of slusher hoists operating where scraping angle is over 15 degrees."

No previous incidents of rolling rock had been reported for this scraper drift, and thus the hazard had not been foreseen. However, it is apparent some sort of guard might have halted or diverted the rock, and thus the verdict is concurred with. It has also been recommended that for similar set-ups the slusher hoist could be located in an offset or less-exposed position.

Robert Gordon Chisan, aged 26, Canadian, married, and employed as a miner at Birkett Creek Mine Operators Limited, Merritt, was instantly killed by a fall of rock at the face of the 3500 level adit on November 1st, 1958, at 2.05 pm.

The 3500 level adit is 9 by 9 feet in finished size and had been driven 547 feet from the portal at the time of the accident. For the first 350 to 400 feet the drift was in overburden. At about 400 feet from the portal the drift entered weak rock which was broken by fractures and slips with smooth, slickensided surfaces. The drift was timbered from portal to face with 10- by 10-inch sets comprising posts, sill, and cap-piece. These were normally set about 4 feet apart, but in places, were set as close as 1 foot apart. The backs of the sets were lagged with 3- by 10-inch timber. From the last set to the face, spiling was driven. This comprised 10-foot diamond-drill rods which were driven about 4 inches apart into holes drilled in the face.

On the day of the accident Chisan was working with W. Ryder and E. Grams, the latter being the drift leader. On the previous shift the upper portion of the cut had been mucked out and the spiling rods had been driven forward and set in position. At



about noon the men drilled and blasted three short lifters. These were 2-foot holes with one stick of powder in each (very little blasting was required in this ground). Chisan then mucked out the face, loading about ten cars, and having done this he extended the air-duct and water-pipe. Meanwhile, Grams barred down the face and, as stated later, was of the impression that the ground seemed to be getting harder.

The men then set the sill in position, after which they all went out to fetch the timber for the posts and cap-piece. While the men were out fetching timber, Stan Hill, the tunnel foreman, went in and examined the face. He found everything normal at this time. The men then returned to the face and began to erect the set. Grams and Ryder set the post on the right side of the drift and were bracing it while Cbisan was cleaning muck off the sill on the left side ready to set the other post. Stan Hill was standing on the right side of the drift supervising the work. Suddenly the men heard a sound of falling rock and when they looked around they saw that a large piece of rock had rolled off the bottom part of the left side of the face and had fallen on Chisan, knocking him to the floor of the drift and trapping him. The rock was originally about 4 by 4 by 1½ feet, weighing about 600 pounds, but broke into three pieces after it had struck Chisan and fell to the floor of the drift. The men quickly released Cbisan, but he was apparently dead. He was brought out of the mine and taken to Merritt hospital, where he was examined by Dr. Hewson and found to be dead. Death was later found to be due to multiple fractures involving the base of the skull with severe brain damage.

The inquest was held on November 10th at the Merritt court-house. The verdict was as follows:-

“ We, the jury, find that Robert Gordon Chisan met his death at the Birkett Creek mine at about 2 pm. on November 1st due to a fall of rock. The cause of death was multiple fractures of the skull. We find that no blame is to be attached to anyone.”

The verdict of the inquest is concurred with. The ground was known to be very weak and badly fractured. It was difficult to scale effectively, but most of the broken material was small in size. Every part of the adit had been well timbered throughout, and further safety measures are difficult to suggest other than continual, careful observation and checking of the face. The most dangerous operation is undoubtedly the timbering, as this is the time when men must stand closest to the face. It would appear from the position of Chisan after the accident that he probably was partly turned with his back to the face at the time.

Fred William Giesen, aged 65, Canadian, and working as a self-employed miner in the Pine Creek Placer mine near Atlin, was smothered by a fall of ground at the face of a short adit on November 11th, 1958, at about 3.30 p.m.

The adit in which the accident occurred had been driven 16 feet from the portal. It was a prospect drift and was in unconsolidated material. It was 9 feet wide and timbered, but the timber used was very old and dried out and all 6 inches or less in diameter. No footsills or dividers were installed. On the day of the accident the deceased's partner, Karl Sieger, an inexperienced miner, was working upstream about 500 feet away. He observed Giesen at 3 p.m., but when he visited the adit at 3.40 p.m. he discovered a cave-in near the face and presumed Giesen was buried. Sieger could do little without help, and this was obtained shortly after from Atlin, 6 miles away. The body was recovered from under 3½ feet of gravel and sand. Artificial respiration was given but without success.

Later investigation revealed that a set of timber had broken at the face, permitting a run of loose gravel and sand. From the position of the body it would appear Giesen had tried to escape, but had been struck by the run, rendered unconscious, and, when covered by sand, suffocated.

The accident was due to poor timbering being done, and it would seem that the deceased, although an experienced man, had complete disregard for his own safety.

George Humphrys, aged 63 years, Canadian, married, and employed as master mechanic at Texada Mines Ltd., Vananda, lost his life by drowning on December 9th, 1958, at 12.15 pm.

At the inquest held in Powell River on December 12th, 1958, the Coroner's jury brought in the following verdict:-

" We, the members of the jury, find that George Humphrys came to his death by drowning as a result of a motor vehicle accident about 2 miles from Gillies Bay, Texada Island, B.C., on the private road of Texada Mines Ltd., on the 9th day of December between 12 noon and 1.00 p.m., with no blame attached to anyone."

The private road of Texada Mines Ltd. extends from the camp to the open-pit iron mine, a distance of 4 miles. About 2 miles from the mine the road curves and crosses a sand and gravel fill about 400 feet long and 20 feet deep. The road is about 25 feet wide. It is usual procedure for the staff to leave the mine at 12 noon in various trucks and motor-vehicles, almost in convoy, and travel to the camp for lunch. On December 9th this procedure was carried out. George Humphrys was the last to leave, but did not show up for lunch. The driver of one of the trucks returning from lunch at about 12.35 p.m. noticed peculiar tracks leading off the road where it crosses the fill. He investigated and found a motor-vehicle lying upside down in 6 feet of accumulated water behind the fill. No one was in the truck and some time elapsed before the body of Humphrys was located by probing from a boat.

The pond was drained, but nothing else was found. The truck involved was in good driving condition. It is thought that Humphrys, being late for lunch, might have been travelling too fast on entering the curve and lost control, to run off the road. There were no skid marks to indicate the brakes had been used.

#### FATAL ACCIDENTS AND ACCIDENTS INVOLVING LOSS OF TIME

Four fatal accidents and 139 accidents involving a loss of time of seven days or more were reported to the Department. These were investigated and reported on by the Inspectors of Mines.

The following three tables classify these accidents as to cause, occupation, and as to the parts of the body injured. The fourth table lists all compensable non-fatal accidents over a ten-year period and relates these accidents to the number of persons employed and tons mined.

#### ACCIDENTS CAUSING DEATH OR INJURY CLASSIFIED AS TO CAUSE

Cause	Number of Accidents	Percentag of Total
Blasting .....	1	0.7
Falls of ground .....	22	15.4
Falls of material and flying material .....	9	6.3
Falls from ladders, staging, etc. ....	2	1.4
Slipping and falling .....	36	25.1
Lifting and handling material, etc. ....	37	25.9
Machinery and tools .....	17	11.9
Run of ore or waste ..	3	2.1
Bums and shock .....	3	2.1
Miscellaneous .....	13	9.1
Totals .....	143	100.0

**ACCIDENTS CAUSING DEATH OR INJURY CLASSIFIED AS TO THE  
OCCUPATION OF THOSE INJURED**

Occupation	Number of Accidents	Percentage of Total
<b>Underground—</b>		
Barmen .....	4	2.8
Chutemen .....	4	2.8
Haulagemen .....	12	8.4
Miners .....	74	51.7
Muckers .....	8	5.6
Timbermen .....	9	6.3
Repairmen .....	6	4.2
Trackmen and pipe-fitters .....	2	1.4
Skip-tenders .....	1	0.7
Miscellaneous .....	9	6.3
Supervisors and staff .....	4	2.8
<b>Surface—</b>		
Shops .....	1	0.7
Mill .....	2	1.4
Surface, general .....	7	4.9
Totals .....	143	100.0

**ACCIDENTS CAUSING INJURY CLASSIFIED AS TO PARTS OF THE BODY INJURED**

Location	Number of Accidents	Percentage of Total
Head and neck .....	11	7.7
Eyes .....	5	3.5
Trunk .....	10	7.0
Back (including shoulders) .....	37	25.9
Arms (including wrists) .....	11	7.7
Hands and fingers .....	21	14.6
Legs and ankles .....	28	19.6
Feet .....	16	11.2
Fatal .....	4	2.8
Totals .....	143	100.0

**COMPENSABLE NON-FATAL ACCIDENTS RELATED TO TONS MINED  
AND MEN EMPLOYED**

Year	Number of Compensable Accidents	Number of Persons Employed	Frequency per 1,000 Persons	Tons Mined
1949 .....	1,161	6,961	167	6,125,460
1953 .....	1,051	7,073	148	6,802,482
1951 .....	1,170	8,787	133	6,972,400
1952 .....	1,345	9,610	140	9,174,617
1953 .....	965	7,105	136	9,660,281
1954 .....	790	6,293	126	8,513,865
1955 .....	756	6,208	107	9,126,902
1956 .....	694	6,507	122	8,827,037
1957 .....	627	5,678	110	7,282,436
1958 .....	485	4,353	111	6,402,198

## DANGEROUS OCCURRENCES

Twenty-two dangerous occurrences were reported as required by section 9 of the "Metalliferous Mines Regulation Act" and were investigated by the Inspectors of Mines. This represents an increase of 22 per cent from the eighteen reported for 1957.

Of these occurrences, nine were connected with hoisting, six with explosives, two with electricity, two with subsidence, one with fire, one with gas inflow, and one with rock bump.

On February 24th, 1958, an explosion took place when a miner at the Reeves MacDonald mine apparently drilled into a small amount of explosives not detonated by the previous blast. He was not injured. It was ruled he had not thoroughly examined the face previous to drilling and, as a consequence, his blasting certificate was suspended for a period of three months.

On March 16th, 1958, at the Bluebell mine a short circuit in the ventilating system allowed a dangerous concentration of carbon dioxide gas, which was being released from the rock strata, to accumulate in the main shaft area between No. 8 and No. 6 levels. The ventilating system was revised and the gas was removed before any person suffered from it.

On March, 1958, a fire of "known origin destroyed a warehouse and its contents at the New Cronin Babine mine.

On April 15th, 1958, the cage-tender at the No. 3 shaft of Pioneer mine was preparing to clean out the east skip, for which operation it was necessary to raise the skip high in the dump. While the hoistman was doing so, the bottom limit switch on the west side came into operation and the power kicked off. Using the backout switch, the hoistman raised the west skip about 4 feet after disengaging the clutch on the east side. The hoistman attempted to re-engage the clutch, but before it was fully engaged he released the brake and the west skip then fell freely past the limit switch, which set the brakes. This stopped the skip after the drum turned about 12 feet beyond the bottom limit, which was sufficient to allow the rope to twist into two tight loops. There was no damage to the skip and, as no one was riding, there was no injuries.

On May 8th, 1958, the surface skips at the Merry Widow mine of Empire Development Company Limited ran away, with resultant damage to the hoisting-rope and other equipment. The hoistman was lowering ore at the time. The hoist, which was powered by a wound rotor induction motor, was held to full speed, when lowering a load, by regenerative braking. However, at the time of the incident the generators were tripped off the line either by reverse current generated by the hoist motor or inadvertently from some other cause. This left the motor without excitation current and, since no power would be produced, the hoist ran away. Unfortunately, the auxiliary automatic brake was inoperative as it had just previously been dismantled for repairs. The operating brakes are applied hydraulically, assisted by weights, but with the power off the weights alone did not apply sufficient pressure to effect a quick stop. The skips reached the end of the run with sufficient speed to shear the cable clamps and this allowed the rope to slide down the incline. It had to be discarded. Adjustments were made to the braking system to prevent a recurrence of this incident.

On May 13th, 1958, the north skip in the inclined No. 5 shaft of Pioneer mine jumped the track when travelling down empty and became wedged in the shaft. Derailment was evidently due to a rock becoming wedged in the bottom guide shoe.

On May 24th, 1958, a large area of the tailings dump at the Mineral King mine collapsed suddenly and slid into Toby Creek. A workman employed on the dump managed to scramble to safety. It is suspected a section of the dump had become undermined by water.

On June 7th, 1958, four electricians were removing a 2,300-volt oil switch in the Jersey mine of Canadian Exploration Limited when the foreman inadvertently closed the main switch from another location. Severe arcing took place, but the workmen were able to leave the working-place without injury. As a result of this incident, changes were made in operational procedure so that it would be necessary for each employee working on equipment powered by electricity to lock the control switch in the open position with his own padlock and each person so doing to remove only his own padlock on completion of the work.

On July 2nd, 1958, a timber-car, which had been hung below the cage in the No. 2 shaft of Pioneer mine, swung loose in the shaft and several shaft timbers were broken when the cage was lowered. The timber-car has retractable guide-shoes which either had not been locked in position or had become disengaged.

On July 7th, 1958, a descending cage in the No. 2 shaft of Pioneer mine was stopped by a shaft timber which had loosened and projected into the cage compartment of the shaft. About 2,000 feet of rope was unwound from the hoist drum before the incident was discovered. Two men were in the cage but neither was injured. The rope was sufficiently damaged to require replacement.

On July 21st, 1958, a miner was trapped by a run of muck from a draw-hole in a slusher drift in the Sullivan mine while he was preparing to bulldoze a hang-up in the draw-hole. He was buried up to his shoulders and on removal was found to have suffered a broken leg. He was alone at the time of the incident, and thus it is fortunate the fuse for the bulldoze had not been ignited.

On July 26th, 1958, a slusherman was preparing to bulldoze seven large rocks in a scam drift in the Reeves MacDonald mine. He was in the process of lighting the third bulldoze when one of the other two ignited charges exploded. Seven to ten sticks of Stopeite were in the charge, but fortunately the slusherman was shielded from the direct line of fire by a large boulder. He suffered a ruptured ear-drum and shock, but was led to safety by a near-by miner before the other charges exploded. It is believed that the premature explosion was caused by a rock rolling down from a draw-point and striking one of the ignited charges.

On August 6th, 1958, a workman at the Cowichan Copper mine suffered a broken leg and a severe gash on the chin when he returned too soon to the scene of a blast. He had lit two shots but returned on hearing one report. The workman did not have a blasting certificate and apparently acted on his own initiative.

On August 8th, 1958, the floor of a section of drift in No. 8 level of the Bluebell mine suddenly heaved up a height of 1 foot. The drift was being driven close to a zone where carbon dioxide gas and water had been released. This area had been cement grouted under high pressure, and it was thought that this pressure had relieved itself through the heaving of the floor of the drift.

On September 8th, 1958, an aluminum angle forming part of the bail of the skip in the No. 3 shaft of Pioneer mine broke while muck was being dumped. The hoistman suspected something was wrong, and thus the defect was discovered before there were more serious consequences.

On October 22nd, 1958, a load of diamond-drill rods 10 feet long became loose while being hoisted in the cage in the No. 2 shaft of Pioneer mine. The rods, standing vertically, had been chained together slightly below the mid-point. Considerable damage was caused to the cage and the shaft timber.

On October 24th, 1958, there was considerable damage to the hoisting-rope and shaft guides of the No. 1 shaft, Cariboo Gold Quartz mine, when the cage became stuck in the cage compartment and the unwinding rope looped into the adjoining skip compartment, to be caught by the ascending skip. The incident occurred during the initial run at the start of a shift, and thus no persons were involved.

On October 28th, 1958, a violent explosion occurred at a blacksmith's forge in the surface car-repair shop at the Sullivan mine while two 1½-inch hollow extension **sprags** were being heated preparatory to sharpening the points. The **sprags** were destroyed, and fragments of the **sprags** were blown through the roof of the building. Fifty panes of glass in windows at various points in the building were also smashed by the blast. Five men were injured, **four** of whom had minor superficial wounds which did not result in loss of work. An inquiry held at the mine failed to disclose the cause of the explosion, but it is suspected there was some explosive in one of the **sprags**.

On November 18th, 1958, two men at the French mine received flash **burns** to **their** eyes from an electric **arc** which occurred while they were attempting to close a crusher-motor magnetic starter switch with the door of the control box open and the power on. Instructions have been issued which prohibit the closing of any switch until the door is closed and secured.

On December 4th, 1958, the skip in the No. 2 inclined shaft of Reeves MacDonald mine was derailed during descent. It proceeded in this manner for 50 feet, coming to rest against a divider. The **hoistman** stopped the hoist when he noticed the motor amperage had decreased. Two men **were** in the skip but were not injured. The cause of the derailment was not revealed, but guides have been installed to prevent a recurrence of this type of incident,

On December 9th, 1958, two miners employed at the 42-H-5 raise. at the Sullivan mine inadvertently ignited a quantity of **primacord** which had fallen into the raise during blasting operations. Three workmen at the bottom of the raise narrowly escaped injury. The blasting certificates of the two miners were suspended for a month for not **taking sufficient** precautions.

On December 9th, 1958, a small explosion occurred at the Reeves MacDonald mine when a **slusherman** struck a rock with a large rock hammer. The workman **was** struck in the face by rock particles, his safety glasses were broken, and he was knocked down. It is believed that a small amount of explosives had been on the rock and had detonated on being struck.

#### PROSECUTIONS

Gold Dot Mining Company Limited was prosecuted at Boston Bar on November 28th, 1958, under General Rule 24 (a) of the "Metalliferous Mines Regulation Act" for erecting an unapproved magazine on a road to its mining property west of **Kanaka**. The **company** pleaded guilty and **was** fined \$15 and costs.

Sheep Creek Mines Limited was prosecuted by the Fish and Game Branch of the Department of Recreation and Conservation at **Kimberley** on **June 28th**, 1958, for allowing mill tailings from the Mineral King mine to pollute **Toby Creek** (*see* "Dangerous Occurrences "). The company was found guilty and fined \$25 and costs.

There were **violations** of the provisions of the "Metalliferous Mines Regulation Act" in regard to the **use** of explosives and blasting procedure. Sii offenders had their blasting certificates suspended from one to twelve months, according to the type of **offence**.

#### EXPLOSIVES USED IN MINES

The table below shows the quantities of explosives and blasting accessories used in metal mines and quarries in British Columbia in 1954, 1955, 1956, 1957, and 1958:—

	1954 Total	1955 Total	1956 Total	1957 Total	1958 Total	1958	
						Mines	Quarries
High explosives (lb.).....	7,652,574	8,420,791	8,560,000	7,103,000	5,485,000	5,179,000	306,000
Blasting-caps.....	1,815,250	1,982,900	2,184,000	1,676,000	1,244,000	1,194,000	50,000
Electric blasting-caps.....	232,270	151,685	52,000	64,000	84,000	46,000	38,000
Delay electric blasting-caps (short period).....	191,513	283,000	205,000	160,000	129,000	118,000	11,000
Delay electric blasting-caps (sure-fire delays and X107 delays).....	70,300	144,875	263,000	127,000	128,000	128,000	-----
Primacord (ft.).....	824,000	399,000	226,000	261,000	574,000	460,000	114,000
B-line detonating fuse (ft.).....	-----	-----	2,436,000	2,049,000	2,197,000	2,017,000	180,000
Safety fuse (ft.).....	13,429,800	17,744,900	17,218,000	13,367,000	11,272,000	11,010,000	262,000
Ignitercord (ft.).....	206,180	418,800	498,000	639,000	469,000	464,000	5,000
Ignitercord connectors.....	160,501	371,000	563,000	750,000	610,000	604,000	6,000
Ammonium nitrate.....	-----	-----	-----	5,000	190,000	160,000	30,000

A drop of 12.08 per cent in quantity of ore mined for 1958 as compared to that mined in 1957 is mainly responsible for the drop of 23 per cent in high explosives used over the same period. This drop in high explosives was offset somewhat by the large increase in the use of ammonium nitrate, which first made its appearance as a blasting agent in British Columbia in 1957. This compound, when sensitized with fuel-oil, constitutes a powerful explosive. As such the preparation comes under the control of the Chief Inspector of Explosives at Ottawa. Written permission must first be obtained from him before the blasting agent can be mixed or used. Permission must also be obtained from the Chief Inspector of Mines, Victoria, when the blasting agent is used in mines and quarries in British Columbia. Four permits were issued in 1958, bringing the total to six-three to open-pit mines and three to quarries. The main condition of the permits was that the blending of "prilled" ammonium nitrate with fuel oil take place on site as it is being loaded into the bore-hole, or just previous to this. Ammonium nitrate and fuel oil is not a permissible explosive for underground use.

#### UNDERGROUND DIESEL EQUIPMENT

There were no significant changes in underground diesel equipment in 1958. Locomotives in use amounted to sixteen, and miscellaneous pieces of equipment, such as trucks, loaders, bulldozers, etc., totalled about thirty. Three of the locomotives were used in coal mines; the remainder of the equipment was used in metal mines.

No unsatisfactory working conditions were reported where this equipment was used. The upper permissible limit of carbon monoxide in diesel exhaust gases was lowered to 0.1 per cent from 0.25 per cent unless laboratory methods of analysis are used. There is a real need of portable equipment for accurate analysis.

#### DUST CONTROL AND VENTILATION

Inflows of carbon dioxide gas at Bluebell, high mine-air temperatures in the deep workings at Bralorne, release of sulphur dioxide gas from backfill at Sullivan, dry drilling at an asbestos mine, and dry drilling and crushing at gypsum and limestone quarries were special problems requiring the attention of the mine operators and the Inspectors of Mines. Continuing progress was made in improving ventilation to remove the normal mining contaminants of dust, diesel exhaust fumes, blasting gases, etc.

Dust counts and ventilation surveys were also made by the staff of the Chief Inspector, Silicosis Branch of the Workmen's Compensation Board, and the results of these surveys were made available to the Chief Inspector of Mines. The following information is taken from the report "Summary of Dust Conditions at British Columbia Metalliferous Mines during the Year 1958":—

"1. During the year 1958, sixty-one ventilation and dust control surveys were made at the metalliferous mines of British Columbia. These were made at forty-three mining operations, eighteen of which were inspected for the second time.

"2. The main object of this inspection work is to lower the amount of dust breathed by the workmen as much as possible. It is not known what concentration of silica dust is considered safe to breathe without producing silicosis, as several other factors besides the dust concentration must be taken into consideration. The figure of 300 particles per c.c. of air has been chosen as an objective to work towards. When this figure is attained, it indicates a very great improvement over conditions existing several years ago.

"3. Blasting operations produce dense concentrations of dust but the workmen are generally not subjected to this dust or subjected to it for short periods of time only. Most of the blasting operations can be arranged to occur at the ends of the shifts and allow sufficient time for ventilation to remove the dust from the workings before the following shift goes to work. A certain amount of blasting operations, such as in chutes, may be considered necessary so that the production of ore may not be interfered with but this should be reduced to the very minimum.

"4. Stopper drilling operations underground consistently produce the highest concentrations of dust during the time the men are working. The dust counts used to be 2,000 or more particles per c.c. of air at these operations. Fifty-eight per cent of the surveys made in 1958 gave averages of less than 1,000 particles.

"5. At leyner, jackleg and plugger drilling operations underground the dust concentrations are not as high as at stopper drilling operations. Since most of the surveys gave less than 1,000 particles, it is probably better to adopt the figure of 500 particles for the purpose of comparison. Sixty-one per cent of the surveys gave averages of less than 500 particles per c.c. of air.

"6. The averages for 'All Other Underground Locations' are very satisfactory. Ninety-three per cent of the surveys made during 1958 gave averages of less than 300 particles. The percentages for the past nine years have remained fairly constant, varying between 76 and 93 per cent. This condition is particularly satisfactory when considering the fact that the great majority of the men work in this lower dust concentration.

"7. The dust concentrations in the crushing plants during 1952 were not satisfactory. During 1953 and subsequent years, a special effort was made to control the dust in these plants and satisfactory results have been obtained. Seventy-one per cent of the surveys made in 1958 gave averages of less than 300 particles per c.c. of air.

"8. Eighty-four per cent of the surveys made in assay grinding rooms gave averages of less than 300 particles. This is very satisfactory, as it is the highest percentage that has been obtained during the past nine years.

"9. The percentage of certificates of fitness held by the employers for their workmen who require a medical examination has steadily increased during the past five years. In 1958, certificates in good standing for 97.0 per cent of the workmen who require same were held by the employers. This is a very satisfactory condition as there are numerous difficulties to overcome.

"10. Aluminum powder prophylaxis treatments for the prevention of silicosis were given at six mines during the year. No aluminum therapy treatments were given at the Rehabilitation Clinic of the Workmen's Compensation Board in Vancouver to men who have silicosis,

"11. The main measures for dust prevention, suppression and elimination are receiving good attention at the mines. The more important of these are good ventilation, thorough wetting of the rock before it is handled in any manner, not subjecting the workmen to dust and fumes from blasting operations, using good exhaust systems in crushing plants and assay Finding rooms, etc. Full application of all these measures at all times has not been obtained but the results obtained have been quite satisfactory."



## MINE-RESCUE, SAFETY, AND FIRST AID

During 1958 the mine-rescue stations at **Cumberland**, Fernie, Nelson, and Princeton were fully maintained and an instructor, qualified in mine-rescue and first aid, was on duty at each station. Each station is equipped with sufficient self-contained oxygen breathing apparatus to maintain at least two mine-rescue teams of six men each should any emergency in near-by mines arise. The equipment consists of **McCaa** two-hour apparatus and **Chemox**  $\frac{3}{4}$ -hour apparatus, as well as all-service gas-masks, self-rescuers, methane and carbon monoxide detectors, inhalators, and a complete supply of first-aid equipment. Supplies and facilities for charging and servicing all this equipment are maintained.

The station at **Cumberland** is maintained to serve coal mines in the area. There were no emergency calls for the apparatus during 1958, but two requests for oxygen from the local hospital were promptly complied with. A truck is kept at the station for emergency purposes,

The station at Princeton was converted to a mobile unit in 1957. A large panel truck was equipped with all facilities and thus was able to give service over a wide area. Mine-rescue or first-aid training was given at the **Cariboo** Gold Quartz, Western Nickel, Highland Bell, **Bralorne**, and French mines. Fire departments at Merritt, Wells, Oliver, and Princeton were also given help with rescue training. The mobile unit gave ambulance service five times while travelling on the highways. The general public also received first-aid instruction in courses held at Princeton, **Hedley**, and Merritt.

The mobile mine-rescue unit stationed at Nelson continued to be of great assistance in promoting and giving instruction in mine-rescue and first aid at mines in the East and **West Kootenay** areas. Mine-rescue courses were held at Bluebell, Reeves MacDonald, and Canadian Exploration mines. Assistance at first-aid classes was given at **Riondel**, **Salmo**, New Denver, **Kaslo**, **Remac**, and Nelson. Fire departments at Nelson, **Salmo**, and New Denver were given help in apparatus training.

The mine-rescue station at Fernie is maintained principally to serve the coal mines in the area, but mine-rescue training is also given to personnel of the Sullivan mine at **Kimberley**. The training of new men for mine-rescue work in coal or metal mines continued in 1958 as well as the maintenance of monthly practices for teams. Assistance was given in the first-aid classes at Fernie. The mine-rescue equipment was made available for a major fire which took place in Fernie

In addition to the mine-rescue equipment maintained at the Government mine-rescue stations, there are sets of **McCaa** or **Chemox** apparatus at the Sullivan, Canadian Exploration, **Michel**, Bridge River, **Cariboo** Gold Quartz, **H.B.**, Bluebell, **Toric**, and **Mineral King** mines. The district instructor makes periodic checks of this equipment

A certificate of competency in mine-rescue work is granted to each man who takes the full training course and passes the examination set by the Department of Mines. During 1958, in addition to the regular teams in training, seventy-nine men took the full course and were granted certificates, as follows:—

Certificate No.	Name	Where Trained	Certificate No.	Name	Where Trained
3015 <sup>1</sup>	James B. Magee	Salmo.	3055	Lyle Joseph Jolie	Riondel.
3016	John William Robinson	Salmo.	3056	Cecil Albert Hedge	Riondel.
3017	Joseph De Anna	Hope.	3057	Horace Alexander Mattock	Riondel.
3018	Roy Martin	Hope.	3058	George Hanschen	Wells.
3019	Werner Tepel	Hope.	3059	Delmer M. Bush	Remac.
3020	Alex M. Laird	Hope.	3060	John M. Parker	Remac.
3021	Herb Krenbrink	Hope.	3061	George Fecyk	Remac.
3022	Elmer Charette	Hope.	3062	Matthew Hurzin	Remac.
3023	Milton Alexander Mellor	Kimberley.	3063	John P. Rozek	Remac.
3024	George Angus Derry	Kimberley.	3064	R. Wayne Ritter	Remac.
3025	George Bruce Crowe	Kimberley.	3065	William R. McDonald	Remac.
3026	Leslie Melvin Carson	Cranbrook.	3066	Ronald L. Turner	Remac.
3027	Jack Jenkins	Kimberley.	3067	Joseph Wandinger	Remac.
3028	Arthur Phillip King	Kimberley.	3068	Edward Howes	Remac.
3029	Robert William Maddison	Fruitvale.	3069	Ronald Charles Kozler	Michel.
3030	Ernest Grams	Salmo.	3070	David Johnson Howe	Michel.
3031	David Copland Fowler	Riondel.	3071	Remo Quarin	Natal.
3032	David Michael Melenius	Riondel.	3072	Henry George Beard	Michel.
3033	Valentine Hummel	Crawford Bay.	3073	Floyd Raymond Miles	Natal.
3034	Norman George Bonnell	Riondel.	3074	Joseph Benjamin R. Warkley	Natal.
3035	Arnold Leo Spence	Crawford Bay.	3075	Jack Louis DeLuca	Natal.
3036	Henry Peter Bartels	Crawford Bay.	3076	Jack Andrew Fontana	Michel.
3037	Ernest Hugo Kriese	Riondel.	3077	Gino Cumbero	Beaverdell.
3038	John Nick Chernoff	Riondel.	3078	Jock Buckendahl	Beaverdell.
3039	Ross Mowbray Wakely	Kootenay Bay.	3079	Bruno E. Goetting	Beaverdell.
3040	Paul Szczerba	Riondel.	3080	Phillip Lessard	Beaverdell.
3041	Peter Badyk	Riondel.	3081	Arthur A. Gill	Beaverdell.
3042	Eugene Ernest Fontaine	Riondel.	3082	Lorne Morrow	Beaverdell.
3043	Roy Robert Eddy	Crawford Bay.	3083	Floyd Arnold Munter	Beaverdell.
3044	Adolph Wastrodowski	Kootenay Bay.	3084	Arnold R. Zelmer	Beaverdell.
3045	John Everett Strong	Crawford Bay.	3085	Ken Worrall	Beaverdell.
3046	Patrick Alois Peterson	Balfour.	3086	Joseph John Tokios	Beaverdell.
3047	Gerald Byron Bishop	Riondel.	3087	John DeYaeger	Beaverdell.
3048	Hans Christian Christensen	Riondel.	3088	Patrick Ferguson	Beaverdell.
3049	William Robert Hay	Riondel.	3089	Charles Eugene Gobert	Bralorne.
3050	Ivan Roy Staples	Riondel.	3090	Giulio Pierobon	Bralorne.
3051	Joseph William Gairdner	Crawford Bay.	3091	Charles Harry Say	Bralorne.
3052	Derek Vane Pollard	Riondel.	3092 <sup>2</sup>	Bruce Hawkins	Riondel.
3053	George Rolick	Riondel.	3093	Edward Kruger	Bralorne.
3054	Hans Kurt Grossman	Riondel.			

<sup>1</sup> Substitute for No. 2530.<sup>2</sup> Substitute for No. 2771.

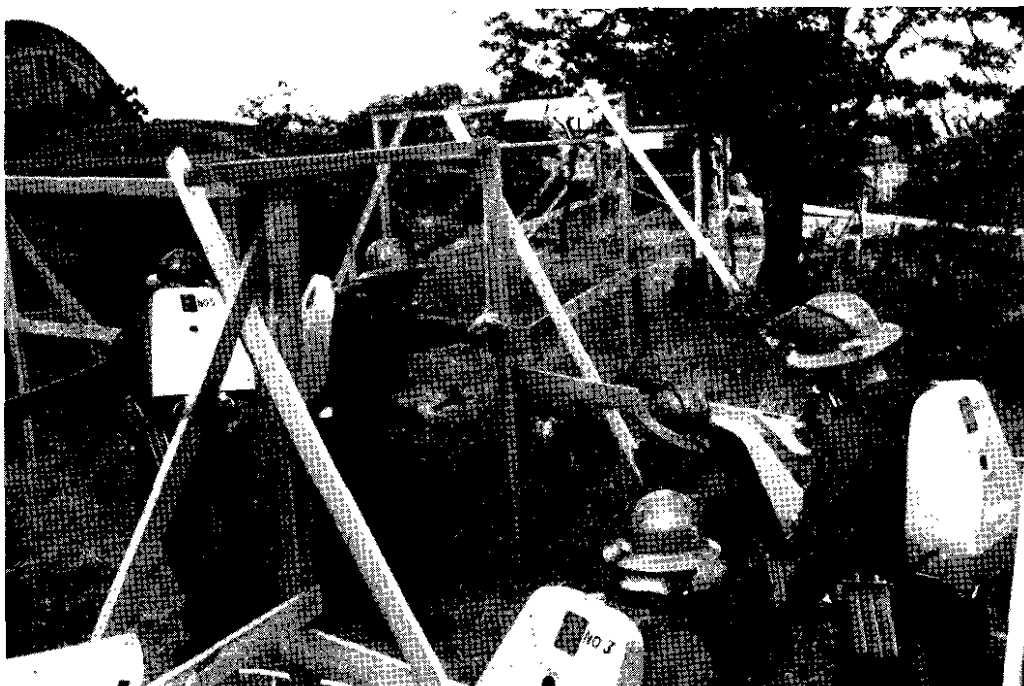
The Mine Safety Associations in different centres of the Province, sponsored by the Department of Mines and aided by company officials, safety supervisors, Inspectors of Mines, and mine-rescue instructors, continued to promote mine-rescue, first-aid, and safety education in their respective districts.

The Vancouver Island Mine Safety Association held its annual competition in **Cumberland** on May 31st, 1958. Three teams competed—two from the **Tsable River** mine and a visiting team from the Western Nickel mine. The winning team was from the **Tsable River** mine and was captained by **J. Thomson**.

The Central British Columbia Mine Safety Association held its annual competition at **Hope** on June 7th, 1958. Six teams took part in this competition. They represented **Bralorne**, **Cariboo Gold Quartz**, **Highland Bell**, **Pioneer**, and **Western Nickel** mines. The **Western Nickel** team, captained by **A. Wells**, took first place.

The West **Kootenay** Mine Safety Association held its annual competition at **Salmo** on June 14th, 1958. Six teams took part in this competition—two from the **Bluebell** mine, one from **Canadian Exploration Limited**, one from the **H.B.** mine, and two from the **Reeves MacDonald** mine. A **Bluebell** team, captained by **B. Ramage**, took first place.

The East **Kootenay** Mine Safety Association held its annual competition at **Kimberley** on June 21st, 1958. Four teams took part in this competition—two from **Kimberley**, one from **Fernie**, and one from **Michel**. First place was won by the **Fernie** team, captained by **A. Littler**.



Provincial mine-rescue competition, Victoria, June 28th, 1958.  
Team wearing compressed-oxygen breathing apparatus.



Victoria competition. Team wearing chemically generated oxygen breathing apparatus.

At all meets, competitions were held in first-aid as well as mine-rescue work. In these competitions, events were also held for women and juniors. Representatives from other industries and organizations not necessarily directly connected with mining also participated.

Competitions were also sponsored by mining companies. Two first-aid competitions were held at Bralorne—one in April by Bralorne Mines Limited and one in November by the Bridge River Valley Mine Safety Association. In May The Consolidated Mining and Smelting Company of Canada, Limited, held a mine-rescue competition at Chapman Camp as an elimination contest for entry in the annual competition of the East Kootenay Mine Safety Association.

The third Provincial mine-rescue competition was held at Victoria on June 28th, 1958. The winning teams from the Cumberland, Hope, Salmo, and Kimberley events competed for a trophy and silver trays. The event was won by the Tsable River team, captained by J. Thomson. In conjunction with the competition the Workmen's Compensation Board sponsored the second Provincial first-aid competition. Teams competed which had won local events at Cumberland, Hope, Victoria, Salmo, Kimberley, and Port Mellon. The winning team was from Howe Sound Pulp Division, Canadian Forest Products Ltd., and was captained by C. Mahlman.

#### JOHN T. RYAN TROPHY

The John T. Ryan Regional Safety Award for the metal mine with the lowest accident-frequency record for 1958 was won by the H.B. mine of The Consolidated Mining and Smelting Company of Canada, Limited, at Salmo. To win this trophy the H.B. mine completed the year without an accident involving loss of time of over six days. This record also won the Dominion Ryan Trophy, which had only once before been won by a mine in British Columbia. The company's safety organization, officials, and employees deserve high praise for this achievement.

The 195X regional safety award for coal mines was won by the Tsable River mine of Canadian Collieries Resources Limited, near Cumberland. This is the fourth year in succession that this mine has won the award. The company's safety programme has thus been quite effective.

#### BRITISH COLUMBIA MINING ASSOCIATION, SAFETY DIVISION

In 1955 the Mining Association of British Columbia set up a Safety Division with the object of promoting and assisting in establishing and maintaining effective safety programmes at its member mines. These programmes have been quite effective since 1955, as indicated by a decrease in the frequency of accidents. During 195X this decrease was further accentuated by a decrease in fatalities and the serious maiming type of injuries. Five courses in mine safety and job instruction were given. Visits were made by the safety director to member mines, where meetings were held with supervisors and reports made giving recommendations on practices and conditions found at these mines. Monthly accident statistics were compiled and issued to member mines.

#### WEST KOOTENAY MINE SAFETY ASSOCIATION TROPHY

The West Kootenay Mine Safety Association in 1951 donated a safety trophy for annual competition in order to encourage and promote safety in small mines not eligible for the John T. Ryan awards. At first the trophy was restricted to mines in the West Kootenay area, but in 1956 this restriction was removed.

The award is made to the mine having the lowest accident rate and working a total of from 2,500 to 30,000 shifts per year, one-third of these having been worked underground. An accident is taken as one which involves more than three days' loss of time.

In 1958 the award was won by the French mine near **Hedley** and was presented at a joint meeting of the West **Kootenay** Mine Safety Association and the Nelson branch of the Canadian Institute of Mining and **Metallurgy** in Nelson on March **14th, 1959**. The French mine completed the year without a single compensable accident. This commendable record had only been achieved once before in the history of the award.

# Coal

By Robert B. Bonar, Deputy Chief Inspector of Mines

## CONTENTS

	PAGE
PRODUCTION.....	133
LABOUR AND EMPLOYMENT.....	137
COMPETITION FROM COAL PRODUCED OUTSIDE BRITISH COLUMBIA.....	137
ACCIDENTS IN AND AROUND COAL MINES.....	137
EXPLOSIVES.....	139
MACHINE-MINED COAL.....	140
SAFETY LAMPS.....	141
ELECTRICITY.....	141
COAL DUST.....	141
DIESEL LOCOMOTIVES.....	141
MILLISECOND DELAY DETONATORS.....	142
DANGEROUS OCCURRENCES.....	142
BUMPS AND OUTBURSTS.....	142
PROSECUTIONS.....	142
SUPERVISION OF COAL MINES.....	142
BOARD OF EXAMINERS FOR COAL-MINE OFFICIALS.....	143
NOTES ON COAL MINES—	
Vancouver Island Inspection District.....	143
Nicola-Princeton Inspection District.....	147
East Kootenay Inspection District.....	148
Northern Inspection District.....	154

---

## PRODUCTION

The gross output in short tons of the coal mines of the Province for 1958 was 882,962 tons, a decrease of 338,804 tons or 27.7 per cent from 1957. A total of 138,005 tons came from strip mines at Michel and Tent Mountain.

The Vancouver Island District produced 182,304 tons, a decrease of 17,901 tons or 8.9 per cent from 1957.

The Northern District production was 8,327 tons, a increase of 178 tons or 2.2 per cent over 1957.

The Nicola-Princeton District production was 689 tons, a decrease of 18,088 tons or 96.4 per cent from 1957.

The East Kootenay District production was 691,642 tons, a decrease of 302,993 tons or 30.6 per cent from 1957.

## OUTPUT AND PER CAPITA PRODUCTION, 1958

Colliery and Mine	Gross Output Mined during Year (Tons)	Days Worked	Total Number of Employees	Daily Output per Employee (Tons)	Yearly Output per Employee (Tons)	Number of Employees Underground	Daily Output per Underground Employee (Tons)	Yearly Output per Underground Employee (Tons)
Tsable River Colliery.....	178,366	233	308	2.49	579	208	3.68	857
Chambers No. 5 mine .....	705	131	4	1.34	176	3	1.79	235
Loudon No. 6 mine.....	315	143	2	1.10	157	1	2.20	315
Lewis mine (Timberlands) .....	680	145	2	2.34	340	2	2.34	340
Carruthers and Wakelam No. 3.....	428	136	2	1.57	214	2	1.57	214
Stronach No. 2 mine .....	467	124	2	1.88	233	2	1.88	233
Undun mine.....	462	127	2	1.82	231	2	1.81	231
Extension mine (Brodrick) .....	842	240	3	1.17	280	3	1.17	280
Big Flame mine.....	18	15	2	.....	.....	2	.....	.....
White mine.....	21	51	2	.....	.....	2	.....	.....
Princeton Blue Flame No. 2 .....	132	15	3	2.93	44	3	2.93	44
Princeton Blue Flame No. 3 .....	14	3	2	.....	.....	2	.....	.....
Coldwater mine.....	543	225	3	0.80	181	3	0.80	181
Bulkley Valley Collieries.....	5,233	115	14	3.25	374	10	4.55	523
Reschke mine.....	782	105	3	2.48	260	2	3.72	391
Gething mine No. 3 .....	2,312	180	7	1.83	330	6	2.14	385
Elk River Colliery <sup>1</sup> .....	16,235	13	311	.....	.....	239	.....	.....
Michel Colliery (underground).....	537,402	176	694	4.40	774	559	5.46	961
Michel Colliery (strip) .....	106,861	176	16	.....	.....	.....	.....	.....
Coleman Collieries (strip) .....	31,144	45	14	.....	.....	.....	.....	.....

<sup>1</sup> Mine closed January 31st, 1958.

## DISTRICT OUTPUT AND PER CAPITA PRODUCTION, UNDERGROUND MINES, 1958

District	Gross Output Mined during Year (Tons)	Total Number of Employees at Producing Collieries	Yearly Output per Employee (Tons)	Number of Men Employed Underground in Producing Collieries	Yearly Output per Underground Employee (Tons)
Vancouver Island .....	182,304	308	592	222	821
Nicola-Princeton .....	689	8	86	8	86
Northern .....	8,327	24	347	18	462
East Kootenay .....	537,402 <sup>1</sup>	694	774	559	961
Whole Province .....	728,722	1,034	705	807	903

<sup>1</sup> Elk River production excluded as mine closed January 31st, 1958.

## OUTPUT PER MAN-SHIFT, UNDERGROUND MINES, 1949-58

Year	Man-shifts <sup>1</sup>	Tonnage	Average per Man-shift (Tons)
1949.....	520,188	1,589,131	3.05
1950.....	460,159	1,481,813	3.22
1951.....	442,170	1,434,974	3.24
1952.....	383,422	1,388,732	3.62
1953.....	333,922	1,171,932	3.51
1954.....	280,353	1,064,023	3.79
1955.....	304,139	1,157,813	3.86
1956.....	307,821	1,100,434	3.57
1957.....	226,536	945,848	4.17
1958.....	204,148	728,722	3.56

<sup>1</sup> Includes both surface and underground workers.

## COLLIERIES OF BRITISH COLUMBIA, 1958—PRODUCTION AND DISTRIBUTION, BY COLLIERIES AND BY DISTRICTS (IN SHORT TONS)

Mine	Gross Output	Washery Refuse	Net Output	Used under Companies' Boilers, etc.	Used in Making Coke	Stocks				Sales				Total Coal Sold and Used <sup>1</sup>
						On Hand First of Year	On Hand Last of Year	Added To	Taken From	In Canada	In U.S.A.	Elsewhere	Total Sales	
<b>Vancouver Island District</b>														
Canadian Collieries Resources Ltd.—	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
Tsable River Colliery.....	178,366	23,822	154,544	404	.....	20,426	24,382	3,956	.....	150,184	.....	.....	150,184	150,588
Chambers No. 5 mine.....	705	.....	705	.....	.....	.....	.....	.....	.....	705	.....	.....	705	705
Loudon No. 6 mine.....	315	.....	315	.....	.....	.....	.....	.....	.....	315	.....	.....	315	315
Lewis mine (Timberlands).....	680	.....	680	.....	.....	.....	.....	.....	.....	680	.....	.....	680	680
Carruthers and Wakelam No. 3.....	428	.....	428	.....	.....	.....	.....	.....	.....	428	.....	.....	428	428
Stronach mine.....	467	.....	467	.....	.....	110	340	230	.....	237	.....	.....	237	237
Undun mine.....	462	.....	462	.....	.....	.....	.....	.....	.....	462	.....	.....	462	462
Extension mine (Brodrick).....	842	.....	842	.....	.....	.....	.....	.....	.....	842	.....	.....	842	842
Big Flame mine.....	18	.....	18	.....	.....	.....	.....	.....	.....	18	.....	.....	18	18
White mine.....	21	.....	21	.....	.....	.....	.....	.....	.....	21	.....	.....	21	21
Totals, Vancouver Island District.....	182,304	23,822	158,482	404	.....	20,536	24,722	4,186	.....	153,892	.....	.....	153,892	154,296
<b>Nicola-Princeton District</b>														
Princeton Blue Flame No. 2.....	132	.....	132	.....	.....	.....	.....	.....	.....	132	.....	.....	132	132
Princeton Blue Flame No. 3.....	14	.....	14	.....	.....	.....	.....	.....	.....	14	.....	.....	14	14
Coldwater mine.....	543	.....	543	.....	.....	.....	.....	.....	.....	543	.....	.....	543	543
Totals, Nicola-Princeton District.....	689	.....	689	.....	.....	.....	.....	.....	.....	689	.....	.....	689	689
<b>Northern District</b>														
Bulkley Valley Collieries.....	5,233	.....	5,233	.....	.....	100	656	556	.....	4,677	.....	.....	4,677	4,677
Reschke mine.....	782	200	582	.....	.....	300	.....	.....	300	882	.....	.....	882	882
Gething mine No. 3.....	2,312	.....	2,312	.....	.....	.....	.....	.....	.....	2,312	.....	.....	2,312	2,312
Totals, Northern District.....	8,327	200	8,127	.....	.....	400	656	556	300	7,871	.....	.....	7,871	7,871
<b>East Kootenay District</b>														
Crow's Nest Pass Coal Co. Ltd.—														
Elk River Colliery.....	16,235	1,537	14,698	339	.....	563	.....	.....	563	13,002	1,920	.....	14,922	15,261
Michel Colliery (underground and strip).....	644,263	52,285	591,978	6,935	224,408	1,673	3,972	2,299	.....	291,956	66,380	.....	358,336	589,679
Coleman Collieries (strip).....	31,144	2,527	28,617	.....	.....	.....	.....	.....	.....	28,617	.....	.....	28,617	28,617
Totals, East Kootenay District.....	691,642	56,349	635,293	7,274	224,408	2,236	3,972	2,299	563	333,575	68,300	.....	401,875	633,557
<b>Coal</b>														
Grand totals for Province.....	882,962	80,371	802,591	7,678	224,408	23,172	29,350	7,041	863	496,027	68,300	.....	564,327	796,413
<b>Coke</b>														
Crow's Nest Pass Coal Co. Ltd.—														
Michel Colliery.....	173,919	.....	173,919	.....	.....	11,076	23,754	12,678	.....	87,515	73,726	.....	161,241	.....

<sup>1</sup> Includes coal used in making coke and coal used under company stationary and locomotive boilers, etc.



COLLIERIES OF BRITISH COLUMBIA, 1958—MEN EMPLOYED, DISTRIBUTION BY COLLIERIES AND BY DISTRICTS

Mine	Supervision and Clerical			Miners			Helpers			Labourers			Mechanics and Skilled Labour			Boys			Total Men Employed		
	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.	U.	A.	T.
<b>Vancouver Island District</b>																					
Canadian Collieries Resources Ltd.—																					
Tsable River Colliery.....	14	12	26	130	.....	130	.....	.....	.....	60	36	96	18	38	56	.....	.....	.....	222	86	308
Chambers No. 5 mine.....	1	1	2	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	4
Loudon No. 6 mine.....	.....	1	1	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2
Lewis mine (Timberlands).....	.....	.....	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2
Carruthers and Wakelam No. 3.....	.....	.....	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2
Stronach mine.....	.....	.....	.....	1	.....	1	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2
Undun mine.....	.....	.....	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2
Extension mine (Brodrick).....	.....	.....	.....	3	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	3
Big Flame mine.....	.....	.....	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2
White mine.....	.....	.....	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2
Totals, Vancouver Island District.....	15	14	29	147	.....	147	1	.....	1	60	36	96	18	38	56	.....	.....	.....	241	88	329
<b>Nicola-Princeton District</b>																					
Princeton Blue Flame No. 2.....	1	.....	1	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	3
Princeton Blue Flame No. 3.....	.....	.....	.....	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2
Coldwater mine.....	.....	.....	.....	3	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	3
Totals, Nicola-Princeton District.....	1	.....	1	7	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	.....	8
<b>Northern District</b>																					
Bulkley Valley Collieries.....	2	1	3	7	.....	7	1	.....	1	.....	1	1	.....	2	2	.....	.....	.....	10	4	14
Reschke mine.....	.....	1	1	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	3
Gething mine No. 3.....	.....	.....	.....	5	.....	5	1	.....	1	.....	1	1	.....	.....	.....	.....	.....	.....	6	1	7
Totals, Northern District.....	2	2	4	14	.....	14	2	.....	2	.....	2	2	.....	2	2	.....	.....	.....	18	6	24
<b>East Kootenay District</b>																					
Crow's Nest Pass Coal Co. Ltd.—																					
Elk River Colliery <sup>1</sup> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Michel Colliery (underground).....	36	22	58	278	.....	278	115	.....	115	46	54	100	84	59	143	.....	.....	.....	559	135	694
Michel Colliery (strip).....	.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	14	.....	.....	.....	.....	16	16
Coleman Collieries (strip).....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	14	.....	.....	.....	.....	15	15
Totals, East Kootenay District.....	36	25	61	278	.....	278	115	.....	115	46	54	100	84	87	171	.....	.....	.....	559	166	725
<b>Grand totals for Province.....</b>	<b>54</b>	<b>41</b>	<b>95</b>	<b>446</b>	.....	<b>446</b>	<b>118</b>	.....	<b>118</b>	<b>106</b>	<b>92</b>	<b>198</b>	<b>102</b>	<b>127</b>	<b>229</b>	.....	.....	.....	<b>826</b>	<b>260</b>	<b>1,086</b>

## COAL-PREPARATION PLANTS

There were no additions or extensive alterations made to existing plants in 1958. For full details of plants *see* 1954 Annual Report.

## COKE-MAKING

Coke is made at only one plant in the Province, that of the Michel Colliery, The Crow's Nest Pass Coal Company Limited, Fernie. There were no alterations or extensions made at this plant during the year. For full details *see* 1954 Annual Report.

## BRIQUETTING

Briquettes are made at only one plant in the Province, that of the Michel Colliery, The Crow's Nest Pass Coal Company Limited, Fernie. There were no alterations or extensions made at this plant during the year. For full details of this plant *see* 1954 Annual Report.

## LABOUR AND EMPLOYMENT

In 1958, 1,086 persons were employed in and about the coal mines of the Province, a decrease of 294 from 1957.

Because of the five-day week in force throughout the Province at the larger mines and the legal holidays, the maximum number of working-days was 241. In the Vancouver Island District the one large mine, the Tsable River mine, worked 233 days. In the East Kootenay District the Michel Colliery worked 176 days.

COMPETITION FROM COAL PRODUCED OUTSIDE  
OF BRITISH COLUMBIA

In 1958 the shipment of Alberta coal and briquettes to British Columbia totalled 532,911 and 16,208 tons respectively. The following table shows the amount of Alberta coal brought into British Columbia during the past ten years:—

Year	Short Tons	Year	Short Tons
1949 .....	891,132	1954 .....	891,194
1950.....	873,558	1955.....	932,764
1951 .....	898,533	1956 .....	860,329
1952 .....	1,021,484	1957 .....	672,527
1953.....	859,385	1958.....	532,911

Of the 564,327 tons of British Columbia coal marketed, 228,254 tons was sold for domestic and industrial use in Alberta, Saskatchewan, Manitoba, Ontario, and Yukon Territory; 63,810 tons was sold for railroad use in Canada; 68,300 tons was exported to the United States; and 3,291 tons was sold for ships' bunkers.

The amount sold for domestic and industrial use in the Province was 200,672 tons.

## ACCIDENTS IN AND AROUND COAL MINES

In 1958 there were no fatal accidents, as compared with two in 1957. The number of fatal accidents per 1,000 persons (underground and strip-mine personnel) employed was 0, compared with 1.45 in 1957, 4.39 in 1956, 3.38 in 1955, 0.69 in 1954, 3.22 in 1953, 1.78 in 1952, 3.11 in 1951, 2.21 in 1950, and 0.43 in 1949.

The number of fatal accidents per 1,000,000 gross tons of coal (underground and strip-mine coal) produced in 1958 was 0, compared with 1.63 in 1957.

The following table shows comparative figures for fatal accidents for 1957 and 1958:—

Company	Colliery	1958	1957
The Crow's Nest Pass Coal Co. Ltd.	Michel	0	1
The Crow's Nest Pass Coal Co. Ltd.	Elk River	0	1
Totals		0	2

The following two tables classify the fatal accidents in coal mines as to cause and quantity of coal per accident:—

#### FATAL ACCIDENTS CLASSIFIED AS TO CAUSE

Cause	1958		1957	
	Number	Per Cent	Number	Per Cent
By falls of roof and coal	---	---	1	50.00
Rolling rock or coal	---	---	1	50.00
Totals	---	---	2	100.00

#### FATAL ACCIDENTS, UNDERGROUND MINES, CLASSIFIED AS TO QUANTITY OF COAL MINED

Cause	1958		1957	
	Number of Fatal Accidents	Coal Mined per Fatal Accident	Number of Fatal Accidents	Coal Mined per Fatal Accident
By falls of roof and coal	---	---	1	945,848
Rolling rock or coal	---	---	1	945,848
Totals	---	---	2	472,924

NOTE.—There were no fatal accidents in strip-mining operations during 1958.

#### RATIO OF FATAL ACCIDENTS, UNDERGROUND MINES

District	Accident Death Rate			
	Per 1,000 Persons Employed		Per 1,000,000 Tons of Coal Mined	
	1958	1957	1958	1957
Vancouver Island	---	---	---	---
Nicola-Princeton	---	---	---	---
East Kootenay	---	2.09	---	2.72
Northern	---	---	---	---
Province, 1958	---	---	---	---
Province, 1957	---	1.50	---	2.11

There were 168 accidents involving loss of seven days or more, reported to the Department by the management of the various mines. All these accidents were investigated and reported on by the District Inspectors of Mines.

The following three tables classify the accidents in coal mines in 1958 as to occupation of the men involved, as to cause, and as to injury.

## ACCIDENTS CLASSIFIED AS TO OCCUPATION

Occupation	Number of Accidents	Percentage of Accidents
Underground—		
Miners .....	96	57.14
Drillers and facemen .....	.....	.....
Haulage and conveyor men .....	34	20.24
Trackmen and mechanics .....	3	1.79
Supervisors .....	2	1.19
Timbermen .....	4	2.38
Coal-cutters .....	.....	.....
Miscellaneous .....	2	1.19
Surface—		
Shops .....	8	4.76
Surface .....	8	4.76
Preparation and coke-ovens .....	11	6.55
Miscellaneous .....	.....	.....
Totals .....	168	100.00

## ACCIDENTS CLASSIFIED AS TO CAUSE

Cause	Number of Accidents	Percentage of Accidents
Fall of ground .....	31	18.45
Fall of material and flying material .....	11	6.55
Lifting and handling equipment and material .....	49	29.17
Machinery and tools .....	33	19.64
Slipped and tripped .....	28	16.67
Falling off staging and platforms .....	8	4.76
Miscellaneous .....	8	4.76
Totals .....	168	100.00

## ACCIDENTS CLASSIFIED AS TO INJURY

Injury	Number of Accidents	Percentage of Accidents
Head and neck .....	8	4.76
Eyes .....	2	1.19
Trunk .....	33	19.64
Back .....	28	16.67
Arms .....	4	2.38
Hands and fingers .....	40	23.81
Legs .....	38	22.62
Feet .....	8	4.16
Toes .....	7	4.17
Totals .....	168	100.00

## EXPLOSIVES

The following table shows the quantity of explosives used in underground coal mines in 1958, together with the number of shots fired, tons of coal produced per pound of explosives used, and the average number of pounds of explosives per shot fired (these.

quantities include all the explosives used for breaking coal and rock work in coal mines):—

## VANCOUVER ISLAND DISTRICT

Colliery	Quantity of Explosives Used (Pounds)	Coal Mined (Tons)	Total Number of Shots	Average Tons of Coal per Pound of Explosives Used	Average Pounds of Explosives per Shot Fired
Tsable River Colliery.....	88,550	178,366	121,225	2.01	0.73
Chambers No. 5 mine.....	350	705	700	2.01	0.50
Loudon No. 6 mine.....	850	315	800	0.37	1.06
Lewis mine (Timberlands).....	500	680	900	1.36	0.55
Carruthers and Wakelam No. 3 mine.....	450	428	600	0.95	0.75
Stronach mine.....	150	467	250	3.11	0.60
Undun mine.....	150	462	300	3.08	0.50
Extension mine (Brodrick).....	663	842	396	1.27	1.67
Big Flame mine.....	150	18	100	0.12	1.50
White mine.....	22	21	43	0.95	0.51
Totals for district.....	91,835	182,304	125,314	1.98	0.73

## NICOLA-PRINCETON DISTRICT

Princeton Blue Flame mine No. 2.....	95	132	95	1.39	1.00
Princeton Blue Flame mine No. 3.....	80	14	100	0.17	0.80
Coldwater mine.....	300	543	600	1.81	0.50
Totals for district.....	475	689	795	1.45	0.59

## NORTHERN DISTRICT

Bulkley Valley Collieries.....	4,582	5,233	5,450	1.14	0.84
Reschke mine.....	500	782	500	1.56	1.00
Gething mine.....	2,200	2,312	2,420	1.05	0.91
Totals for district.....	7,282	8,327	8,370	1.14	0.86

## EAST KOOTENAY DISTRICT

Elk River Colliery.....	620 <sup>1</sup>	16,235	765 <sup>1</sup>	26.18	0.81
Michel Colliery (underground).....	104,050	537,402	90,149	5.16	1.15
Totals for district.....	104,670	553,637	90,914	5.28	1.15

<sup>1</sup> Estimated.

## PROVINCE

Totals for Province.....	204,262	744,957	225,393	3.64	0.91
--------------------------	---------	---------	---------	------	------

## QUANTITY OF DIFFERENT EXPLOSIVES USED

Monobel of different grades.....	Lb.	197,262
Permissible rock powder.....		7,000
Total.....		204,262

## MACHINE-MINED COAL

In 1958, mining-machines produced approximately 25,133 tons or 3.45 per cent of the total output from underground mining. A total of 138,005 tons of strip-mined coal was removed by mechanical means.

## SAFETY LAMPS

There were 905 safety lamps in use in the mines of the Province. Of this number, seventy-nine were flame safety and 826 were approved electric lamps, mostly of the Edison type,

## APPROVED SAFETY LAMPS—ELECTRIC AND FLAME

The following is a list of approved safety lamps, electric and flame:—

The Wolf lamp, flame type.

The Koehler lamp, flame type.

The Edison electric lamp (cap) under Approval No. 18 of the United States Bureau of Mines, and all Edison lamps up to and including Model P, carrying the Approval Certificate No. 26 of the United States Bureau of Mines, Model R-4, Approval No. 29.

The Wheat electric lamp and having Approval No. 20, as issued by the United States Bureau of Mines,

The Wolf electric lamp, No. 830C.

The electric lamp manufactured by the Portable Lamp and Equipment Company, under Approval No. 27 of the United States Bureau of Mines.

M.S.A. single-cell trip lamp, carrying United States Bureau of Mines Approval No. 1009, approved for use on haulage trips in mines.

The Davis M.L. model pneumatic electric lamp.

## ELECTRICITY

Electricity is used for various purposes on the surface and underground at three collieries. A total of 12,247 horsepower was used in and about these mines. Detailed information as to how and where this power was used is given in the report of the Senior Electrical Inspector of Mines.

## INSPECTION COMMITTEES

The provisions of the "Coal-mines Regulation Act," section 65, General Rule 19, require that an inspection committee of workmen shall inspect the mine regularly on behalf of the workmen and make a true report of the conditions found. In all the larger mines of the Province this rule is fully observed, and copies of the report are sent to the Inspectors for the district. The work of these committees is valuable and assists in furthering the interests of safety at the various mines.

## COAL DUST

The danger of accumulations of coal dust on the roadways and in the working-places is fully realized and as a rule the regulations regarding the control of coal dust are adequately carried out. Large quantities of limestone dust are used continually in the larger mines to combat this hazard. It is used in the roadways, working-places, and for the tamping of shots.

Dust samples are taken regularly from roof, sides, and floor of mine roadways and analysed. The reports of the analyses are forwarded to the District Inspector each month.

## DIESEL LOCOMOTIVES

Early in August, 1950, the first diesel underground locomotive to be used in any mine in British Columbia made its trial runs in No. 9 mine, Elk River Colliery, The Crow's Nest Pass Coal Company Limited.

The locomotive is a 15-ton 100-horsepower model and is fully permissible for use in coal mines. Two 75-horsepower diesel locomotives were purchased in 1956 for use in hauling the output from the "A" North mine to the tippie at the Michel Colliery.

#### MILLISECOND DELAY DETONATORS

In February, 1951, an amendment to the "Coal-mines Regulation Act" was passed to allow, with the permission of the Chief Inspector of Mines, more than one shot to be fired at a time in any coal mine or district of a mine. For further details see 1954 Annual Report.

#### DANGEROUS OCCURRENCES

On February 12th, 1958, while drilling to complete a round of holes for brushing at the face of No. 2 level, "A" North mine, Michel Colliery, a miner decided to deepen one of the holes that had been drilled by the cross-shift. As soon as he started to drill an explosion occurred which seriously injured the miner.

Subsequent investigation brought out the fact that one of the cross-shift miners had put one stick of rock-powder into the hole and had not reported the matter.

On November 3rd, 1958, a fire occurred in the No. 2 compressor motor at the Tsable River mine when the closed-circuit rings of the Amortisseur windings burned through in several places and ignited oil and dirt on the stator coils. Damage was confined to the motor.

#### BUMPS AND OUTBURSTS

On January 31st, 1958, a severe bump occurred in No. 8 split roadway of No. 12 room, No. 3 Slope district, "B" South mine, Michel Colliery. Two miners working in the place were severely shaken and bruised and approximately 90 feet of the floor was heaved about 2 feet. The large quantity of methane gas which was liberated from the coal affected the whole district, necessitating the withdrawal of all the men.

On December 9th, 1958, a bump occurred on the No. 3 haulage slope, "B" South mine, Michel Colliery, which caused considerable damage to the floor and track of the slope. Approximately 90 feet of track was heaved, and the displacement ranged from 3 feet in the centre to zero at both ends. No damage was caused to the roof or timber support. No one was injured.

On December 19th, 1958, a bump occurred on No. 3 haulage slope, "B" South mine, Michel Colliery, that disturbed several sets of timber supports and caused several small caves. Approximately 50 feet of the roadway was affected. The location of the bump was immediately outby the one that occurred on December 9th, 1958. The floor of the area was only slightly affected and no one was injured.

#### PROSECUTIONS

Cecil Gareau, miner, Michel Colliery, was prosecuted on February 14th, 1958, under Rule 112 of The Crow's Nest Pass Coal Company's "Special Rules" for subjecting a fellow workman to danger not necessary in the course of his occupation. He was fined \$30 and \$5 costs.

#### SUPERVISION OF COAL MINES

During 1958 eighteen companies operated twenty-three mines, employing 826 men underground. In the supervision of underground employees there were 3 managers, 8 overmen, 3 shiftbosses, and 53 firebosses, or approximately 1 official for every 12 men.

## BOARD OF EXAMINERS FOR COAL-MINE OFFICIALS

FIRST-, SECOND-, AND THIRD-CLASS CERTIFICATES AND MINE  
SURVEYORS' CERTIFICATES

The Board of Examiners, formed on July 10th, 1919, consists at present of R. B. Bonar, Deputy Chief Inspector of Mines, chairman and secretary; A. R. C. James, Inspector of Mines, member; and D. R. Morgan, Inspector of Mines, member.

The meetings of the Board are held in the office of the Department of Mines in Victoria. The examinations are held at least once a year and more often if necessary.

All officials, before engaging in multiple blasting with millisecond delay detonators, are required to obtain a permit to do so from the Board of Examiners (Coal-mine Officials). This permit is issued only after the applicant has successfully passed oral and practical examinations in such work.

In addition to the examinations and certificates already specified as coming under the Board of Examiners, the Act provides that every coal-miner shall be the holder of a certificate of competency as such. Examinations are held as circumstances warrant in coal-mining districts, and no certificate is granted 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 1958 there were fourteen candidates for coal-miners' certificates. In addition to the certificates granted above, substitute certificates were issued to those who had lost their original certificates. Permits to act as coal-miners, as provided by the Act, have been granted to younger men by Inspectors in their respective districts. This method allows promising men with less than one year's experience underground to work at the coal face as miners under the guidance of an experienced miner.

The Board of Examiners desires to thank the different coal-mining companies for the use of their premises for holding examinations where necessary.

---

NOTES ON COAL MINES

## VANCOUVER ISLAND INSPECTION DISTRICT

By R. B. BONAR

The gross output of coal from the Vancouver Island Inspection District was 182,304 tons, a decrease of 17,901 tons or 8.9 per cent from the 1957 output. Only one large coal mine, the Tsable River mine, is now in production on the Island. Operations in the once important Nanaimo coalfield are now restricted to nine very small mines, providing employment for no more than twenty-one men. These mines operate in outcrop, pillars, and barriers left during earlier working.

The Island coal-mining industry has suffered a rapid decline in the past few years. Production has declined by as much as 60 per cent since 1951. This condition has resulted from loss of markets due to competition from other fuels, high costs of production, and from the depletion of reserves in the Nanaimo coalfield.

In 1958 there were no accidents classified as serious, although fifty-three minor accidents were reported and investigated. There was one dangerous occurrence reported from the mines of the Island—a fire that occurred in one of the compressor motors at the Tsable River mine. The incident is reported fully under "Dangerous Occurrences."

The annual mine-rescue and first-aid meet organized by the Vancouver Island Mine Safety Association was held at Cumberland on Saturday, May 31st. Two teams from Tsable River mine and a visiting team from the Western Nickel mine participated in



the mine-rescue competition, and a very high standard of performance was maintained. The winning team was the Tsuble River team No. 1, captained by John Thomson.

#### NANAIMO (49° 123° S.W.)

**Chambers No. 5 Mine**, Extension district, near Extension. The area was first opened up as a strip-ping operation in the latter part of 1952 and comprised a small section of the Wellington seam lying close to the surface in the vicinity of the old Vancouver slope workings. By the end of 1954 all available surface coal was depleted, and early in January, 1955, the present slope was started to test the continuity of the the seam underground. Early in 1957 the slope broke into the old Extension workings after being driven well over 600 feet from the portal. The slope pillars and room pillars are now being mined on the retreat.

The coal is mined by picking out the middle band of carbonaceous shale with hand-picks. It is then blasted and hand-loaded into cars which are hauled to the tippie by a gasoline-driven hoist. A small shaker screen sorts the coal into 2-inch, 1- to 2-inch, and under 1-inch sizes.

Total production in 1958 was 705 tons over a working period of 131 days, with a crew of four men. Working conditions were found to be satisfactory in the course of inspections. No accidents were reported.

**Lewis Mine (Timberlands)** Glyn Lewis, operator and fireboss. This property comprises two small mines operating in the Wellington seam in a small area of outcrop coal that was left when No. 8 mine was abandoned by Canadian Collieries (Dunsmuir) Limited. The seam outcrops on the side of a ridge parallel to and immediately south of the Nanaimo River valley at an elevation of 540 feet above sea-level. The coal measures dip southward at 8 degrees. The two mines are one-third of a mile apart.

The new mine, which commenced production in May, 1951, is in Range 1, Section 2, of the Cranberry district. It operates in an area of coal outcrop about 1 acre in extent, which is bounded on the west by a thrust fault that also formed the western boundary of the old No. 8 mine. The seam is 6 feet thick, including two thin rock bands.

The coal is blasted off the solid and hand-loaded into cars which are hauled to the surface up the slope by a small gasoline-driven hoist. A shaker screen sorts the coal into lump, nut, and pea sizes. Total production in 1958 was 680 tons over a working period of 145 days, with a crew of two men. Working conditions were found to be satisfactory, and no accidents were reported.

**Undun Mine** J. Unsworth and A. Dunn, operators; A. Dunn, fireboss. This mine, which was brought into production in August, 1954, is three-quarters of a mile northwest of the village of Extension. It operates in the Wellington seam, and the output comes from the mining of pillars and small areas of coal left near the outcrop in the workings of the old Extension No. 6 mine. The Wellington seam is variable in thickness, but the coal is of excellent quality. The measures dip about 10 degrees southwest. The roof is strong conglomerate.

The coal is blasted off the solid and hand-loaded into cars which are hauled via the slope to the surface by a small gasoline-driven hoist. Production in 1958 amounted to 462 tons over a working period of 127 days, with a crew of two men. Working conditions were found to be satisfactory in the course of inspections, and no accidents were reported.

**Big Flame Mine** Albert Addison, operator. This mine is in Range 5, Section 13, of the Cranberry district. Reopening of this mine, formerly known as the Clifford mine, was commenced early in 1955. During the year only prospecting was done in an attempt to find coal of economical thickness and grade.

**Extension Mine** H. Brodrick and associates, operators; H. Brodrick, fireboss. This mine is located partly on Lot 6, Douglas district, and on Section 12, Range 1, Cranberry district, and is about 2 miles west of Extension village. The mine was started early in 1957 in outcrop coal near the portal of the No. 2 slope, old Extension colliery,

The coal is blasted off the solid and hand-loaded into cars which are hauled to the surface by a small gasoline-driven hoist. Production in 1958 amounted to 42 tons over a working period of 240 days, with a crew of three men. Working conditions were found to be satisfactory in the course of inspections, and no accidents were reported.

#### NORTH WELLINGTON (49° 124° S.E.)

**Loudon No. 6 Mine** William Loudon and associates, operators; W. Loudon, fireboss. This mine is about 1 mile southeast of Wellington and has been opened up by a flat-dipping slope driven in a small area of outcrop coal in the No. 2 Upper Wellington seam adjacent to the old No. 9 mine workings. The top portion of the seam, varying from 2 to 3 feet and consisting of carbonaceous shale, is blasted off the solid and stowed. The bottom 20 inches to 2 feet of coal is broken up with light shots and hand-loaded into cars which are hauled to the surface by a small gasoline-driven hoist. Production in 1958 amounted to 315 tons over a working period of 143 days, with a crew of two men. Working conditions were found to be satisfactory during the course of inspections, and no accidents were reported.

**Carruthers and Wakelem No. 3 Mine** R. B. Carruthers and W. Wakelem, operators; R. B. Carruthers, fireboss. This mine, near the Loudon mine, is also in the No. 2 or Upper Wellington seam adjacent to the abandoned workings of the old No. 9 mine. Production in 1958 amounted to 428 tons over a working period of 136 days, with a crew of two men. Working conditions were found to be satisfactory in the course of inspections. No accidents were reported.

**Stronach No. 2 Mine** Charles Stronach, operator; H. Gilmour, fireboss. This mine is in a section of the No. 2 or Upper Wellington seam adjacent to the old No. 9 mine. All the output comes from the mining of pillars and small areas of coal left in the early workings. Production in 1958 amounted to 467 tons over a period of 124 days, with a crew of two men. Working conditions were found to be satisfactory in the course of inspections. No accidents were reported,

**White Mine** Joseph White, operator and fireboss. This mine is about 200 feet south of Stronach No. 2 mine and is operated as a prospect in search of pillars of coal thought to have been left during the early working of the old Wellington slope and latterly the Pacific No. 2 mine. These mines operated in the lower Wellington seam, which averages 6 to 8 feet in thickness and is of excellent quality. After considerable difficulty in passing through a gob area, a small pillar of coal was located from which 60 tons of coal was mined before a cave-in closed the area.

During 1958 a roadway was driven through the gob area to explore to the west of the portal. A small pillar of coal was discovered.

## COMOX (49° 124° N. W.)

Head office, S66 Hornby Street, Vancouver. F. Ronald Graham, Canadian Collieries chairman of the board; N. R. Whittall, president; E. O. T. Resources Limited Simpson, vice-president, mining; W. W. Johnstone, district superintendent.

*Tsable River Mine.*—S. J. Lawrence, manager; T. Ecclestone, overman; L. Cooper, A. Cullen, and A. Somerville, shiftbosses; W. Bennie, J. Cochrane, M. Frobisher, W. High, L. Hutchinson, C. Lewis, G. Nicholas, J. Thomson, and A. Maxwell, firebosses; S. Gough, surface foreman.

The layout and method of operating this mine are fully described in the 1954 Annual Report. In 1958 production came from the extraction of pillars formed by earlier development in the seam and from development work in the northeast section beyond the second fault system. This latter section, which was penetrated by an inclined rock tunnel near the end of 1955, is being rapidly expanded in spite of difficulties encountered, such as local thinning of the seam and seam faulting.

The haulage slope of No. 1 slope in this section is still being advanced in virgin territory, and the seam at the face of the slope is of normal height and clean. The immediate roof, especially in the lower area of the section, has not improved and consists of thinly bedded sandstone which contains numerous slips and joints and requires closer timbering than is usual. The rock tunnel started to the rise off No. 10 level parting to connect with the slope workings in this section intersected the coal beyond the fault, but at the end of the year had not been converted to the main haulage incline for the district as was the original intention.

The extraction of pillars in the Nos. 6 Right, 8 Right, and 10 Right sections of the main diagonal slope is proceeding methodically and rapidly.

All the coal, both in development and pillar-extraction areas, is blasted off the solid. Electrical multiple blasting with millisecond delay detonators is used throughout the mine. Totals of 88,550 pounds of Monobel No. 4 and CXL-ite explosives and 121,225 detonators were used during the year.

Total production in 1958 amounted to 178,366 gross tons over a working period of 233 days, with a crew averaging 241 men underground and eighty-eight on the surface. Conditions at the mine were usually found to be satisfactory in the course of inspections.

First-aid arrangements have been maintained at a satisfactory standard. A suitably equipped first-aid room is provided on the surface, and an ambulance is held in readiness for emergencies. Five employees hold industrial first-aid certificates, and twenty-four employees hold other first-aid certificates. Two mine-rescue teams of six men each are maintained, and these attend periodic practices at the Cumberland mine-rescue station.

Forty-six accidents at or in the mine were reported and investigated, none of which were classed as serious. This mine won the Ryan Trophy, emblematic of having the lowest accident record in a British Columbia coal mine, in 1956 and 1957, and has again won the award for 1958. This very excellent record is due to the maintaining of the intensified safety programme put into effect by the management and ably assisted and advised by the director of the Safety Division of the British Columbia Mining Association.

Regular inspections of the mine were made each month by the inspection committee appointed by the workmen, and copies of its reports were forwarded to the office of the District Inspector through the courtesy of the committee.

## NICOLA-PRINCETON INSPECTION DISTRICT

By A. R. C. JAMES

Coal production in 1958 in the Nicola-Princeton district was only 689 tons—an industry which once gave employment to a considerable numbers of men in the district has now almost entirely dwindled away due to lack of markets. Operations were restricted to two very small mines working in pillars and small areas of coal close to the outcrops. The Coldwater mine at Merritt continued to be operated on a small scale and produced coal for local domestic use. The Blue Flame mine near Princeton was closed in January, but the fireboss and another employee reopened an old slope near by and began production in December. Coal from this operation is sold to the Princeton brewery. The Blue Flame property is on a Coal Lease 38, which was again renewed in favour of the Wilson Mining Corporation.

Coal Licences Nos. 32, 69, 70, 71, 125, and 126 covering a total of 2,618 acres near Blakeburn have been renewed in favour of Mullin's Strip Mine Ltd.

Coal Licence No. 11, covering 640 acres near Princeton, has been renewed in favour of E. Hayes and B. Vittoni. Coal Licence No. 17, covering 320 acres near Coalmont, has been renewed in favour of Collins Gulch Collieries Ltd. Coal Licence No. 59, covering 80.9 acres near Grindrod, has been renewed in favour of Edward Pechr. No activity of any importance was reported from any of these properties.

No accidents were reported from either of the coal mines in 1958 nor were there any prosecutions under the "Coal-mines Regulation Act."

## MERRITT (50° 120° S.W.)

**Coldwater Coal  
Mines**

This property, 1 mile south of Merritt, is operated by the owners, S. Gerrard and partners. Fireboss (on permit), S. Gerrard. Activities were again confined to the Coldwater No. 5 mine and consisted of splitting pillars and extracting remnants of coal left between the abandoned workings of the Middlesboro No. 5 mine and the surface, in the area adjacent to and west of the old water-tank and about 250 feet west of the old Middlesboro No. 4 mine. The seam is from 4 to 5 feet thick and includes two partings consisting of 3 inches of bone and 1 inch of hard shale. The coal is blasted from the solid and is hand-loaded into cars which are hauled to the surface by a small gasoline-driven hoist. Total production in 1958 was 543 tons. The crew varied from two to three men. Working conditions were usually found to be satisfactory in the course of inspections, No methane was detected,

## PRINCETON (49° 120° S.W.)

**Blue Flame  
Colliery**

Thomas Bryden, fireboss. The mine is about 10 miles by road south of Princeton and about half a mile west of the Hope-Princeton Highway. The old slope was abandoned in January after all available coal had been extracted. In August an old prospect tunnel about one-quarter of a mile east of the old slope, and in the same seam, was reopened. This old tunnel extends 130 feet down dip on the seam and terminates alongside a northeasterly striking fault. The coal seam is from 6 to 7 feet thick, strikes eastward, and dips northward at 16 degrees. During the fall months a tippie was erected at the portal, and equipment was transferred from the previous operation. A gasoline-driven compressor and hoist were erected at the mine. Production began in December, the total production for the year being 132 tons. The coal is crushed to stoker size and is mainly sold to the Princeton brewery. Two men were employed. Working conditions were found to be generally satisfactory and no methane was detected.

## EAST KOOTENAY INSPECTION DISTRICT

By D. R. Morgan

Coal-mining activities in the East Kootenay Inspection District were considerably restricted during 1958 owing to shortage of markets for coal. This resulted in irregular operation, closure of one of the collieries, and a decline in production. Two companies were in operation and produced 691,642 tons of coal, a decrease of 302,993 tons or 30.6 per cent less than was produced in 1957. Most of the production, totalling 660,498 tons, was obtained from the mines of The Crow's Nest Pass Coal Company Limited. This was 223,994 tons or 25.3 per cent less than in 1957. The company operated collieries at Michel and Coal Creek at the commencement of the year, but the Elk River Colliery at Coal Creek was closed in January, and since that time company activities have been confined to the Michel Colliery. The remainder of the production was obtained by Coleman Collieries Limited, which operates a large strip mine on both sides of the interprovincial boundary on Tent Mountain, near Corbin. This company produced 31,144 tons from the British Columbia side in 1958, a decrease of 78,999 tons or 71.7 per cent less than was produced from the same operation in 1957.

The accident record showed an improvement in both frequency and severity rates, and it is very pleasing to report that there were no fatal accidents in the district in 1958. Four serious accidents, each involving a fractured limb, were reported from the Michel Colliery, three of which occurred underground and the other on the surface. This was two serious accidents less than were reported from the colliery in 1957. Minor accidents resulting in the loss of one or more days from work totalled 152, of which 124 occurred underground and twenty-eight on the surface. This number was twenty-four less than in 1957. Five minor accidents were reported from the Elk River Colliery prior to its closure. No accidents were reported from the British Columbia side of the stripping operation on Tent Mountain. Four dangerous occurrences were investigated at Michel Colliery, one of which led to the prosecution of one of the workmen concerned. These incidents are reported more fully in another part of the report under the heading "Dangerous Occurrences."

The thirty-seventh annual competition of the East Kootenay Mine Safety Association was held at Chapman Camp on June 21st, and the various contests were well attended. Four teams representing Fernie, Michel, and Kimberley entered the mine-rescue contest, and the British Columbia Department of Mines shield was won by the Fernie team, captained by Albert Littler. There were 135 entries in the first-aid contests, and the Rotary shield and the British Columbia Department of Mines cup were won by the Sullivan concentrator team, captained by A. Nixon. Winners of both these competitions represented the East Kootenay District at the Provincial competition held at Victoria on June 28th.

T. G. Ewart, president, Fernie; Thomas Balmer, vice-president, The Crow's Nest Pass Coal Company Limited, 305 Great Northern Railway Building, Seattle, Wash.; James Littler, general superintendent, Fernie; W. R. Prentice, secretary, Fernie; R. A. Colleaux, treasurer, Fernie. This company owns extensive coal properties in the Crowsnest Pass area and has conducted large-scale coal-mining operations in the district since 1897. Present operations are confined to the Michel Colliery and include both underground and open-cast mining, and are directed from a head office in Fernie. Most of the production is sold on the industrial market and a large amount of the fines is used for coke-making and briquetting. A short description of the operations follows.

**MICHEL COLLIERY.**—(49° 114° N.W.) William Chapman, manager; Irving Morgan, senior overman; Walter McKay, safety supervisor; William Gregory, afternoon-shift overman.

This colliery is operated at Michel, 24 miles east of Fernie, and is on the Crow'snest Pass branch of the Canadian Pacific Railway. It is a large colliery, comprising five underground mines at Michel and a stripping operation on Baldy Mountain, near Michel. It also includes a modern by-product plant and a briquette plant which are located on the colliery-site. The mines are operated on both sides of the valley and are named according to the seams worked and the direction of development. Four of the mines are on the south side and one on the north side. Those on the south side have been developed from a pair of rock tunnels which have been driven across the synclinal structure of the coal measures, and they are operated on both limbs of the syncline. The remaining mine, "A" North, is being developed from the outcrop of the seam on the north side of the valley. Each of the mines is ventilated by a separate fan. The mines in general are operated by the room-and-pillar system and the pillars are extracted on the retreat. The chief motive power in use underground is compressed air, which is supplied by four electrically driven and two steam-driven compressors on the surface. Two other compressors also supply high-pressure air for operating compressed-air locomotives on some of the main haulage roadways and also the main rock tunnel. The haulage on the levels at the "A" North mine is by diesel and battery locomotives. Electricity is used at some of the mines for operating conveyors and pumps on the main and secondary roadways and is used on a larger scale in the "A" North mine. Coal from all the mines is cleaned and treated for market at a modern preparation plant, a description of which has been given in past reports. A new slimes recovery plant was added to the preparation plant early in 1958 for handling  $\frac{1}{4}$ -mm. slimes which formerly were sluiced to settling-ponds and subsequently stockpiled. The slimes are now dewatered and recovered at the plant, a process which has eliminated several conveyors and an elevator.

The underground operations are under the direct supervision of seven overmen and twenty-eight firebosses.

**"A" East Mine.**—Daniel Chester, overman; Frank McVeigh, Harry Sanders, Roger Pasiand, Albert Littler, Kenneth Kniert, Thomas Taylor, and Louis Sclipa, firebosses.

This mine, in "A" seam, is on the eastern limb of the Michel syncline and all the workings are on the left side of the rock tunnels. The mine has been in operation for many years, and present activities are confined mainly to dip workings which are rapidly retreating back toward the rock tunnels. The mine is worked by the room-and-pillar system.

The seam is of good quality, 10 to 12 feet thick, and dips at an average of 20 degrees in a southwesterly direction. It is friable and gassy. The roof is weak and requires careful attention for its support. Usually the coal in the rooms is mined by compressed-air picks but sometimes is blasted from the solid by the use of millisecond delay detonators. It is loaded by duck-bill conveyors or directly by hand onto the conveyors. The pillars are extracted by the shortwall method, and, as the coal is friable, pneumatic picks are used to advantage and only occasional shots are required. The coal from the pillars is loaded by hand onto shaker-conveyors and transferred to loading points in the rooms or levels by shaker, chain, and belt conveyors. From these loading points the coal is hauled in trips of cars by compressed-air hoists to the main east level, and from there to the surface by compressed-air locomotives via the main rock tunnels.

The mine produced an average of 920 tons per day during 1958 with a crew of 180 men. Most of the production was obtained from the No. 1 and No. 3 Slope districts, and the remainder from a panel of pillars left above the main east level. No. 1 Slope district, the larger operation, is at the outer end of the main level, and has been developed by means of three slopes driven to the base of the Michel syncline. Rooms and pillars have been developed on both limbs of the syncline from this point, but up to the present extraction of pillars has been confined to the inner, or Sparwood, limb of

the **syncline**. Considerable difficulties have been encountered in this **area** owing to excessive roof pressures, and a large number of the roadways were abandoned in 1958 because of the high cost of maintenance. Further development in the area was also stopped, and since that time operations have been confined to the extraction of pillars. This decision has restricted the size of the district considerably. No. 3 Slope district has been in operation for many years, and present activity consists of the extraction of pillars left for supporting the slopes. Extraction of the pillars at the lower end of the slopes was completed early in June and since that time operations have been confined to the upper regions. Conditions in general were found to be satisfactory with the exception of breakages of timber supports and restricted clearance on some of the roadways at the lower end of the No. 1 Slope district prior to their abandonment. Difficulty was also experienced on one occasion when the ventilation in this section of the mine was found to be sluggish. This was rectified by driving a new airway between the No. 1 room in the No. 4 Slope section to the No. 1 raise section.

The mine is ventilated by an electrically driven aerodyne fan which delivers 93,000 cubic feet of air per minute to the workings at a 5.8-inch water-gauge.

*"A" West Mine.*—Harry Corrigan, overman; Reginald Taylor, Robert Taylor, James Walsh, John McInnes, Thomas Krall, Roger Girou, Stanley Menduk, Paul Kusnir, Leonard Brett, William Verkerk, and William Cytko, firebosses.

This mine is operated in the same seam and the same limb of the syncline as the "A" East mine, but most of the workings are on the right side of the rock tunnels. It has been developed from a number of inclines which have been driven from the main west level to the outcrop of the seam, and all the present operations are in the upper regions of these inclines. The coal is of good quality, ranging from 12 to 28 feet in thickness and dipping 20 to 35 degrees in a westerly direction. A full description of the general layout of the mine and the method of working is included in the 1957 Annual Report.

The mine is the largest producer at the colliery and during 1958 averaged 1,000 tons per day with a crew of 175 men. Most of the production was obtained from the No. 9 right and No. 4 left belt-road sections, where the coal is 28 feet thick and the pillars are extracted by the caving system. The remainder of the production was obtained from the extraction of pillars alongside the No. 1 entry in the No. 4 right belt-road section. Only the top 12 feet of the seam is extracted in the latter section. Operations in the No. 9 right belt-road section were confined chiefly to pillar extraction, which was accomplished with a great deal of success. A high percentage of the coal was recovered and caving of the roof was controlled without much difficulty. Pillar extraction in this area is now nearing completion. No. 4 left belt-road section is in development stages, and is being prepared ready for the completion of pillar extraction in the No. 9 belt-road section. The main belt-roads have been advanced for 1,000 feet along the strike of the seam, and three pairs of raises have been driven from the belt-roads preparatory to driving rooms for pillar extraction. Some difficulties were encountered in driving the inner pair of rooms due to the presence of faults, and the direction of the rooms had to be changed on the inby side of the fault in order to follow the line of strike. A small amount of pillar extraction had been commenced from these rooms at the end of 1958.

The conditions at the mine in general were found to be satisfactory during the course of inspections and no trace of gas was found in any of the active workings. A close check was maintained on the fire seals in the No. 3 left belt-road section where a gob fire occurred in 1956, and indications were that the first was inactive.

The mine is ventilated by an electrically driven axivane fan which delivers 85,000 cubic feet of air per minute to the mine workings at a 3.5-inch water-gauge. This quantity was found to be sufficient for the requirements of the mine.

*Upper "A" South Mine.*—Vans S. Hulbert, overman; Arnold Webster and James E. Anderson, firebosses.

This is a new operation that was commenced in October, 1956, and is being driven to develop another mine in the "A" seam on the Sparwood limb of the Michel syncline. It is entered on the right side of the rock tunnels, and up to the present comprises only two inclines which are being driven toward the seam for later development of a large area of virgin coal left between the old "A" South mine workings and the outcrop. The two inclines have been driven up the full pitch of the underlying No. 1 seam, and after reaching a distance of 1,200 feet both have been continued as rock raises at a steeper grade to meet the "A" seam. Descriptions of No. 1 seam and the rock raises are included in the 1957 Annual Report.

Most of the activities in 1958 were confined to driving the rock raises and regrading several portions of the two inclines for the installation of track and conveyors. Operations for the greater part of the year were on a single-shift basis and a crew of sixteen men was employed.

The rock raise on No. 1 incline reached the footwall of the "A" seam at the end of November, and indications are that the seam is 26 feet thick at this point. It is intended to continue the roadway at its present grade until it reaches the hangingwall of the seam. The face of No. 2 incline is still in rock but is expected to reach the seam in the near future. Both inclines are now at a point where it will be possible to develop workings at a safe distance from the old "A" South mine workings.

Conditions in general were found to be satisfactory during the course of inspections. Nearly all the equipment is electrically driven and is of the permissible type. The mine is ventilated by the old No. 3 seam fan, which also ventilates the "A" West mine workings and which was found to be sufficient for the requirements of the workings.

*"A" North Mine.*—John Whittaker, overman; Sidney Hughes, Henry Eberts, Thomas Slee, Ronald Saad, and Michael Tymchuk, firebosses.

This mine, in "A" seam, is operated on the north side of the Michel valley, approximately half a mile east of the colliery preparation plant. It has been in operation since 1951, but up to the present activity has been confined to development work. The mine is developed by the room-and-pillar system and is expected to become a large operation. Entry into the mine is provided by four main levels which have been driven from the outcrop and follow the strike of the seam.

The seam is 12 feet thick where normal but is very irregular and faulty. It is of good quality and dips at an angle of 15 to 20 degrees in a southerly direction. The roof is weak. Most of the coal at the working-places is mined with pneumatic picks or is blasted from the solid with millisecond delay detonators. It is loaded by hand onto shaker or chain conveyors and transported to various loading points along the levels, where it is loaded into 10-ton-capacity bottom-dumping cars and taken from the mine by battery or diesel locomotives. The two bottom main levels are more highly mechanized, one being advanced by a new type of continuous miner, which is being tested for the Canadian Ingersoll-Rand Company, and the other by a coal-cutter and mechanical loader. All the production of the mine is brought to the preparation plant by trucks, which are loaded from bins at two of the mine portals.

The production of coal from the mine in 1958 was 360 tons a day with a crew of sixty-seven men. Most of the operations were directed to the lower part of the mine, where the development levels, No. 0 and No. 1, are not sufficiently advanced to serve the remainder of the mine workings. These two levels were advanced 1,200 feet despite a great deal of difficulty encountered due to thinning of the seam in places, and due to the presence of small faults. The faces of the No. 2 and No. 3 levels in the upper part of the mine were idle for most of the year, and activities in this area were directed to the development of a large panel of workings above the levels. The panel, when completed,



will be 800 feet long and 2,000 feet wide. It is entered by two inclines which have been driven across the pitch of the seam. The inclines advanced 1,150 feet during 1958. Conditions in general were found to be satisfactory during the course of inspections. The roadways were kept in good condition, and there was very little sign of subsidence taking place. Most of the equipment at the mine is operated by electricity and is of the permissible type. Compressed air, which is mainly used for operating the pneumatic picks, is supplied by three portable electric compressors located inside the mine on the main intake airway.

The mine is ventilated by an axivane fan which delivers 90,000 cubic feet of air per minute to the workings at a 1.6-inch water-gauge. Small auxiliary fans capable of producing 5,000 cubic feet per minute are used for ventilating the faces of the main levels in the last cross-cuts, and narrow headings. This volume of air was found to be sufficient to meet the requirements of the mine.

"B" South Mine.-William Davey, overman; John Krall, Robert Doratty, and Eric Singleton, firebosses.

This mine is operated in the "B" seam, on the western limb of the Michel syncline, and on the left of the rock tunnels. The seam is 5% feet thick, dips 30 degrees in an easterly direction, and is overlain by a strong sandstone roof. The coal is of excellent quality, friable, and gassy. It is mined with pneumatic picks, and no shot-firing is allowed.

The mine is one of the oldest operations at the colliery and for many years was the major producer. Extensive extraction over a period of years, however, has reduced the size of the operation considerably, and present activities are restricted mainly to a comparatively small area of workings known as the No. 3 Slope district. This district is on the dip side of the main south level, and most of the workings have been developed to the inby side of the old No. 1 Slope district. They are entered by a pair of slopes which have been driven across the pitch of the seam, and most of the workings are on the south side of the slopes. Rooms are driven along the strike of the seam, and the pillars are extracted by a modified shortwall system from between the rooms. All the coal at the working-places is loaded by hand onto shaker and chain conveyors, and transported to a common loading point in the No. 8 room where it is loaded into cars; the cars are hauled to the main south level by compressed-air hoist. All the equipment is operated by compressed air, with the exception of two electric pumps which are used for pumping water from the slopes,

The mine had an average daily output of 420 tons of coal during 1958 with a crew of eighty-five men. Most of the production was obtained from the lower section of the slope district, and the remainder by the extraction of small pillars left from previous workings, scattered at various points in the mine. The coal reserves in the slope district are nearing depletion, and the line of pillar extraction is rapidly converging upon the main haulage slopes. This is causing excessive pressures on the roadside pillars, and considerable difficulties were experienced in 1958 in maintaining sufficient height on the roadways for the conveyors and haulage. Two severe bumps occurred on the main haulage slope above No. 8 room in December (as reported under "Dangerous Occurrences"), and it was decided to abandon the workings below this point.

Conditions in general were found to be fairly good during the course of inspections, with the exception of the restricted clearance just mentioned. Some difficulty was experienced at times in directing a sufficient quantity of air to the faces of the working-places in the lower section of the slope district, but the difficulty was usually overcome by installing small auxiliary fans to boost the ventilation to the faces or by rearranging the brattice partitions.

The mine is ventilated by an axivane fan which delivers 75,000 cubic feet of air per minute to the workings at a 4.3-inch water-gauge. Of this quantity, 46,000 cubic

feet is directed to the slope workings and the remainder to goh areas in the "Id workings above the main south level.

During 1958, 98,550 pounds of Monobel No. 4, 5,500 pounds of CXL-ite, and 90,149 electric detonators were used at the colliery for coal and rock blasting. Fourteen misfired shots were reported.

Three hundred and twenty-nine tons of limestone dust were used for application on the roadways at the various mines to minimize the coal-dust hazard and for tamping shots. Monthly mine-dust samples were regularly taken at all the mines and analysed. All the samples were above the minimum requirements of incombustible content,

Monthly examinations were made at all the mines by the miners' inspection committees, and a regular meeting was held at the colliery office each month by the pit safety committee. Copies of the findings and recommendations were sent to the office of the District Inspector through the courtesy of the committee members. All the report books kept at the mines in accordance with the "Coal-mines Regulation Act" were examined periodically and found to be in order.

*Baldy Mountain Strip Mines.*—William Chapman, manager; C. M. Matson, foreman.

The coal-stripping operations of The Crow's Nest Pass Coal Company are on Baldy Mountain, 4 miles east of Michel, where a number of thick seams outcrop on the mountainside. The company had two pits in operation during 1958, and both operations were carried out by Mannix Limited, of Calgary, on a contract basis. The pits are known as No. 2 and No. 3, and access is by means of a private roadway leading up the mountain from Natal. Both pits have been in operation for a number of years, and a description is included in past Annual Reports.

The mine produced 106,861 tons of coal in 1958 with a crew of three men in the pit and six truck-drivers to transport the coal to the preparation plant. This was a decline of 42,819 tons from the corresponding figure in 1957. Most of the 1958 production was obtained from No. 3 pit, where a large area of overburden had been previously removed to expose the seam. Operations were confined to loading the coal on a single-shift basis to meet the requirements of the market. No. 2 pit was only operated for a short period during the summer months, the remainder of the coal being reserved pending completion of the No. 3 pit.

The conditions in general were found to be satisfactory during the course of inspections. There were indications at one period that a section of the wall above No. 3 pit was subsiding following extraction of the coal at the northern extremity of the pit, but it appeared to settle later and there was no further movement. A close check was kept on the area and all loose rock was scaled down. No. 3 pit is rapidly nearing depletion and is expected to be abandoned in the near future.

*By-product Plant.*—This plant is adjacent to the preparation plant, and a full description of it is included in the 1954 Annual Report.

During 1958, operations were confined to the Curran-Knowledge ovens, and the production of coke was 173,919 tons, an increase of 20,425 tons above the production in 1957. There were no appreciable changes made to the plant during 1958, and the conditions in general were found to be satisfactory during the course of inspections.

*Briquette Plant.*—A description of this plant is included in the 1954 Annual Report, and very little change has been made to the plant since that time. Operations during 1958 were considerably curtailed owing to lack of markets for briquettes, and the plant only worked during intermittent periods. The production was 33,272 tons of briquettes, as compared with 84,436 tons in 1957 and 188,355 tons in 1956. Conditions in general during the course of inspections were found to be satisfactory.

*ELK RIVER COLLIERY.*—(49° 114° S.W.) James E. Morris, manager. The Crow's Nest Pass Coal Company Limited suspended all mining operations at this colliery at

Coal Creek on January 23rd owing to the lack of markets for the coal. All the equipment and materials were removed from the mines, and the entrances to the mines have been sealed. There were 284 men and officials employed at the colliery at the time of closure; eighty-one of them were transferred to the Michel Colliery.

The colliery had been in operation since 1942. A full description has been given in past Annual Reports. Three mines were in operation at the time of closure.

D. B. Young, general manager, Coleman Alta.; John C. Shearer, Coleman Collieries strip-mine manager. The coal-mining activities of this company Limited in East Kootenay Inspection District are confined to a large stripping operation on the interprovincial boundary on Tent Mountain, near Corbin. Most of the property is in Alberta, but large quantities of coal have been produced from the part in British Columbia during the past eight years. Access to the property is by means of a private road leading to the top of the mountain from the No. 3 highway at Crowsnest Lakes. All the roadways are in Alberta, and all the coal from the strip mines is taken to the company's preparation plant at Coleman, Alta.

Most of the activities in 1958 were confined to the No. 2 pit, where a large deposit of coal over 100 feet thick is in the form of a syncline. Half the pit is in Alberta and the other half in British Columbia. The overburden has been removed during the past three years and the present operations are confined to loading coal. This is done by power-shovels and the coal is transported to the company's preparation plant by 15-ton-capacity trucks. Conditions in general during the course of inspections were found to be satisfactory.

#### NORTHERN INSPECTION DISTRICT

By David Smith

The coal mines of the Northern District produced a total of 8,327 tons of coal in 1958, an increase of 178 tons or 2.2 per cent from the 1957 output. The output is sold entirely on the domestic market, which limits all operations to seasonal work only.

No accidents or dangerous occurrences were reported from the coal mines of this district during 1958.

#### TELKWA (54° 127° N.E.)

Company office, Telkwa. F. M. Dockrill, president; F. Bond **Bulkley** Valley and L. Gething, firebosses. This is a private company mining Collieries Limited coal on a royalty basis in a property comprising six Crown-granted lots, Nos. 388 to 392 and No. 401. The property is on Goat Creek, a tributary of the Telkwa River, about 7 miles southeast of Telkwa.

Total production in 1958 was 5,233 tons. The mine was shut down on March 31st and resumed operations September 3rd. An average crew of fourteen men was employed. The main slope has been extended an additional 500 feet and a new section has been opened to the right.

Conditions in the mine were found satisfactory in the course of inspections. No accidents were reported. No methane was detected during inspections.

#### PEACE RIVER (56° 122° SE.)

King **Gething** Mines Q. F. (King) Gething, operator and fireboss. This property is on Lot 1039, 12 miles by road from Hudson Hope. Mining was confined to the upper level. Total production was 2,312 tons. A crew of three men was employed. Conditions at the working-faces were found to be satisfactory in the course of inspections. No methane was detected. No accidents were reported.

Company office, Fort St. John. E. B. Summer, operator and **Reschke Coal Ltd.** fireboss. This property is at an elevation of 2,600 feet on the steep southern end of a spur of Butler Ridge, 1 mile north of the Peace River. It is 23 miles by road from Hudson Hope. Mining was carried on until the last week in February, when surface run-off due to an early thaw entered the mine and then froze, so handicapping the haulage that operations were suspended for the season. At the time of inspection in September no start had been made on production for the coming season due to lack of markets for domestic coal in the immediate area. Conditions were found to be satisfactory in the course of inspections. No methane was detected. No accidents were reported. Total production was 782 tons.

# Inspection of Electrical Equipment and Installations at Mines, Quarries, and Well Drilling Rigs

By L. Wardman, Electrical Inspector of Mines

## ELECTRIC POWER

In 1958 electric power was used at thirty-six mining companies in operations at twenty-nine lode mines, three placer mines, two non-metallic mineral mines, three collieries, two coal-cleaning plants, and one coking plant. Electric power was also used at eight non-metallic mineral mines for loading, crushing, separating, and conveying materials. Over forty drilling rigs using electric power for lighting and driving motors were used in drilling operations at 112 oil and gas wells. Eighty-nine of these wells were completed.

## LODE-METAL MINES

In 1958 operations at eight metal mines using electric power were terminated either permanently or indefinitely. A mill was built at a reopened mine and wired for electric power. Part of a mill at an inoperative mine was put into service for reclaiming barite from the tailings.

The kva. generating capacity of privately owned plants which were operated in 1958 was as follows:—

Prime Mover	Generator Kva. Capacity
Steam turbines .....	11,449
Diesel engines .....	12,667
Water-wheels .....	1,800
Total .....	25,916

The electric power produced by these plants was approximately 45,237,588 kilowatt-hours during 1958. The power purchased from public utilities and from the generating division of The Consolidated Mining and Smelting Company of Canada, Limited, amounted to 199,844,072 kilowatt-hours. The total amount of power used in the Province for mining and concentrating purposes was 245,081,660 kilowatt-hours.

Approximately 6,761 horsepower was produced by diesel engines, water-wheels, and gas engines for direct-driven equipment such as compressors. The power was produced as follows:—

Prime Mover	Horsepower
Diesel engines .....	4,276
Water-wheels .....	1,790
Gasoline engines .....	695
Total .....	6,761

The above figures for generating capacity, kilowatt-hours, and horsepower are very much less than 1957 because of fewer operating mines. For the same reason the connected load shows a considerable reduction in horsepower. A general breakdown of the connected load for those properties which operated in 195X is as follows:—

Equipment	Horsepower
Hoists .....	6,530
Scraper hoists .....	5,815
Ventilating fans .....	4,289
Pumps .....	5,457
Rectifiers and M.G. sets .....	8,261
Air compressors .....	19,626
Crushing equipment .....	7,921
Sink float .....	570
Milling and concentrating equipment .....	36,542
Workshops .....	2,299
Miscellaneous .....	10,553
Total .....	<u>107,869</u>

On surface and underground haulage systems there were in use 131 battery locomotives, 96 trolley locomotives, and 13 diesel locomotives.

#### PLACER MINES

Electric power was used at three placer mines. The generating capacity was as follows: Diesel-engine-driven generators, 652 kva.

The connected load was as follows:—

	Horsepower
Trommel screens .....	90
Jigs .....	5
Conveyors .....	25
Pumps .....	100
Compressors .....	15
Miscellaneous .....	59
Total .....	<u>294</u>

#### NON-METALLIC MINES AND QUARRIES

Electric power was used at two non-metallic mines, one non-metallic mill, and eight quarries.

#### COAL MINES

Operations at one colliery were terminated in January, 1958, and the use of electric power at one small colliery was discontinued, reducing the number of collieries using electric power to three.

The distribution of electric power was as follows:—

Surface—	Horsepower
Compressed air .....	4,440
Ventilation .....	630
Hoisting .....	545
Haulage .....	15
Coal washing and screening .....	2,561
Pumping .....	215
Briquetting .....	642
Coke production .....	1,180
Miscellaneous .....	599
Total .....	<u>10,827</u>

Underground—	Horsepower
Ventilation	40
Hoisting	60
Haulage	80
Pumping	2 5 0
Coal-cutters	175
Conveyors	612
Compressed air	200
Miscellaneous	3
<b>T o t a l</b>	<b>1,420</b>
Total for surface and underground	12,247

The closing-down of Elk River Colliery caused a decrease of 3,535 horsepower in the above totals. This decrease would have been greater had not some of the equipment from Elk River Colliery been put into use at Michel Colliery.

Four permissible battery locomotives and three permissible diesel locomotives were in use underground.

#### WELL DRILLING RIGS

Forty-four drilling rigs were operated in 1958. One hundred and twelve wells were operated during the year, and of these eighty-nine were completed.

#### ELECTRICAL INSTALLATIONS

##### LODE MINES

In 1958 operations at the following enumerated mines were suspended for an indefinite period: Granduc, Emerald Tungsten, Dodger, Highlander, Spider, B.C. Nickel and Britannia. Operations at the Silver Standard mine were terminated and the equipment was moved off the property.

The Silver Giant mill was reopened to recover barite from the tailings. A mill was built at the Bedwell River Gold mine.

The following is a brief outline of electrical installations which were made at operating mines in 1958.

##### LILLOET

###### *Bridge River (50° 122° N.W.)*

Four 25-horsepower motors driving ventilation fans were installed **Bralorne (Bralorne Miner Limited)** on the 2600 level at the cooling radiators. An air compressor driven by a 100-horsepower motor was installed at the 800 level shaft station to boost the air pressure by 20 pounds. The 150-kva. transformer station which was at the 200 level Empire shaft station was rebuilt adjacent to the 200 level portal. New switch-gear was installed to replace the old. This station supplies the Empire shaft equipment, the 200 level exhaust fan, the framing-shed motors, and the air-compressor motor at **Bradian**.

An air compressor driven by a 300-horsepower motor was installed on the surface and a new lamp-house was built at the **Bralorne** mine portal.

A new Woods 19-inch 2-stage ventilation fan driven by a 440.volt **Pioneer (Pioneer Gold Miner of B.C. Limited)** 3,450-r.p.m. 11½-horsepower motor was installed on the 29 level to ventilate the 29-16 crosscut. Magnetic proximity shaft-limit switches were installed in No. 2 and No. 3 shafts. These switches have no exposed moving parts and therefore cannot seize up because of dust or corrosion.

The new Pioneer substation was completed early in the year and put into service. The domestic power and lighting distribution system was sold to the British Columbia Electric Company Limited. This sale necessitated several alterations to the Pioneer primary-power distribution-lines,

Two Orelikon fully automatic voltage regulators were installed at the Pioneer No. 1 power plant.

#### HEDLEY

**French (French Mines Ltd.)** (49° 120" S.E.) A scraper hoist driven by a 10-horsepower motor was installed in the 3916 stope and a pump driven by an X-horsepower motor was installed in the Cariboo level. A dangerous occurrence took place on November 18th when the mill mechanic and crusherman, while examining a defective crusher-motor magnetic starter, attempted to close it with the door open and the power on. An electric arc occurred which caused flash burns to the eyes of both men. Instructions were issued which prohibit the closing of any switch until the door is closed and secured.

#### PHOENIX

**Phoenix Copper Company Limited** (49° 118° S.W.) During 1958 construction work was continued on a reduced scale to prepare the Phoenix operation for production at some future date. A 1,500-c.f.m. compressor driven by a 2,200.volt 240-horsepower motor and a 1,000-c.f.m. compressor driven by a 440-volt 150-horsepower motor were installed in the compressor building.

In the crusher building three 2,200-volt crusher motors totalling 500 horsepower and ten 440.volt motors totalling 50 horsepower were installed and the lighting-circuit wiring was completed.

In the mill twenty 440-volt motors totalling 175 horsepower were installed, and the 2,200.volt ball-mill motors were set in place but were not connected. The lighting-circuit wiring was three-quarters completed.

#### SALMO

**Jersey, Emerald, and Dodger (Canadian Exploration Limited)** (49° 117° S.E.) The tungsten mines were closed in August and all equipment, with the exception of the hoist in the Emerald shaft, was removed. The tungsten mill was left in operating condition. Five substations in the Jersey mine were rebuilt and put in service, and several cables were rerouted and connected to serve substations in the Jersey mine. A 10-horsepower fan and a 50-horsepower fan were relocated. Three new scraper hoists were installed, bringing the total in operation to seventeen.

A 3-ton Mancha locomotive is being converted for diesel-electric drive. A similar locomotive converted in 1957 has given satisfactory service.

A dangerous occurrence took place in the Dodger 4200 mine on June 7th, as follows:-

The electrical foreman detailed two electricians to disconnect an oil switch in substation 420 while he and two electricians went to substation 47-J-42 to cut off the power and disconnect a transformer. When the transformer was disconnected, the electricians informed the foreman that he could close the switch to return power to the line. This he did, forgetting that in so doing he was energizing the feeder to substation 420. Fortunately, the cables to the oil switch in substation 420 had been disconnected and were lying on the floor with the ends touching. A severe arc occurred but no one was injured. A special rule was written by the management which prohibits working on equipment unless the person working on the equipment has locked the switch controlling the circuit to that equipment in the "open" position.



## NORTH KOOTENAY LAKE

*Riondel (49° 116" N.W.)*

A 2,000-kva. 66,000–6,900-volt 3-phase unit substation was installed in the substation enclosure adjacent to the No. 1 shaft hoist-room. By means of 2,120 feet of 1/0 A.W.G. 3-conductor varnished-cambric lead-covered steel-wire-armoured cable, this unit substation supplies a new substation on No. 8 level. This new substation consists of three 500-kva, single-phase 6,900–575-volt transformers and switch-gear. The power from this system will be used mainly for driving pumps on No. 8 level.

In No. 5 level pumping station No. 1 shaft, one 2-stage 3,600-r.p.m. 1,000-imperial-gallons-per-minute pump driven by a 300-horsepower motor was installed.

In No. 8 level pumping station No. 1 shaft, three 2-stage 1,750-r.p.m. 1,000-imperial-gallons-per-minute pumps driven by 150-horsepower motors and two single-stage 3,500-r.p.m. 300-imperial-gallons-per-minute pumps driven by 50-horsepower motors were installed.

The 2A pump station in the Bluebell shaft was reduced to four 300-imperial-gallons-per-minute pumps driven by 40-horsepower motors.

To provide power for the mine ventilating-fan installation, a diesel-engine-driven 150-kw. continuous-rating 550-volt 3-phase 60-cycle generating unit was installed in the compressor building. Three 75-kva, single-phase 600–7,200-volt transformers were installed to transform the power to line voltage.

## SANDON

Victor (**Violamac** Mines Limited).—(49° 117" N.E.) A 125-kva. Caterpillar diesel generating unit was moved from the mill to the compressor-house.

Silversmith (Carnegie Mines of British Columbia, Ltd.).—(49° 117° N.E.) A n auxiliary vacuum pump driven by a 7½-horsepower motor, a filtrate pump driven by a 5-horsepower motor, and a unit cell driven by a 5-horsepower motor were installed in the mill. The motor-generator battery-charging set was moved from the Ruth to the Carnegie mine.

## SLOCANLAKE

Western Exploration Company **Limited**.—(49° 117° N.E.) The 300-kva. substation for connecting to the British Columbia Power Commission power-lines was completed. A 27.5-kva. substation was built at the portal of the No. 12 Buffalo-Mammoth adit. A 2,300-volt power-line was erected from the Mammoth mine to supply the substation. Battery-charging equipment and a battery locomotive are in use.

## KIMBERLEY

(49° 115" N.W.) In the mine the 75-horsepower sinking-hoist at the No. 1 Pilot shaft was replaced with a 150-horsepower hoist. A 30-horsepower scraper hoist and a 60-horsepower scraper hoist were put in service. At the mill the No. 47 pump 40-horsepower 900-r.p.m. motor was replaced with a 100-horsepower 1,200-r.p.m. motor. The west bank mill-lighting transformers were reconnected from 3-phase 110-volt to 230/115-volt single-phase. The 5-kva, 6,900–230/115-volt transformer at the portal mercury-arc rectifier station was replaced with a 10-kva. 6,900–230/115-volt transformer.

All the welded track on the 3700 haulage has been replaced with track having expansion joints bonded with 4/0 A.W.G. wedge bonds. A 5-kva. 6,900–230/115-volt transformer was installed on the 3700 haulage to supply the track lubricator.

A new service and panel was installed for the X-ray analyser.

## VANCOUVER ISLAND

*Benson (Elk) Lake (50" 127" S.E.)*

Empire Develop-  
ment Company  
Limited

A dynamic braking system was installed on the hoist to permit more effective control of the wound-rotor induction motor than was **possible** with regenerative braking. To ensure that dynamic braking would be available when the power was off, a bank of wet batteries was installed to provide excitation. Previous to the installation of dynamic braking a runaway occurred which ruined **the** hoisting-cable.

At the time of the incident the generators were tripped off the line inadvertently, either by reverse current from the power generated by the hoist motor or by some other cause. This would leave the motor without excitation current, and since it would then produce no power, the hoist would run uncontrolled until the brakes were applied. Unfortunately, at the time of the incident the automatic brake was dismantled for repairs and stopping of the hoist depended entirely on the operating brakes which are controlled hydraulically and are assisted by weights when applied. When the power was off the weights alone did not apply the brakes with sufficient pressure to effect a quick stop, and the skips reached the ends of the incline with sufficient speed to shear the cable clamps and allow the cable to slide down the incline and become very badly kinked, and was discarded.

*Bedwell River (49" 125" S.W.)*

David, Jericho, and mill building was rebuilt and some of the old equipment was Laddie Nos. **1, 2,** repaired. New electrical wiring, switch-gear, and motors were and 3 (**Bedwell** installed. Power for the mill is supplied by three **Pelton** wheels as River Gold Mines follows: A **36-inch Pelton** wheel drives a **35-kva, 120-volt genera-** tor to supply all the electric power required. A **24-inch Pelton** wheel drives the ball mill and an **18-inch Pelton** wheel drives the primary conveyors and crusher. The remaining equipment is driven by electric motors and is as follows: Crusher to fine-ore bin conveyor, driven by a **5-horsepower** motor; classifier, driven by a **5-horsepower** motor; four flotation cells and an amalgam barrel, each driven by a **3-horsepower** motor; tine-ore feeder, thickener, and vacuum pump, each driven by a **2-horsepower** motor; filter and filtrate pump, driven by a **1½-horsepower** motor; flotation feed pump and flotation concentrate pump, each driven by a **1-horse-** power motor; and **filtrate** pump, driven by a **%-horsepower** motor. In the sample-room a **1-horsepower** motor drives the crusher fan and pulverizer.

## PLACER MINES

The Noland mine on Spruce Creek and the Atlin Placers on Wright Creek were not operated in 1958. Hixon Placers on Hixon Creek was operated. Allied Developers **commenced** an operation on the Fraser River at Fountain, and Kumhila Exploration Co. Ltd. commenced an operation on Williams Creek between Wells and Barkerville.

(50" 121° N.W.) The equipment installed at this property **con-** Fountain Placers sists of a direct-connected **1,200-r.p.m. 75-kw, 60-cycle 240-volt** (Allied Developers **3-phase** Palmer generator driven by an International diesel engine; Ltd.) a **trommel** screen driven by a **15-horsepower** induction motor; and three Yuba jigs, two driven by 2-horsepower motors and the third by a 1-horsepower motor.

(53° 121° S.W.) A washing plant, dragline shovel, and boom shovel were installed on the property in 1958. The washing plant (Kumhila Exploration Co. Ltd.) is powered by a 200-kva, 480-volt diesel-driven alternator which supplies power to a 75-horsepower trommel-screen motor, a 100-horsepower pump motor, a 25-horsepower stacking-conveyor motor, a 5-horsepower compressor motor, a 5-horsepower cooling-fan motor, and a 3-horsepower winch motor.

On the dragline a diesel engine drives the shovel winch and a 360-kw, 250-volt d.c. generator which supplies power to a 50-horsepower turn-table motor, a 1-horsepower boom motor, and two 5-horsepower compressor motors.

## NON-METALLIC MINES

### McDAME

(59° 120° S.W.) Several changes made in the operation increased the mill load by 38% horsepower. The mine load was increased by 29½ horsepower. In the power-house were added one VGB 560-horsepower Ruston & Hornsby diesel driving a 438-kva. alternator and one VGB 480-horsepower Ruston & Hornsby diesel driving a 375-kva. alternator. The total generating capacity is now 2,563 kva. The transformer capacity was increased by 238 kva. to accommodate additional loads.

British Columbia Cement Company Limited.-(48° 123° N.W.) Operation of the Bamberton quarry was terminated and the electrical shovels were taken out of service.

Blubber Bay (Gypsum Lime and Alabastine, Canada, Limited).-(49° 124° N.W.) An overhead 440.volt power-line was built to the quarry to supply a pump motor.

**Coquitlam (Deeks-McBride Ltd.).**-(49° 122° SW.) A transportable crusher driven by a 440-volt SO-horsepower motor was installed in the pit. It is supplied from a transportable distribution centre. Capacitors were installed in the distribution centre to improve power factor and voltage regulation.

### SIRDAR

(49° 116° SW.) The equipment in the plant was rearranged and the electrical installation was rebuilt as follows: The main service for the plant, consisting of a 400-ampere main switch, 400.ampere gutter, two 200-ampere fused switches, and one 100-ampere fused switch, supplies a SO-horsepower air-compressor motor and two distribution centres, "A" and "B."

"A" distribution centre supplies a SO-horsepower crusher motor, a 30-horsepower crusher motor, a 3-horsepower conveyor motor, a 1-horsepower conveyor motor, a 1½-horsepower screen motor, and a 7½-horsepower fan motor.

"B" distribution centre supplies a 3-horsepower screen motor, a 5-horsepower screen motor, a 2-horsepower conveyor motor, a 1-horsepower conveyor motor, and a 15-horsepower fan motor.

## COAL MINES

### NANAIMO (49° 123° S.W.)

Union Bay **Washery** (Canadian Collieries Resources Limited).-The length of a 440-volt gutter in the washery was increased to accommodate a 50-horsepower combination line starter controlling a SO-horsepower crusher motor. A 2,200.volt static ground fault indicator was installed on the bus at the Union Bay substation.

**Tsable** River (Canadian Collieries Resources Limited).-A dangerous occurrence took place on November 3rd when a fire occurred in the windings of the No. 2 compressor motor in the Tsable River mine compressor-room. Apparently the amortisseur windings overheated and burned through in several places, producing sufficient heat to ignite the oil and dirt on the stator windings. The motor was repaired and returned to service.

EAST KOOTENAY (49° 114' S.W.)

Elk River Colliery (The Crow's Nest Pass Coal Company Limited).-Operations were terminated on January 31st and all equipment was dismantled.

The Elk River Colliery switchboard, consisting of a main oil circuit-breaker and four 600-horsepower starter panels, was installed in the Michel Colliery (The Crow's Nest Michel compressor-room. Two 1,500-kva. 6,600-2,300-volt 3-phase transformers were also moved to Michel and installed in the Pars Coal Company Limited) substation at the power-house. Three 300-kva. single-phase transformers were removed. The substation now consists of four 1,500-kva. 3-phase transformers. Two of these transformers supply the air-compressor motors and the other two supply the plant.

A 600-horsepower air compressor from Elk River Colliery was installed in the Michel power-house.

A second 500-kva. transformer was added to the underground system, so that now "A" North mine is supplied separately from the other mines.

## Lode-metal Deposits Referred to in the 1958 Annual Report

The names of the properties are arranged alphabetically within five areas. Each area consists of the mining divisions listed below. The table shows the principal metals produced or indicated in the deposits in 1958:—

Northern *British Columbia*-Atlin, Liard.

*Central British Columbia*.—Cariboo, Clinton, Omineca.

*Coast and Islands*.-Albemi, Nanaimo, New Westminster, Skeena, Vancouver, Victoria.

*South Central British Columbia*-Greenwood, Kamloops, Lillooet, Nicola, Osoyoos, Similkameen, Vernon.

*Southeastern British Columbia*-Fort Steele, Golden, Nelson, Revelstoke, Slokan, Trail Creek.

Property	Mining Division	Latitude and Longitude	Gold	Silver	Copper	Lead	Zinc	Tungsten	Cadmium	Iron	Manganese	Uranium	Chromium	Tin	Nickel	Molybdenum	Cobalt	Sulphur	Mercury	Page	
<i>Northern British Columbia</i>																					
Balsom Group	Liard	57° 132° N.E.			3											3				6	
Magnum Group	Liard	58° 125° N.E.			3															13	
Silver Tip Group	Liard	59° 130° N.W.			3		3													13	
Toad River	Liard	58° 125° N.W.			3															13	
<i>Central British Columbia</i>																					
AMY	Omineca	55° 125° N.E.																	3	11	
Aurum	Cariboo	53° 121° S.W.	1	2																14	
Boss Mountain	Cariboo	52° 120° S.W.														3				15	
Cariboo Gold Quartz	Cariboo	53° 121° S.W.	1	2																14	
Cronin Babine	Omineca	54° 126° N.W.	2	1		1	1													A43	
Glacier Gulch	Omineca	54° 127° N.E.														3				10	
Jane Group	Omineca	56° 125° S.W.			3															11	
Lorraine	Omineca	54° 126° N.W.		3		3	3													10	
Silver Standard	Omineca	55° 127° S.W.	2	1	2	1	1		2											9	
<i>Coast and Islands</i>																					
A.M.	New Westminster	49° 121° S.E.			3															54	
Blue Grouse	Victoria	48° 124° N.E.		2	1															60	
Britannia	Vancouver	49° 123° N.E.	2	2	1	2	1		2										2	56	
Ecstall	Skeena	53° 129° N.W.			3		3												3	7	
Empire (Merry Widow and Kingfisher)	Nanaimo	50° 127° S.E.									1									57	
Fandora	Albemi	49° 125° S.W.	3																	59	
Gabbro	Victoria	48° 124° S.W.			3															60	
Gold Coin	New Westminster	49° 121° S.E.			3	3	3													55	
Gold Flake	Albemi	49° 125° S.W.	3																	59	
Granduc	Skeena	56° 130° S.E.			3															6	
Musketeer	Albemi	49° 125° S.W.	1	2	2	2														59	
Newmont	New Westminster	49° 121° N.W.														3				56	
Packsack	Skeena	53° 129° N.E.			3		3												3	9	
Pride of Emory (Western Nickel)	New Westminster	49° 121° S.W.			1											2				55	
Silbak Premier	Skeena	56° 130° S.E.	1	2		2	2													6	
Sunloch	Victoria	48° 124° S.E.			3															60	
Texada (Prescott, Paxton, Yellow Kid, Yellow Jacket)	Nanaimo	49° 124° N.W.	1	1	2															57	
Toric	Skeena	55° 129° N.W.		1		1														6	
Western Nickel	New Westminster	49° 121° S.W.			3											3				55	

*Shipping Mines*.—(1) Metal contributed at least 10 per cent of gross value of the shipment. (2) Metal contributed less than 10 per cent of gross value of the shipment. Production for 1958 is listed in Table XV.

*Non-shipment Mines*.—(3) Metal present, indicated by assay or mineralogical determination.



LODE-METAL DEPOSITS REFERRED TO IN THE 1958 ANNUAL REPORT—Continued

Property	Mining Division	Latitude and Longitude	Metal Content												Page				
			Gold	Silver	Copper	Lead	Zinc	Tungsten	Cadmium	Iron	Manganese	Uranium	Chromium	Ti		Nickel	Molybdenum	Cobalt	Sulphur
<i>Southeastern British Columbia—Continued</i>																			
Dodger	Nelson	49° 117' S.E.						1											
Eclipse	Revelstoke	50° 117' N.W.	2	1		1	1											38	
Elsmere	Revelstoke	50° 117° N.E.		3		3	3											49	
Emerald	Nelson	49° 117° S.E.						1										50	
Estella	Fort Steele	49° 115° N.W.		2		1	1		2									38	
Feeney	Nelson	49° 117° S.E.						1										A45	
Fisher Maiden	Slocan	49° 117° N.E.		3		3	3											38	
Fort Steele	Fort Steele	49° 115° N.W.		3		3	3											48	
Fourth of July	Slocan	50° 117° S.E.		3		3	3											52	
Gold Belt	Nelson	49° 117° S.E.	1	2		2	2											45	
Goodenough	Nelson	49° 117° S.E.	3	3		3	3											A45	
H.B.	Nelson	49° 117° S.E.	2	2		1	1											37	
Hewitt	Slocan	49° 117° N.E.	2	1		1	1		2									39	
Highlander	Slocan	49° 116° N.W.	2	1		1	2											48	
J.G.	Slocan	50° 116° S.W.		3		3	3											43	
Jersey	Nelson	49° 117° S.E.		2		1	1		2									50	
Key	Golden	50° 115° S.W.		3		3	3											38	
King Fissure	Revelstoke	51° 118° S.E.		3		3	3											52	
Kootenay	Slocan	49° 116° N.W.		3		3	3											53	
Kootenay Belle	Nelson	49° 117° S.E.	1	1		1	2											42	
Kootenay Florence	Slocan	49° 116° N.W.		3		3	3											A45	
Kootenian	Slocan	49° 116° N.W.		3		3	3											42	
L.T.	Slocan	49° 117° N.E.		1		1	2											A45	
Lakeshore	Slocan	49° 116° N.W.		3		3	3											43	
Laura M.	Slocan	49° 116° N.W.		2		1	2		2									A46	
Little Phil	Slocan	49° 116° N.W.		1		1	2											A46	
Logan	Slocan	49° 116° N.W.			3													44	
Lost Atlantis	Slocan	50° 117° S.E.		3		3	3											45	
Lucky Jim	Slocan	50° 117° S.E.	2	1		1	1		2									45	
McAllister	Slocan	50° 117° S.E.		1		2	2											A46	
Manmoth	Slocan	49° 117° N.E.	2	1		1	1		2									47	
May-Bee	Nelson	49° 116° S.E.			3													50	
Mineral King	Golden	50° 116° S.E.		2		2	1		2									52	
Monarch	Slocan	49° 117° N.E.	2	1		1	1		2									47	
Monitor	Slocan	50° 117° S.E.		3		3	3											45	
Noonday	Slocan	49° 117° N.E.		1		1	1		1									48	
Nugget	Nelson	49° 117° S.E.	1	2		2	2											38	
Ottawa	Slocan	49° 117° N.E.	2	1		2	2											49	
Pico	Fort Steele	49° 116° N.E.						3										52	
Ptarmigan	Golden	50° 116° N.E.	2	1		2	2											53	
Red Bird	Nelson	49° 117° S.E.		3		3	3											40	
Reeves MacDonald	Nelson	49° 117° S.E.		2		2	1		2									40	
Rosco	Slocan	50° 116° S.W.		3		3	3											50	
S.B.	Revelstoke	51° 118° S.E.		3		3	3											53	
Scranton	Slocan	49° 117° N.E.	3	3		3	3											43	
Silver King	Nelson	49° 117° S.E.	2	1		1	1											37	
Silver Mountain	Slocan	49° 117° N.E.		1		1	2											45	
Silversmith, etc.	Slocan	49° 117° N.E.	2	1		1	1		2									46	
Snap	Slocan	50° 117° S.E.		3		3	3											45	
Spider	Revelstoke	50° 117° N.W.	2	1		1	1											49	
Spokane	Slocan	49° 116° N.W.		2		1	1											A46	
Star, Retalack	Slocan	50° 117° S.E.		3		3	3											44	
Sullivan	Fort Steele	49° 115° N.W.	2	2		1	1											51	
Sun Group	Nelson	49° 117° S.E.	1	2		2	2											A45	
Tamarac	Nelson	49° 117° S.E.	3	3														37	
Texas	Slocan	50° 117° S.E.		3		3	3											45	
Tungsten King	Nelson	49° 117° S.E.		3		3	3											39	
Utica	Slocan	49° 117° N.E.	2	1		1	1		2									44	
Van Roi	Slocan	49° 117° N.E.	2	1		1	1		2									48	
Venango	Nelson	49° 117° S.E.		3				3										37	
Victor	Slocan	49° 117° N.E.	2	1		1	1		2									46	
Vulcan	Fort Steele	49° 116° N.E.		3		3	3											51	
W.D.	Trail Creek	49° 117° S.W.	1	2		2	2											36	
Wagner	Revelstoke	50° 117° N.E.		3		3	3											50	
Wellington	Slocan	50° 117° S.E.		3		3	3											44	
Westmont	Slocan	49° 117° N.E.	2	1		1	1		2									48	
Wonderful	Slocan	49° 117° N.E.		3		3	3											47	
Ymir	Nelson	49° 117° S.E.	3	3		3	3											37	

Shipping Mines.—(1) Metal contributed at least 10 per cent of gross value of the shipment. (2) Metal contributed less than 10 per cent of gross value of the shipment. Production for 1958 is listed in Table XV.  
 Non-shipping Mines.—(3) Metal present, indicated by assay or mineralogical determination.

# INDEX

## A

	PAGE
"A" East mine, Michel Colliery, 49° 114° N.W.	149
"A" North mine, Michel Colliery, 49° 114° N.W.	151
"A" South mine, Upper, Michel Colliery, 49° 114° N.W.	151
"A" West mine, Michel Colliery, 49° 114° N.W.	150
A.M., 49° 121° S.E.	54
AMY Group, 55° 125° N.E.	11
A.V. Richardson Ltd.	103
Abbotsford, 49° 122° S.E., clay and shale sand and gravel.	88 99
Abbotsford Gravel Sales Ltd.	99
accidents, coal mines	118
lode mines, placer mines, and quarries.	137
Ace Group, 55° 127° S.W.	73
Ace Group, 58° 131° N.W.	75
Addison, Albert	145
Administration Branch	A 49
Ady, W. A.	49
Afton Group, 50° 120° S.E.	66
Afton Group, 50° 120° N.W.	67
Agassiz Lime Quarry	96
Ainsworth, 49° 116° N.W.	43
Ajax, 50° 120° N.E.	66
A1 1-12 Mineral Claims, 50° 120° S.W.	66
Alameda, 50° 120° S.W.	28
Alaska Highway	13
Alaska Pine & Cellulose Limited	97
Albert Head, 48° 123° S.E., sand and gravel	103
Aldergrove, 49° 122° S.E.	99
Alexander, B. L.	57
Alice, 49° 119° S.E.	33
Alice Arm, 55° 129° S.E.	6
Allan, A.	13
Allen, A. R.	15, 21, 28
Allen, L. L.	56
Allied Developers Ltd.	161
Alocin Chrome Groups A and B, 49° 119° N.W.	64
Aloha North and Northeast Groups, 50° 120° N.W.	66
Alpha-Scotty Group, 50° 120° S.W.	66

	PAGE
Alpine Group, 50° 116° N.E.	65
Alscope Explorations Limited	28
Amco 43-47 Fractions, 49° 117° S.E.	62
Amco Group, 49° 117° S.E.	62
Amelia, 49° 119° S.E.	33
American Metal Climax, Inc., Balsom Group	6
Boss Mountain	15
Glacier Gulch	10, 11
American Metal Company, The	15
American Smelting and Refining Company Ltd., Beaver	22
Bethlehem Copper	21
Hat	22
Lodge	22
American Standard Mines Limited	53
American Zinc, Lead and Smelting Company	39
Americonda Mines Limited	37
Analytical and Assay Branch	A 53
Anderson, C.	43
Anderson, James E.	151
Ann Claim, 48° 124° S.E.	61
Anson Mines Limited	24
antimony, production	A 15, A 23, A 28
Antler Creek Placer Leases, 53° 121° S.E.	73
Apps, G. E.	9
Arbuckle, W. A.	80
Archibald, L. R.	55
Arlington, 49° 117° S.E.	A 45, 38
Arrowsmith, O.	50
arsenious oxide, production	A 30
Art Group, 50° 116° S.W.	65
asbestos	83
production	A 15, A 24, A 30
Ashenbrenner, J.	55
Ashley, Irvine	30
Ashley, Len	30
Aspen Creek, 49° 117° S.E.	39
Aspen Grove, 49° 120° N.W.	28
assessment reports	61-75
Associated Enterprises Limited	99
Atlin, 59° 133° N.W., placer	78
Atlin Mining Division, prospecting	A 59
Attwood Claims, 49° 118° S.W.	64
Aurum, 53° 121° S.W.	A 43, 14
Avison, R. A.	47

## B

"B" South mine, Michel Colliery, 49° 114° N.W.	152
B.J., 50° 121° S.E.	2 4
B.J. Claims, 50° 121° S.E.	70
B.R. Claims, 49° 124° N.E.	65
B. X., 50° 120° N.W.	22
B.X. Claims, 50° 120° S.W.	67
B.X. Mining Company Limited	22
Baby's Own Group, 50° 12° N.E.	70
Bacon, W. R.	7, 9
Bailer, C. J.	43
Baker Brick & Tile Company Limited	89
Baldy Mountain strip mine, 49° 114° N.W.	153
Balmer, Thomas	148
Balsom Group, 57° 132° N.E.	6
Bamberton, 48° 123° N.W., cement	88
Bannockburn, 50° 117° N.E.	50
Bapty, H.	6

Barclay, S.	49
barite	84
production	A 15, A 24, A 30
Barite Company of Canada	86
Barite Grow, 55° 129° S.W.	73
Barker, C. E.	100
Barker, H. G.	39
Barker Construction Co. Ltd.	100
Barkerville-Wells area, 53° 121° S.W.	14
Barkshanty Group, 49° 115° S.W.	61
Barnet, 4 9 122° S.W.	89
Barr, D. A.	1
Barrett-Leonard, W. J.	102
Bassford Creek, 53° 121° S.W.	79
Baynes, E. G.	89
Bazan Bay, 48° 123° N.E., clay and shale	89
Beale, w. S.	96
Beale Quarries Division, limestone	96



	PAGE		PAGE
Bear Creek Brick Company	88	Bonar, Robert B., Deputy Chief Inspector of Mines	A 54, A 55
Beatrice, 50° 117' N.W.	49	reports by	57-60, 89, 98, 133-143, 143-146
Beatrice Mining Co. Ltd.	49	Bond, F.	154
Beaver, 50° 121' N.E.	22	Bond, Reuben	98
Beaver Group, 50° 121' N.E.	70	Bonfield, Davis	39
Beaver Lodge Uranium Mines Limited	22	Border Sand and Gravel Company	99
Beaverdell, 49° 119' S.E.	35	Bordula, A. L.	45
Beaverpass Creek, 53° 121' S.W., placer	78	Boreas Mines Limited	82
Bedwell River, 49° 125' S.W.	161	Borup, Edward L.	44
Bedwell River Gold Mines Limited	59	Borup Group, 50° 120' N.E.	67
electrical installations	161	Boulder Creek, 59° 133' S.W., placer	78
Bedwell Sound, 49° 125' S.W.	59	Boulder Mill Creek, 49° 117' S.E.	39
Bel Group, 51° 119' S.W.	72	Boulder Nest, 49° 124' N.W.	57
Belair Mining Corporation Ltd.	34	Bounty Fraction, 49° 119' S.E.	36
Belchrome, 49° 119' S.E.	34	Bounty Group, 49° 120' N.W.	65
Bellaclava Claims, 49° 119' S.E.	64	Boss Mountain, 52° 120' S.W.	15
Belle Air, 49° 116' N.W.	43	Bosun, 49° 117' N.E.	47
Bennie, W.	146	Bralorne, 50° 122' N.W.	A 44, 17
Benson (Elk) Lake, 50° 127' S.E.	57	electrical installations	158
electrical installations	161	Bralorne Mines Limited	11, 15, 158
bentonite, production	A 30	Bray, F.	100
Bet Group, 51° 119' S.W.	72	Brenda Prospect, 49° 119' N.W.	64
Bethlehem Copper Corporation Ltd.	21	Brett, Leonard	150
Bethlehem Copper Property, 50° 120' S.W.	66	Brett Mineral Claims, 50° 119' N.E.	66
Bethsaida Copper, 50° 121' S.E.	70	bricks, production	A 15, A 25, A 32
Bethsaida Copper Mines Limited	24	Bridge, C. W.	102
Bevister, T.	20	Bridge River, 50° 121' N.W., placer	80
Big Flame mine, 49° 123' S.W.	145	Bridon, 49° 119' S.E.	34
Big Ledge Group, 50° 118' N.E.	66	briquelette plant, Michel	153
Biggs, J. S.	31	Brisco, 50° 116' N.E., barite	84
Biggs, John G., obituary	A 4	Britannia, 49° 123' N.E.	A 44, 56
Bill Mineral Claim, 50° 120' S.W.	66, 67	Britannia Beach, 49° 123' N.E., sand and gravel	102
Bill Mineral Claims, 50° 121' S.E.	70	Britannia Mining and Smelting Co. Limited	56
Billingsley, J. R.	60	British Columbia Cement Company Limited, cement	88
Birch Island, 51° 119' N.W.	30	electrical installations	162
Bird, Nick	78	limestone	98
Bird Mineral Claims, 50° 119' N.E.	66	British Columbia Electric Company Limited	111
Birkett Creek Mine Operators Ltd.	25	British Columbia Mining Association, Safety Division	131
fatal accident	119	British Columbia Power Commission	160
bismuth, production	A 15, A 23, A 28	British Columbia Slate Co. Ltd.	87
Black, J. C.	46	Brodrick, H.	145
Black, Robert	80	Bronlund, E.	11
Black Diamond, 49° 116' N.W.	A 46	Brossard, R. A.	21, 28
Black Warrior, 50° 117' N.E.	50	Brown Group, 50° 120' S.W.	69
Blake, A. M.	52	Bruce, K.	89
Blake, J. C.	52	Bruce, S. G.	27
Blake, J. E.	52	Bruce Group, 49° 118' S.E.	64
Blake, J. W.	52	Bruch, Rex	81
Blakey, K. B., Chief Gold Commissioner and Chief Commissioner, Petroleum and Natu- ral Gas	A 2, A 49	Brummer, J. J.	24, 27
Blaylock, 50° 117' S.E.	43, 44	Brunswick, Nos. 5 and 8, 49° 121' S.W.	55
Bloomer, T. O.	82	Bryant, A. E.	6
Blubber Bay, 49° 124' N.W., limestone	97	Bryant, J. W.	11
electrical installations	162	Bryden, Thomas	147
Blue, G. E., petroleum engineer	A 57	Brynsen, B. O.	27, 55
Blue Bell, 50° 116' N.E.	65	Buccaneer, 49° 125' S.W.	A 43
Blue-Belle Group, 56° 130' N.W.	74	Buck Group, 50° 120' S.W.	67
Blue Creek, 51° 122' S.W.	15	Buckham, T. R.	44
Blue Flame Colliery, Princeton, 49° 120' S.W.	147	Buckland, J. H.	81
Blue Grouse, 48° 124' N.E.	A 44, 60	Buerk, J. E.	102
Blue River, 59° 129' S.W.	75	building-stone	86
Blue Star Mines Limited	44	production	A 15, A 25, A 32
Bluebell, 49° 116' N.W.	A 46, 41	Bulkley Valley Collieries Limited	154
electrical installations	160	bumps and outbursts, coal mines	142
Board of Arbitration	A 57	Bunker Exploration Ltd.	53, 54
Board of Examiners for Coal-mine Officials	143	Burgess, A.	37
Bob, 50° 120' N.W.	22	Burnaby, 49° 122' S.W., sand and gravel	101
Bob A-B Group, 48° 124' S.E.	61	Burnaby, Corporation of the Municipality of	101
Bobicki, A.	81		

	PAGE		PAGE
Burnett, W. B. ....	13, 31	Burton, W. R. ....	6
Burnt Creek, 49° 117° S.E. ....	52	Butler Bros. Supplies Ltd. ....	103
Burton, A. D. K. ....	29	Buy Mineral Claims, 57° 131° S.E. ....	74
Burton, F. R. ....	59	by-product plant, Michel ....	153

## C

C.J.S., 50° 120° S.W. ....	27	Caviar Group, 49° 117° S.E. ....	63
C.J.S. Group, 50° 120° S.W. ....	67	Cedar Creek, 49° 116° N.W. ....	43
C.R., 51° 118° S.E. ....	53	Cedar Creek, 52° 121° N.W., placer ....	80
CS Claims, 50° 120° S.W. ....	68	Celtic Queen Group, 49° 117° S.W. ....	63
Cadamet Mines Limited ....	29	cement ....	88
cadmium, deposits ( <i>see table</i> ) ....	165	production ....	A 15, A 25, A 32
production ....	A 15, A 23, A 28, A 43	Centennial award ....	14
Cadwallader Creek, 50° 122° N.W. ....	17, 20	Centennial Mines Ltd. ....	26
Calcite Group, 49° 117° S.E. ....	62	Central Records Office ....	A 50
Caledonia, 50° 117° S.E. ....	A 46, 44	certificates of competency ....	129
Caledonia Mines Limited ....	44	Cewe, Jack ....	101
Callahan, L. R. ....	81	Chalco, 50° 122° N.E. ....	71
Camac Mining Co. Limited ....	59	Chalmers, H. J. ....	51
Camborne, 50° 117° N.W. ....	49	Chambers, R. H. ....	144
Camp McKinney, 49° 119° S.E. ....	33	Chambers No. 5 mine, 49° 123° S.W. ....	144
Campbell, D. A. ....	10	Chapman, William ....	148, 153
Campbell, D. S. ....	41	Chapman Camp, 49° 115° N.W. ....	51
Campbell Creek, 53° 121° S.W., placer ....	79	Cheam View, 49° 121° S.W., building-stone ....	86
Canadian Collieries (Dunsmuir) Limited ....	144	Chef Group, 48° 124° S.E. ....	61
Canadian Collieries Resources Limited ....	103	Chef No. 2 Group, 48° 124° S.E. ....	61
dangerous occurrence ....	163	Chester, Daniel ....	149
electrical installations ....	162	Chestnut, R. H. ....	97
Tsable River ....	146	Childress, W. H., instructor ....	A 55
Canadian Exploration Limited, Craigmont ....	25	Chilliwack, 49° 121° S.W., building-stone ....	87
Dodger ....	38	Chilliwack Dyking District Board ....	87
Emerald ....	38	Chisan, Robert Gordon ....	119
Feeney ....	38	Christensen, A. A. ....	97
Jersey ....	38	Christensen, A. D. ....	57
Tungsten King ....	39	Christensen, P. O. ....	97
dangerous occurrence ....	124	Christian, J. D. ....	83
electrical installations ....	159	chromium, deposits ( <i>see table</i> ) ....	165
fatal accident ....	119	production ....	A 28
Canadian Refractories Limited ....	88	Circle City Mines Limited ....	50
Canal Flats, 50° 115° S.W. ....	52	Clark Claim Groups, 49° 124° N.W. ....	65
Canam Copper Company Ltd. ....	54	Clarke, J. ....	79
Canex Aerial Exploration Ltd. ....	11, 13	clay ....	88
Cap, 50° 120° S.W. ....	26	production ....	A 15, A 25, A 32
Cap Group, 50° 120° S.W. ....	69	Clayburn Company Limited ....	88
Capilano Crushing Co. Ltd. ....	102	Clayburn-Harblson Ltd. ....	88
Cariboo area, lode ....	14	Clearbrooke, 49° 122° S.E., sand and gravel ....	99
placer ....	78	Climax Molybdenum (B.C.) Ltd. ....	11
Cariboo Gold Quartz, 53° 121° S.W. ....	A 43, 14	Climax Molybdenum Company ....	15
Cariboo Gold Quartz Mining Company Limited, The, Aurum ....	14	Clinton Lime Holdings Limited ....	92
Cariboo Gold Quartz ....	14	Clinton Mining Division, prospecting ....	A 60
French ....	31	Cloverdale, 49° 122° S.W., sand and gravel ....	100
Cariboo Mining Division, prospecting ....	A 60	Clubine, L. R. ....	39
Carlson, G. ....	80	Clubine Comstock, 49° 117° S.E. ....	39
Carnegie Mines of British Columbia, Ltd. ....	46	coal ....	133
electrical installations ....	160	employment in mines ....	A 41
Carnegie Mining Corporation Limited ....	46, 47	fees and licences ....	A 53
Carnsew, John M. ....	87	price ....	A 15
Carpenter Creek, 49° 117° N.E. ....	45	production A 14, A 15, A 21, A 26, A 33, A 34	A 54
Carr, J. M., geologist ....	A 55, A 56	samples ....	A 54
reports by ....	21-27, 29	coal dust ....	141
Carruthers, R. B. ....	145	Coal Hill, 50° 120° N.E. ....	29
Carruthers and Wakelem No. 3 mine, 49° 124° S.E. ....	145	coal mines, accidents ....	137
Carson, D. ....	27	bumps and outbursts ....	142
Casino Red Cap, 49° 117° S.W. ....	36	dangerous occurrence ....	142
Cassiar, 59° 129° S.W., asbestos ....	83	electrical inspection ....	162
Cassiar Asbestos Corporation Limited ....	83	men employed by collieries and district ....	137
electrical installations ....	162	prosecutions ....	142
		supervision ....	142
		coal-preparation plants ....	137
		coal production ....	133-135

	PAGE		PAGE
cobalt ( <i>see table</i> )	165	copper, deposits ( <i>see table</i> )	165
production	A 28	price	A 8, A 13
Cochrane, J.	146	production	A 14-A 22, A 26, A 43
Coffee Creek, 49° 116° N.W.	43	Copper Basin Groups A, B, and C, 49° 118° S.W.	64
Coggan, A. D.	35	Copper Island Group, 54° 126° S.E.	73
coke, production	A 35	Copper Mountain, 49° 120° S.W.	A 45
coke-making	137	Copperado Group, 50° 120° S.W.	67
Coldwater coal mines, 50° 120° S.W.	147	Copter Mineral Claims, 59° 133° N.W.	75
Colebrook Sand and Gravel Company Ltd.	100	Coquitlam, 49° 122° S.W., electrical installations	162
Coleman Collieries Limited	148, 154	sand and gravel	100, 101
Colleaux, R. A.	148	Coquitlam, Corporation of the District of	100
Collins Gulch Collieries Ltd.	147	Corrigan, Harry	150
Colthorp, P. E.	45	Cosburn, S. S., mineral engineer	A 57
Columbia River, 51° 118° N.W., placer	81	Courtenay, 49° 124° N.W.	103
Comfort, 49° 116° N.W.	41	Covellite Group, 49° 120° S.W.	65
Comox, 49° 124° N.W.	146	Coveney, C. J.	21
Conn, George L.	21	Cow, 50° 120° N.W.	22
Connell, F. M.	83	Cowboy, 50° 117° S.E.	45
Conrad A-D Group, 48° 124° S.E.	61	Cowichan Copper Co. Ltd.	60
Conservation Committee	A 58	Cowichan Copper Group, 48° 124° S.E.	61
Consolidated Mining and Smelting Company of Canada, Limited, The, A.M.	54	Cowichan Lake, 48° 124° N.E.	60
Bluebell	41	Cox, B. Franklin	88, 98
Fairview	32	Craig, S. D.	59
H.B.	39	Craigmont, 50° 120° S.W.	25
J.B.	50	Craigmont Mines Limited	25
Key	52	Cranbrook, 49° 115° N.W., placer	82
Kootenay	42	Crater Lake Group, 49° 119° S.E.	65
Kootenian	42	Crawford, Thomas	79
Pico	52	Creston, 49° 116° S.W.	50
Roscoe	50	sand and gravel	98
Silver King	37	Cronin Babine	A 43
Sullivan	51	Crowe-Swords, R.	47
Vulcan	51	Crow's Nest Pass Coal Company Limited, The	148
electric power, lode-metal mines	156	coke-making and briquetting	137
electrical installations	160	electrical installations	163
Oliver Silica Quarry	104	Elk River Colliery	153
Construction Aggregates Ltd.	102	Croydon Creek, 56° 125° S.W.	11
Continental M.B. Groups, 50° 120° N.E.	67	Cullen, A.	146
Conwest Exploration Company Limited	6	Cullinane, J. A.	48
Cooper, J. A.	44	Cutler, Hiram	96
Cooper, L.	146	Cytko, William	150
Copeland Creek, 51° 118° S.E.	54		

## D

D.M., 50° 120° N.W.	29	Dewar Creek, 49° 116° N.E.	51
D.M. Group, 50° 120° N.E.	67	de Yaeger, J.	35
D.W., 50° 121° N.E.	21	diatomite, production	A 15, A 24, A 30
D.W. Group, 50° 120° N.W.	67	diesel locomotives, coal mines	141
dangerous occurrences, coal mines	142	Dip Group, 51° 119° S.W.	72
metal mines and quarries	123	Discovery, 59° 133° N.W.	78
Davey, William	152	Ditmars, W. C.	87
David, 49° 125° S.W., electrical installations	161	Divide Group, 50° 121° N.E.	70
Davidson, A. M.	98	Divide Lake, 50° 121° S.E.	22, 24
Davies Group, 56° 124° S.E.	74	dividends, coal mines	A 39
Davis, Dudley	79	copper mines	A 39
Day, T. J.	29	lode-gold mines	A 37
Deby, 51° 118° S.E.	53	silver-lead-zinc mines	A 38
Deeks-McBride Ltd., Bazan Bay	89	paid, 1957 and 1958	A 36
Coquitlam	101	paid yearly, 1917-1958	A 36
electrical installations	162	Dockrill, F. M.	154
Deer Group, 49° 117° S.E.	63	Doctor Creek, 50° 116° S.E.	52
Deer Horn Mines Limited	30	Dodger, 49° 117° S.E.	A 45, 38
Delano Creek, 58° 125° N.E.	13	electrical installations	159
Delaware Claims, 49° 116° S.E.	62	Doelle, H. E.	52
Dell Group, 56° 125° N.E.	74	Dominion Chromium Property, 50° 121° N.E.	70
Department of Mines and Technical Surveys	A 65	Dominion Creek, 59° 133° N.W.	78
departmental work	A 49	Domino, 50° 120° S.W.	26
Derosa, E.	48		

	PAGE		PAGE
Domino No. 1 Group, 50° 120° S.W. ....	67	drain-tile, production .....	A 15, A 25, A 32
Don Claim, 48° 124° S.E. ....	61	Dries, 49° 115° N.W. ....	61
Don Group, 50° 116° S.W. ....	65	Drumheller, J. L. ....	45
Don Group, 50° 120° S.E. ....	67	Drybrough, J. ....	49
Donald, J. B. ....	41	Dueck Building Supplies Ltd. ....	99
Donnelly, F. ....	36	Dueck's Gravel Pit .....	99
Doratty, Robert .....	152	Duncan, 48° 123° N.W., sand and gravel ..	103
Dorothy Group, 55° 125° S.E. ....	73	Dunmore Mines Ltd. ....	29
Dorreen Group, 59° 129° S.E. ....	75	Dunn, A. ....	144
Dot, 50° 121° S.E. ....	27	Dunsire, R. A. ....	80
Double B Group, 49° 117° S.E. ....	63	dust control and ventilation .....	125
Downie Creek, 53° 121° S.E. ....	78	Duthie, R. G. ....	25
Doyle, N. ....	39		

**E**

E.D. Group, 50° 121° N.E. ....	70	Elva No. 4 Mineral Claim, 52° 131° S.E. ....	72
E.D. Mineral Claim, 50° 120° N.W. ....	68	Emerald, 49° 117° S.E. ....	A 45, 38
East Kootenay, 49° 114° S.W., electrical installations .....	163	electrical installations .....	159
East Kootenay Inspection District .....	148	Emery, P. C. ....	56
British Columbia Department of Mines shield .....	148	Emma, 49° 119° S.E. ....	33
British Columbia Department of Mines cup .....	148	Empire Development Company Limited .....	57
East Sooke Copper, 48° 123° N.W. ....	61	dangerous occurrence .....	123
Eastwood, G. E. P., geologist .....	A 55, A 56	electrical installations .....	161
Eberts, Henry .....	151	employment, coal mines .....	A 41, 137
Ecclestone, T. ....	146	lode-metal mines .....	A 48
Eclipse, 50° 117° N.W. ....	A 46, 49	mining industry .....	A 41
Ecstall, 53° 129° N.W. ....	7	Endersby, A. ....	38
Ecstall Mining Company Limited .....	7	Enemark, T. ....	101
Ecstall River, 54° 129° S.W. ....	7	Enemark Construction Limited .....	101
Ehlers, J. ....	87	Enterprise, 49° 117° N.E. ....	47
Eholt Copper Property, 49° 118° S.W. ....	64	Enterprise Creek, 49° 117° N.E. ....	47, 48
Eholt Group, 49° 118° S.E. ....	64	Enterprise Placers .....	78
Elderkin, Lawrence .....	100	Erickson, E. A. ....	38
Elderkin's Excavating Ltd. ....	100	Erickson, Nils .....	97
electric power, coal mines .....	157	Erickson-Ashby Claims, 58° 133° N.E. ....	75
lode mines .....	156	Erie Creek, 49° 117° S.E. ....	38
non-metallic mines and quarries .....	157	placer .....	81
placer mines .....	157	Erin Group, 50° 116° N.E. ....	66
well drilling rigs .....	158	Estella .....	A 45
electricity, coal mines .....	141	Estella Group, 49° 115° N.W. ....	61
Elizabeth, 51° 122° S.W. ....	A 44, 15	Etna Group, 49° 115° S.W. ....	61
Elizabeth Group, 55° 125° S.E. ....	73	Europa, 50° 116° N.E. ....	66
Elk Group, 51° 119° S.W. ....	72	Evans, Coleman & Johnson Bros. Ltd. ....	103
Elk River Colliery, 49° 114° S.W. ....	153	Ewart, T. G. ....	148
electrical installations .....	163	examinations for assayers .....	A 54
Filis Syndicate .....	48	explosives, coal mines .....	139
Elsmerc, 50° 117° N.E. ....	50	lode mines and quarries .....	125
Elsmore, A. ....	45	table .....	126
		Extension, 49° 123° S.W. ....	144
		Extension mine, 49° 123° S.W. ....	145
		Eye, 50° 121° S.E. ....	24
		Eye Group, 50° 121° S.E. ....	70

**F**

F.B. Claims, 50° 120° S.W. ....	67	Fat Chance, 50° 120° N.E. ....	29
FRM 1-8 Group, 50° 120° S.W. ....	68	fatal accidents, lode mines, placer mines, and quarries .....	118
Fair Fraction Mineral Claim, 49° 119° S.E. ....	65	Feeney, 49° 117° S.E. ....	A 45, 38
Fairview, 49° 119° S.W. ....	A 45, 32	Feeney Pit, 49° 117° S.E. ....	99
Fairview Amalgamated Gold Mines Limited .....	33	Fenwick-Wilson, B. A. ....	34
Fairview Group, 50° 121° N.E. ....	71	Ferguson, 50° 117° N.E. ....	50
Faith Group, 50° 121° N.E. ....	71	placer .....	81
Falcon Claims, 49° 117° S.E. ....	63	Ferguson Creek, 50° 117° N.E. ....	50
Fandora, 49° 125° S.W. ....	59	Ferraro Gravel Pit .....	99
Farr Lake, 50° 120° S.W. ....	27	Fiddler Claims, 50° 120° S.W. ....	67
Farr Lake Property, 50° 120° S.W. ....	27, 67	Fiddler Group, 50° 120° S.W. ....	67
Farrell, Gordon .....	88, 98	field work, British Columbia Department of Mines .....	A 56
Farris, D. F. ....	21, 24	Geological Survey of Canada .....	A 65
Farwest Mining Limited .....	22		
Farwest Tungsten Copper Mines Limited .....	22		

	PAGE		PAGE
first aid .....	128	Fountainview, 50° 121° N.W., placer .....	80
Fisher, Darrell .....	39	Four Mile Creek, 52° 121° N.E., placer .....	79
Fisher, N. ....	78	Fournier, Lee .....	79
Fisher Creek, 49° 115° N.W., placer .....	82	Foweraker, J. C. ....	26, 27
Fisher Maiden, 49° 117° N.E. ....	A 46, 48	Fox, G. D. ....	38
fluorspar, production .....	A 30	Fran Group, 50° 120° N.W. ....	68
flux, production .....	A 15, A 24, A 30	Frank Mineral Claim, 50° 120° S.W. ....	66, 67
Fly Group, 49° 115° N.W. ....	61	Frank Mineral Claims, 50° 121° S.E. ....	70
Foghorn Mountain, 51° 119° N.W. ....	30	Fraser River, 50° 121° N.W., placer .....	80
Fording River Project, 50° 114° S.W. ....	65	Fraser River Copper, 53° 121° N.W. ....	73
Forge Mountain, 50° 121° N.E. ....	21	Fraser Valley Lime Supplies .....	96
Fort Langley, 49° 122° S.E., clay and shale .....	88	Fred Group, 49° 116° N.W. ....	62
Fort Reliance Minerals Limited .....	13	Freeman, Frank .....	79
Fort Steele, 49° 115° N.W. ....	52	French, 49° 120° S.E. ....	A 45, 31
placer .....	82	electrical installations .....	159
Fort Steele Gold and Silver Mines Limited .....	52, 82	French Mines Ltd. ....	31, 159
Fosbery, P. H. V. ....	81	Friday Creek, 49° 120° S.W. ....	30
Foster, C. N. ....	99	Fried, L. ....	46, 48
Foster Bar, 50° 121° N.W., placer .....	80	Frobisher, M. ....	146
Foster's Gravel Pit .....	99	fuel and electricity used in mines .....	A 40
Fourth of July, 50° 117° S.E. ....	45	Fulton, H. B., assistant geologist .....	A 57
Fountain, 50° 121° N.W., placer .....	80	Fyles, J. T., geologist .....	A 55, A 56
Fountain Placers, 50° 121° S.W., electrical .....	161	report by .....	40-41

## G

GM 1-8 Mineral Claims, 50° 120° S.W. ....	66	Gold Belt, 49° 117° S.E. ....	A 45
GM 9-16 Mineral Claims, 50° 120° S.W. ....	66	Gold Bridge, 50° 122° N.W., placer .....	80
GPX Mineral Claims, 49° 117° S.E. ....	63	Gold Coin, 49° 121° S.E. ....	55
Gabbro, 48° 124° S.E. ....	60	Gold Commissioners and Mining Recorders .....	A 50
Gagen, G. S. ....	79	office statistics, 1958 .....	A 51
Gagen Creek, 53° 122° S.E., placer .....	79	Gold Creek, 49° 117° S.E. ....	48
Gallo, J. ....	50	Gold Dot Mining Company Limited, proce- .....	125
Gardener, L. R. ....	85	cutions .....	125
Garnett, W. E. ....	28	Gold Drop Group, 55° 129° N.W. ....	73
Geigerich, J. R. ....	51	Gold Flake, 49° 125° S.W. ....	59
Gem, 50° 120° S.W. ....	28	Gold Gozzan, 50° 120° S.W. ....	28
Gem, 59° 126° S.E. ....	75	Golden, 51° 116° S.W., silica .....	104
Gem 1-38, 59° 130° N.E. ....	75	Golden Mining Division, prospecting .....	A 60
Gen (1-2) Mineral Claims, 56° 125° N.E. ....	74	Goldsmith, G. A. ....	79
Gen (6-11) Mineral Claims, 56° 125° N.E. ....	74	Goldstream River, 51° 118° N.W., placer .....	81
Geological Survey of Canada, field work .....	A 65	Goodenough, 49° 117° S.E. ....	37
publications .....	A 66	Gordon, G. A. ....	38
Gerrard, S. ....	147	Gordon Creek Property, 50° 121° S.E. ....	27
Gertrude, 49° 115° N.W. ....	52	Gordon Group, 56° 124° S.E. ....	74
Gething, L. ....	154	Gorse, C. F. ....	52
Gething, Q. F. (King) .....	154	Gough, S. ....	146
Giant Mascot Mines Limited .....	85	Government Creek, 53° 122° S.W., placer .....	78
Gibson, W. C. ....	85	Gower, J. A. ....	24, 27
Giessen, Fred William .....	78, 120	Graham, F. Ronald .....	146
Gilbart, K. C., petroleum engineer .....	A 57	Graham, Philip .....	87
Gilleland, H. B. ....	9	Graham Bousquet Gold Mines Limited .....	29
Gilley, J. C. ....	87, 101	Grams, E. ....	119
Gilley, J. H. ....	87, 101	Granby Consolidated Mining Smelting and .....	
Gilley Bros. Limited .....	87	Power Company, Limited, The, lime- .....	97
Maryhill Division .....	101	stone .....	97
Gilmour, H. ....	145	Phoenix Copper .....	36
Girou, Roger .....	150	Pride of Emory .....	55
Giselle Group, 50° 120° N.W. ....	68	Granduc, 56° 130° S.W. ....	6
Glacier Creek, 50° 116° S.W. ....	50	Granduc Mines, Limited .....	6
Glacier Gulch, 54° 127° N.E. ....	10, 11	Grandview, 49° 117° N.E. ....	44
Glen Mountain, 55° 127° S.W. ....	9	Granite, 49° 117° N.E. ....	44
Glencairn Group, 49° 115° S.W. ....	61	Granite Falls, 49° 122° S.W., building-stone .....	87
Glover, M. H. A., economist, Conservation .....	A 58	granules, production .....	A 15, A 24, A 30
Committee .....	A 58	Greene, W. H. ....	100
Goat River, 49° 116° S.W. ....	50	Greenway, Austin K. ....	37
gold, deposits (see table) .....	165	Greenwood Copper, 49° 118° S.W. ....	64
price .....	A 8, A 13	Gregory, William .....	148
production .....	A 14-A 22, A 26, A 43	Grieve, J. B. ....	81
		Griffin, D. L., mineral engineer .....	A 57

	PAGE		PAGE
Grouse Claims, 49° 117° S.E.	63	Gunnysack Group, 53° 129° N.E.	73
Grub Gulch, 53° 121° S.W., placer	79	Gunnysack Nos. 1 and 2, 53° 129° N.E.	9
grub-stake statistics	A 59	gypsum	89
grub-staking prospectors	A 58	production	A 15, A 24, A 30
Guichon Creek, 50° 120° S.W.	25	Gypsum Lime and Alabastine, Canada, Limited, Blubber Bay	97
Guiguet, M.	14	electrical installations	162
Gunn, Jack	78		

## H

H.B., 49° 117° S.E.	A 45, 39	Highland-Bell, 49° 119° S.E.	A 44, 35
H.B. Nos. 2-7 Mineral Claims, 49° 117° S.E.	63	Highland-Bell Limited	35
H.P.H. Group, 50° 127° N.W.	72	Highland Sand and Gravel Company Limited	102
H.S. Group, 50° 121° N.E.	71	Highland Valley area	21
Hab Mineral Claims, 57° 131° S.E.	74	Highland Valley Mining Corporation Ltd.	27
Hackey, P. O.	6	Highland Valley Property, 50° 120° S.W.	68
Hadgiss, J.	89	Highlander, 49° 116° N.W.	A 46, 43
Haile, Joseph J., instructor	A 55	Hill, Henry L., and Associates	6, 47, 85
Hal Group, 49° 117° S.E.	63	Hill, Stan	120
Hall, E.	49	Hillside, 49° 123° S.E., sand and gravel	102
Hall Creek, 50° 117° N.E.	50	Hillside Sand & Gravel Limited	102
Halley, J. Kenneth	57	Hill Top Group, 50° 120° N.E.	68
Hallgren, Sven	43	Hind, John	79
Ham, A. M.	47	Hixon Creek, 53° 122° S.W., placer	78
Hamilton, R. E.	21	Hixon Placers Inc.	78
Haney, 49° 122° S.W., clay and shale	89	Hladinec, W.	81
Haney Brick and Tile Ltd.	89	Hobbs, A. W., solicitor, Board of Arbitration	A 57, A 58
Hank, 50° 120° S.W.	26	Hodgson, W. L.	32
Hansen, V.	48	Holland, Stuart S., geologist	A 55, A 56
Harbison-Walker Refractories Company	88	reports by	15-21, 53
Harbledown Island, 50° 126° N.W., limestone	97	Hong, W. M.	78
Harbour Natural Resources Limited	98	Hooch Creek, 49° 117° S.E., placer	81
Hardscrabble Fraction, 49° 118° S.W.	64	Hook Group, 49° 115° N.W.	61
Hargood, H. W.	78	Hope, 49° 121° S.E.	55
Harris Creek, 50° 118° S.W., placer	81	Hope-Summit Group, 49° 120° S.W.	65
Harrison Group, 53° 127° S.E.	73	Horn Silver, 49° 119° S.W.	A 45, 32
Harrison Lake, 49° 121° N.W.	56	Hornby, Harry	100
Haskins, R. E.	88, 98	Hornby General Machinery Company	100
Hat, 50° 120° N.W.	22	Howe Sound, 49° 123° N.E.	56
Hat Group, 50° 120° S.W.	68	slate	87
Hatch Point, 48° 123° N.W.	60	Howe Sound Company (Britannia Division)	56
Hayes, E.	147	Hudson Bay Mountain, 54° 127° N.E.	10
Haylmore, W.	80	Huestis, H. H.	15, 21
Hazelton, 55° 127° S.W.	9	Hughes, E. R., Senior Inspector of Mines	A 55
Hazelton Group, 55° 127° S.W.	73	Hughes, J. E., geologist	A 55, A 56
Heap, M. O.	80	Hughes, H. C., Chief Inspector of Mines	A 55
Heather Group, 50° 120° N.W.	68	Hughes, Sidney	151
Heba, 49° 116° N.W.	45	Hulbert, Vans S.	151
Hec North Group, 50° 120° S.W.	68	Humphrys, George	121
Hec South Group, 50° 120° S.W.	68	Hungerford, R. M.	88
Hecla Mining Company	40, 41	Hunstone, R. W.	33
Hedley, M. S., Senior Geologist	A 55, A 56	Hunt, J.	44
Hedley, 49° 120° S.E.	31	Hurley River, 50° 122° N.W.	17
electrical installations	159	placer	80
Heli Mineral Claims, 59° 133° N.W.	75	Hutchinson, L.	146
Hematite Group, 55° 129° S.W.	73	Hutchison, W. A.	30
Hemsworth, F. J.	21	Huus, P. K., engineering assistant	A 57
Hera, 49° 116° N.W.	45	hydromagnesite, production	A 30
Hewitt, 49° 117° N.E.	A 47, 48	Hyland Mountain, 54° 126° N.W.	10
High, W.	146		

## I

	PAGE		PAGE
Idaho Mineral Claim, 49° 119° S.E.	65	inspection of electrical equipment and installations	156
Ideal Cement Company Ltd.	96	Interior Contracting Company Limited	104, 105
Ikeda No. 7 Mineral Claim, 52° 131° S.E.	72	Intermountain Construction Ltd.	22
Ilk, 49° 120° S.W.	30	introduction	A 7
Illidge, T. W.	15	Intruder Group, 49° 115° S.E.	62
Independence Group, 49° 120° N.W.	65	Invermere, 50° 116° S.E., barite	86
Indian Arm, 49° 122° S.W.	101	iron, deposits ( <i>see table</i> )	165
Indian River Quarries Limited	87	Iron Mountain, Merritt, 50° 120° S.W.	28
indium, production	A 15, A 23, A 28	Iron Mountain, Salmo, 49° 117° S.E.	38
industrial minerals	83	iron ore, production	A 15, A 23, A 28
production A 14, A 15, A 21, A 24, A 26, A 30		iron oxides, production	A 15, A 31
Ingram, W. L., petroleum engineer	A 57	Isaacs, Arthur	96
Inland Natural Gas Co. Ltd.	111	Isaacs, John	96
Inspection Branch	A 54	Island Mountain mine, 53° 121° S.W.	14
inspection committees, coal mines	141		

## J

J Claims, 50° 120° S.W.	68	Jericho Mines Limited	24
J.G., 50° 116° S.W.	50	Jernslet, E. N., field survey assistant	A 57
J.S.S., 50° 120° S.W.	27	Jersey, 49° 117° S.E.	A 45, 38
Jack Cewe Blacktop Ltd.	101	electrical installations	159
Jack of Clubs Lake, 53° 121° S.W., placer	79	Jesse Creek, 50° 120° S.W.	27
Jack Group, 55° 127° S.W.	73	Jessiman, Kenneth	86
Jacko 4 and 9, 50° 120° N.E.	66	Jervis Inlet, 50° 123° S.W., slate	87
Jacko Fractions 6 and 10, 50° 120° N.E.	66	Jeune Landing, 50° 127° S.W., limestone	97
Jackpot Group, 49° 116° N.W.	62	Jig Mineral Claims, 52° 122° N.W.	72
Jager, H. D. M.	20	Jim Group, 49° 116° N.W.	62
James, A. R. C., Inspector	A 55	Jo A-D Claims, 48° 124° S.E.	61
reports by	21, 28-36, 80-81, 104, 147	Joe Groups, 55° 127° S.W.	73
James Varden Mineral Claims, 55° 129° S.W.	73	John Group, 55° 127° S.W.	73
Jan Group, 50° 120° N.E.	70	Johnson, G. L.	13
Jan Mineral Claim, 50° 120° N.W.	68	Johnson Property, 51° 119° S.W.	72
Jane Group, 56° 125° S.W.	11	Johnston, E.	101
Jason Groups, 49° 115° S.E.	61	Johnston, Ed	79
Jason Group, 49° 115° S.E.	62	Johnstone, Lloyd	43
Jean Group, 50° 120° S.E.	67	Johnstone, W. W.	146
Jefferson Lake Petrochemicals of Canada Ltd.	109	Joker Group, 49° 117° S.E.	63
Jefferson Lake Sulphur Company	109	Jordon River, 48° 124° S.E.	60
Jericho, 49° 125° S.W., electrical installations	161	Joseph, Philip	30
		Joubin, F. R.	15
		Joy, 49° 115° N.W.	52

## K

KL 1-6 Groups, 50° 120° S.W.	68	King, Robert B., Inspector and Resident Engineer	A 55
KL 7 and 8 Groups, 50° 120° S.W.	68	reports by	14-20, 56-59, 78-80, 86-89, 96-103
Kakiddi Group, 57° 130° N.W.	74	King David Group, 51° 116° N.W.	72
Kamloops, 50° 120° N.E.	29	King Fissure, 51° 118° S.E.	53
Kamloops Mining Division, prospecting	A 60	King Gething mines	154
Kanaka Bar, 50° 121° S.W., placer	80	King Mineral Claims, 49° 117° S.E.	63
Kaslo, 49° 116° N.W.	44	Kingfisher, 50° 127° S.E.	A 43
Kehoe, Ray	102	Kinney, L. M.	40
Keithley Creek, 52° 121° N.E., placer	79	Kirbyville Creek, 51° 118° N.W., placer	81
Kelowna Mines Hedley Limited	31	Klapatuuk, N.	79
Ken Group, 50° 116° S.W.	65	Klastine Group, 57° 130° N.W.	74
Kentucky Lake area, 49° 120° N.W.	28	Kleim, T.	45
Kenville Gold Mines Limited	37	Kniert, Kenneth	149
Keremeos, 49° 119° S.W.	32	Knight, H. W.	43
Kettle River, 49° 118° S.E., placer	81	Knutsford, 50° 120° N.E.	29
Key, 50° 115° S.W.	52	Koeye Limestone Co. Ltd.	97
Kiernan, Hon. W. K., Minister of Mines	A 2	Koeye River, 51° 127° N.W., limestone	97
Kilgard, 49° 122° S.E., clay and shale	88	Kokanee Glacier Park, 49° 117° N.E.	43
Kimberley, 49° 115° N.W.	51	Kootenay, 49° 116° N.W.	42
electrical installations	160	Kootenay Belle, 49° 117° S.E.	A 45
Kimberley Claims, 49° 115° N.W.	62		

	PAGE		PAGE
Kootenay Chief, 49° 116° N.W.	41	Krain Copper Ltd.	21
Kootenay Florence, 49° 116° N.W.	43	Krain Group, 50° 120° N.W.	67
Kootenay Granite Products Limited	86	Krall, John	152
electrical installations	162	Krall, Thomas	150
Kootenay Lake, North, 49° 116° N.W.	41	Kumhila Exploration Co. Ltd., placer	79
electrical installations	160	electrical installations	161, 162
Kootenian, 49° 116° N.W.	41	Kumhila Placer, 53° 121° S.W.	162
Korpack Cement Products Company Limited	99	Kusnir, Paul	150
Kotush, P. R.	82	Kvikstad, H.	13
Kozar, J.	40	Kwong Foo Creek, 53° 121° S.W., placer	78
Krain, 50° 121° N.E.	21		

## L

L.B. Claims, 55° 129° S.W.	73	Lind, Charles	44
L and M Claims, 49° 124° N.E.	65	Lineham, J. D., Chief of the Petroleum and Natural Gas Branch	A 2, A 57
L.T., 49° 117° N.E.	A 45	report by	108
Lac la Hache, 51° 121° N.E.	15	Lingle, J.	46
Laco Group, 50° 121° S.E.	71	Linn, R. W.	38
Laddie Nos. 1, 2, and 3, 49° 125° S.W., electrical installations	161	Linton, Thomas A.	100
Ladner, 49° 123° S.E., sand and gravel	100	Linton's Construction Co. Ltd.	100
Lafarge Cement of North America Ltd.	88, 96	Lipsev, George C.	57
Lajo Mines Limited	44	Little, J. D.	38
Lakeshore, 49° 116° N.W.	43	Little Bess Group, 49° 117° S.W.	63
Lane, Thomas	42	Little Mountain Quarry, building-stone	87
Lang, E.	79	Little Phil, 49° 116° N.W.	A 46
Langley, Corporation of the Township of	100	Little Snowshoe Creek, 52° 121° N.E., placer	79
Langley Municipality, 49° 122° S.W.	100	Littler, Albert	129, 148, 149
Lapierre, T.	99	Littler, James	148
Larch Claims, 49° 117° S.E.	63	lode-metal deposits referred to in the 1958 Annual Report	165
Larch Group, 49° 117° S.E.	63	lode-metal mines, tonnage, number of mines, net and gross value of principal metals	A 42
Larch Group, 50° 127° N.W.	72	lode-mining	1
Lardeau area, placer	81	employment	A 41, A 48
North Lardeau	49	Lodge, 50° 120° N.W.	22
South Lardeau	50	Lodge Claims, 50° 122° N.W.	68
Lardeau Creek, 50° 117° N.E., placer	81	Lodge Group, 50° 120° N.W.	68
Lardeau Mines Exploration Limited	49	Loe Group, 50° 120° S.W.	68
Larrabee Mining and Exploration Ltd.	86	Loeb, A. A.	43
Larson, A.	13	Logan, 49° 116° N.W.	44
Larson Group, 49° 115° S.W.	61	Lorne Creek, 54° 128° N.E., placer	78
Last Chance, 50° 120° S.W.	28	Lorraine, 54° 126° N.W.	10
Last Chance No. 1 Group, 49° 117° S.E.	63	Lost Atlantis, 50° 117° S.E.	45
Lathrop, T. S.	44	Loudon, William	145
Laughton, M.	43	Loudon No. 6 mine, 49° 124° S.E.	145
Laura M., 49° 116° N.W.	A 46	Louis, 50° 121° N.W.	21
Lawless Creek, 52° 121° N.W., placer	80	Louis Salvador and Son	98
Lawrence, S. J.	146	Louise Group, 50° 121° N.E.	71
lead, deposits ( <i>see</i> table)	165	Low Grade, 59° 129° S.W.	75
price	A 8, A 13	Lower Antler Creek Gold Placers, 53° 121° S.E.	73
production	A 14-A 22, A 26, A 43	Lowhee Creek, 53° 121° S.W., placer	78
Leduc glacier	6	Lucie-Smith, A. N., Senior Petroleum Engi- neer and Chairman of the Conservation Committee	A 57, A 58
Lehto Group, 56° 130° S.W.	74	Lucky Edd Mines Limited	45
Lembke, W.	13	Lucky Four Leasers	45
Lemieux, F.	55	Lucky Jim, 50° 117° S.E.	A 46, 45
Lewis, C.	146	Lucky Jim Group, 50° 120° S.W.	68
Lewis, Glyn	144	Lucky Strike Group, 48° 123° N.W.	61
Lewis mine (Timberlands), 49° 123° S.W.	144	Lulu Island, 49° 123° S.E., cement	88
Liard Fluorite, 59° 126° S.E.	75	Lynn Claims, 50° 120° S.W.	68
Liard Mining Division, prospecting	A 60	Lynnmour, 49° 123° S.E., sand and gravel	102
Lightning Creek, 53° 122° S.E., placer	79	Lyon, H.	48
Lightning Creek Leases, 53° 121° S.W.	73	Lyons Claim, 49° 124° N.E.	65
Lillooet area	15		
placer	80		
Lillooet Mining Division, prospecting	A 60		
lime and limestone, production A 15, A 25, A 32	32		
limestone	90		
deposits in the Ashcroft-Clinton area	90		
in the Merritt area	94		



## Mc and Mac

	PAGE		PAGE
McAllister .....	A 46	McIntyre Creek, 50° 118° S.W., placer .....	81
McAlpine, T. C. ....	80	McK Group, 56° 130° N.W. ....	74
McArthur, W. E. ....	24, 33	McKay, Don .....	97
McAuley, W. J. ....	79	McKay, Walter .....	148
McBeath, S. B. ....	29	McKay Quarry .....	97
McBeth, James .....	88	McKechnie, N. D., geologist .... A 55, A 56, A 58	58
McCammon, J. W., geologist .....	A 55, A 56	report by .....	60
reports by .....	84, 87, 88, 90-96, 97, 104-106	McKee, J. H. ....	80
McCready, G. E. ....	44	McKee Creek, 59° 133° S.W. ....	78
McCrimmon, R. H. ....	A 49	McKeen, George B. ....	101
McCullough, M. P. ....	47	Mackenzie, T. A., engineering assistant ...	A 57
McDame, 59° 120° S.W. ....	162	MacLean, J. C. ....	39
McDame, Mount, 59° 129° S.W. ....	83	McLellan, C. H. ....	33
McDearnid, J. M. ....	47	McLeod, C. E. ....	80
McDonald, D. J. ....	13	McLeod, R. J. ....	38
McDonald, Francis J. ....	87	McLeod, R. R., Senior Petroleum Engineer	
McDonald, John Daniel .....	119	and Chairman of the Board of Arbitra-	
McDonald, Oswood G. ....	60	tion .....	A 57, A 58
Macdonald, P. J. ....	79	McLeod, W. H. ....	47
MacDonald, Roy .....	79	McLeod Nos. 5 and 6, 50° 120° S.W. ....	25
MacDougall, R. E. ....	78, 79	Maclynn Gravel Co. Ltd. ....	102
McFarland, R. C. ....	10	MacMillan, A. D. ....	102
McGaughey Ready-Mix Concrete Company ..	99	MacMillan, George A. ....	46
McGillivray Creek, 50° 121° N.W., placer ..	80	MacMillan, Mrs. Viola .....	46
McGonigle, Frederick A. ....	56	McNab Creek Slate Quarry .....	87
McGowan, C. M. ....	38	McPhails Engineering Company .....	85
McInnes, John .....	150	MacPherson, William .....	84, 104
McIntosh, D. A. ....	49	McTaggart, K. C. ....	A 56
McIntyre & Harding Gravel Company Lim-		McVeigh, Frank .....	149
ited .....	103		

## M

M 2, M 3, M 4, M 5, and M 2-4 Fractions, 49° 123° N.E. ....	65	Maple Leaf, 49° 119° S.E. ....	33
M.L. 1-6 Groups, 49° 115° S.W. ....	62	maps showing mineral claims, placer claims, and placer-mining leases .....	A 63
M.L. 7 and 8 Groups, 49° 115° S.W. ....	62	Mar Group, 49° 116° N.W. ....	62
M.L. 72 Fraction, 49° 115° S.W. ....	62	Marasek, B. F. ....	48
M.L. 73-75 Claims, 49° 115° S.W. ....	62	Marg Group, 56° 130° N.W. ....	74
M.L. Claims (Moyie Lake), 49° 115° S.W. ....	62	Mark Creek, 49° 115° N.W. ....	51
Mac Group, 50° 120° S.W. ....	69	marl .....	98
Mac Group, 50° 126° S.W. ....	72	Marriott, S. H. ....	103
machine-mined coal .....	140	Mars, 50° 116° N.E. ....	66
Magee, J. B. ....	52	Martin, Michael .....	81
magnesium, production .....	A 28	Martin, Richard E. ....	45
magnesium sulphate, production .....	A 31	Martini, N. ....	28, 29
Magnum Copper, 58° 125° N.E. ....	13	Mathew Creek Group, 49° 116° N.E. ....	62
Magnum Copper Limited, N.P.L. ....	13, 26	Matson, C. M. ....	153
Magnuson, H. F. ....	47	Mattson, A. ....	78
magnesite .....	98	Maxinuk, A. ....	46
Magnet Groups No. 2 and No. 1, 50° 126° S.E. ....	72	Maxwell, A. ....	146
Magnetite Group, 52° 131° S.E. ....	72	May-Bec, 49° 116° S.E. ....	50
Mahlman, C. ....	131	May Queen Fractions, 1, 17, 23, 36, and 38, 49° 117° S.W. ....	63
Maid of Erin Property, 59° 136° N.W. ....	75	May Queen Groups, 49° 117° S.W. ....	63
Main, J. ....	50	Mel Group, 50° 120° S.W. ....	69
Mainland Clay Products Limited .....	89	Menduk, Stanley .....	150
Mairs, Thomas .....	96	Menzies, M. M. ....	27
Maio, Clarence .....	85	mercury (see table) .....	165
Makaoo Development Company Limited ..	29	production .....	A 16, A 29
Malcolm, D. C. ....	30	Mer-Pay Group, 50° 120° S.W. ....	69
Malkow, E. E. ....	10	Merrell Nos. 7 and 8, 50° 120° S.W. ....	25
Mammoth, 49° 117° N.E. ....	A 46, 47	Merrett, J. E., Inspector and Resident Engi-	
manganese, deposits (see table) .....	165	neer .....	A 55
production .....	A 28	reports by .....	36-50, 81, 86, 98, 99, 104-106
Manning, C. M. ....	15	Merriam, F. ....	99
Mannix Company Limited .....	57	Merriam and Peskor .....	99
Mannix Limited .....	153	Merritt, 50° 120° S.W. ....	24
		coal .....	147

	PAGE		PAGE
Merritt Group, 50° 120° S.W.	69	Monarch, 49° 117° N.E.	A 46, 47
Merritt Property, 50° 120° S.W.	27	Monashec Creek, 50° 118° S.W.	81
Merry Widow, 50° 127° S.E.	A 34, 57	south fork, 50° 118° S.E., placer	81
Metcalfe, S. W., Chief Analyst and Assayer	A 2, A 53	Monet, Jack	79
Meurling, O.	49	Moneta Porcupine Mines, Limited	59
Miard, Harry E., obituary	A 4	Monitor, 50° 117° S.E.	45
mica, production	A 15, A 24, A 31	Monte Carlo, 50° 120° N.E.	66
Michel Colliery, 49° 114° N.W.	148	Montgomery, W. B.	20
electrical installations	163	Mooney, M. G.	24, 31
Midnight Consolidated Mines Ltd.	27	Moorhouse, W. W.	11
Millar, Hannigan & Associates Limited	98	Morgan, D. R., Inspector and Resident Engineer	A 55
Millar, K.	48	reports by	51-53, 82, 84-86, 89, 98, 104-106, 148-154
millisecond delay detonators	142	Morgan, Irving	148
Mills, F.	48	Morris, James E.	153
mine-rescue	128	Moss, R. E.	A 49
Mineral King, 50° 116° S.E.	A 45, 52	Mostique Creek, 53° 122° S.E., placer	79
mineral specimens	A 63	Mountain Minerals Limited	84, 104
Mineralogical Branch	A 55	Moyic River, 49° 116° S.E., placer	82
Mines Branch	A 66	Mullin's Strip Mine Ltd.	147
miscellaneous metals, production	A 14, A 15, A 21, A 23, A 26, A 28	Mulcahy, P. J.	A 2, A 49
miscellaneous samples	A 54	Munro, W. A.	98
Mission Creek, 49° 119° N.E., placer	81	Murison, J.	44
Minto, 50° 122° N.W.	15	Murray, James R.	24
Mocena Mines Group, 49° 125° S.W.	65	Murray, N. F.	83
Mohawk Creek, 50° 117° N.W.	49	Murrayville, 49° 122° S.W., sand and gravel	100
Mollison, R. D.	7	museums	A 62
molybdenite, deposits ( <i>see table</i> )	165	Musketeer, 49° 125° S.W.	A 43, 59
production	A 29	Musser, C. D.	15

## N

N.H. Claims, 55° 129° S.W.	74	Nicki Group, 50° 120° S.W.	69
N.W. Groups, 58° 131° N.W.	75	Nicola Mining Division, prospecting	A 61
Nanaimo, 49° 123° S.W., coal	144	Nicola-Princeton Inspection District	147
electrical installations	162	Nigger Creek, 52° 121° N.E., placer	79
Nanaimo Mining Division, prospecting	A 60	Nixon, A.	148
Nasmith, H. W., geologist	A 55, A 56	Noland Mines Limited	78
natro-alunite, production	A 31	non-metallic mines	162
natural gas, exploration, permits, leases, royalties, etc.	A 52	Noonday, 49° 117° N.E.	48
production	A 14, A 16, A 21, A 26	Noonday-Curley	A 46
samples	A 54	Nor A, B, C Groups, 49° 120° N.W.	65
Nelson, W. I.	29	Noranda Exploration Company, Limited, AMY	11
Nelson, 49° 117° S.E.	37	Bob, Star, Cow, and B.X.	22
sand and gravel	99	Craigmont	25
Nelson Island, 49° 124° N.E., building-stone	87	D.M.	29
Nelson Mining Division, prospecting	A 60	Farr Lake Property	27
Nelson Ready-Mix Concrete Ltd.	99	Gold Coin	55
Nelway, 49° 117° S.E.	40	Gordon Creek Property	27
Neptune, 50° 120° N.E.	66	Merritt Property	27
Nero, 49° 116° S.W.	82	Tyner Lake Property	27
New Arlington Mines Limited	38	Norcross, D.	99
New Hamil Silver-Lead Mines Ltd.	21, 28	Norcross, D. H.	37
New Jersey Zinc Exploration Company (Canada) Limited	28, 29	Nord Mineral Claim, 50° 120° S.W.	66, 67
New Santiago Mines Limited	47	Nord Mineral Claims, 50° 121° S.E.	70
New Wellington Mines Limited	45	Norris, C. J.	78
New Westminster, 49° 122° S.W., sand and gravel	100	North, W. E.	78
New Westminster Mining Division, prospect- ing	A 61	North Bend, 49° 121° N.E., placer	80
Newmont Mining Corporation of Canada Limited	21, 56	North Kootenay Lake— <i>see</i> Kootenay Lake	
Newton, 49° 122° S.W., sand and gravel	100	North Star, 55° 129° N.W.	7
Ney, C. S.	24, 27	North Wellington, 49° 124° S.E.	145
Nicholas, G.	146	North Wind Mineral Claims, 49° 117° S.E.	63
Nichols, O. W.	22	Northern Gem Mining Corporation Ltd.	15
Nick Group, 49° 116° N.W.	62	Northern Inspection District	154
nickel, deposits ( <i>see table</i> )	165	Northlodge Copper Mines Limited	22
production	A 16, A 23, A 29	Northwestern Explorations, Limited, Gui- chon Creek	24
Nickel Plate	A 45	Highland Valley	21, 22
		Merritt	27
		Pimainus Lake	24
		Nugget, 49° 117° S.E.	A 45, 38

## O

	PAGE		PAGE
O.K. Group, 50° 116° N.E.	65	Olson, Ole	78
O'Brien, M. M.	15	Olson, P. E.	43
ochre, production	A 31	Omineca area	11
O'Donnell, J. P.	81	placer	78
Ogden, Peter	80	Omineca Mining Division, prospecting	A 61
oil and gas, drilled or operated	113-115	One Shot Group, 49° 117° S.E.	63
fields, table	116	Oppollo, 49° 116° N.W.	45
operation and production statistics	117	Ore Hill Group, 49° 117° S.E.	63
reserves, table	116	Oregon Gulch, 53° 121° S.W., placer	79
Okanagan Claim, 49° 119° S.E.	33	Oscarson, D. J.	82
Old Camp Creek, 51° 118° N.W., placer	81	Oscarson, E.	39
Old Camp Placers, 51° 118° N.W.	81	Oscarson, R. O.	39
Ole Mineral Claim, 50° 121° S.E.	71	Ottawa, 49° 117° N.E.	A 46, 49
Ole Mineral Claims, 50° 120° S.W.	69	Outrider, 50° 120° S.W.	22
O'Leary Group, 50° 120° S.W.	69	Outrider Group, 50° 120° S.W.	68
Oliver Silica Quarry	104		

## P

P.C.M., 50° 120° S.W.	26	Peterson, G. H.	88
P.C.M. Group, 50° 120° S.W.	69	petroleum, crude, gas, permits, leases, etc.	A 52
PEC Group, 50° 120° S.W.	69	production	A 14, A 16, A 21, A 26
P.E.H., 50° 121° S.E.	24	samples	A 54
P.L., 50° 120° S.W.	28	petroleum and natural gas, exploration	107
PL 1-48 Claims, 50° 120° S.W.	69	development	108
Pacific Great Eastern Railway	80	production	108
Pacific Northwest Pipeline Corporation	111	reserves	108
Pacific Petroleum Ltd.	109	well records, well information and sta-	
Pacific Silica Limited	105	tistics	111
Packsack, 53° 129° N.E.	9, 73	Petroleum and Natural Gas Branch	A 57
Packsack No. 2, 53° 129° N.E.	9	Petroskey, V. M.	28
Pactolus Group, 49° 117° S.E.	63	Petroskey, W. M.	29
Paddy Peak, 49° 117° N.E.	44	Phelps Dodge Corporation of Canada, Ltd.	24, 30
palladium, production	A 29	Phil Mineral Claims, 49° 117° S.E.	63
Pan 1-32 Mineral Claims, 57° 131° S.W.	75	Phillips Petroleum Company	109
Par Group, 59° 129° S.E.	75	Phoenix, 49° 118° S.W.	36
Paradise	A 45	electrical installations	159
Parker, B. W.	103	Phoenix Copper Company Limited	36
Parliament, H.	32	electrical installations	159
Parliament, J. H.	36	phosphate rock, production	A 31
Parson, 51° 116° S.W.	84	Piccolo, Joe	78
Pasiaud, Roger	149	Piccolo, Louis	78
Pat Group, 49° 118° S.W.	64	Pickard, E.	43
Pat Mineral Claim, 50° 120° S.W.	66, 69	Pico, 49° 116° N.E.	52
Pat Mineral Claims, 50° 121° S.E.	70, 71	Pike, J. A.	49, 56
Patrick Group, 50° 120° N.W.	69	Pimainus Lake, 50° 121° S.E.	24, 71
Paxton, 49° 124° N.W.	A 43, 57	Pine Creek, 59° 133° N.W., placer	78
Payne, Thomas	79	Pioneer, 50° 122° N.W.	A 44, 20
Peace River district	109	electrical installations	158
coal	154	Pioneer Gold Mines of B.C. Ltd.	20, 33
Pehr, Edward	147	electrical installations	158
Peck, J. W., Chief Inspector of Mines	A 2, A 54, A 55	Pioneer Gold Mines Limited	59
report by	118	Pip Group, 51° 119° S.W.	72
Peerless Oil and Gas Company	25	Pitt, Arthur	97
Peg Group, 55° 127° S.W.	73	Pitt River, 49° 122° S.W., building-stone	87
Pend d'Oreille River, 49° 117° S.W.	40	placer	77
Pengelly, W.	45	Placer Development Limited	38
Perepolkin, E.	46	placer mines, electrical installations	161
Perepolkin, J.	46	platinum, production	A 15, A 29
perlite, production	A 15, A 31	Pluto Fraction, 49° 116° N.W.	45
Perry, O. S.	35	Pole Group, 55° 125° N.E.	73
Perry, R. D.	51	police and coroners' exhibits	A 54
Peskor, Carl	99	Pontiac, 49° 117° N.E.	44
Peskor Paving Ltd.	99	Popkum, 49° 121° S.W., limestone	96
Peters Creek, 53° 121° S.E., placer	79	marl	98
Petersen, E.	46	Popkum Marl Products Limited	98
Peterson, A.	50	Porter, R. M.	51

	PAGE		PAGE
Portland Canal, 55° 130° S.E. ....	6	Princeton, 49° 120° S.W., coal .....	147
Portman, A. E. ....	89	Pringle, D. W. ....	55, 56
Port Mann, 49° 122° S.W., sand and gravel	100	Privateer Mine, Limited .....	59
Postle, L. T. ....	6, 36	production .....	A 14-A 47
pottery, production .....	A 15, A 25, A 32	Promontory Hills, 50° 120° S.W. ....	24, 26
Powell, George .....	37	prosecutions, coal mines .....	142
Premier Sand and Gravel Company Limited	99	lode mines and quarries .....	125
Prentice, W. R. ....	148	Prospect Hill .....	9
Prescott, 49° 124° N.W. ....	A 43, 57	Providence, 49° 118° S.W. ....	A 44
Preston, S. G., agrologist, Board of Arbitra- tion .....	A 57	Ptarmigan, 50° 116° N.E. ....	A 45, 53
prices, average used in valuing Provincial mineral production .....	A 11, A 13	publications, B.C. Department of Mines Geological Survey of Canada .....	A 63 A 66
Pride of Emory, 49° 121° S.W. ....	A 44, 55	Mines Branch .....	A 66
		Pukaist Creek, 50° 121° N.E. ....	21

## Q

Quartzite Group, 50° 120° S.W. ....	69	Quesnel Forks, 52° 121° N.W., placer .....	80
Quartzite Point Quarry .....	104	Quesnel Lake, 52° 121° N.W., placer .....	80
Quatsino Copper-Gold, 50° 127° S.E. ....	72	Quesnel River, 52° 121° N.W., placer .....	80
Queen, 49° 117° S.E. ....	104	Quiltanton (Divide) Lake, 50° 121° S.E. . .	21

## R

R.D. Group, 51° 119° S.W. ....	72	Richmond, G. W. ....	87
R.K., 50° 121° N.E. ....	21	Richmond-Eureka, 49° 117° N.E. ....	46
R.K. Group, 50° 120° N.W. ....	67	Richter Mountain, 49° 119° S.W. ....	32
R.K. 7-30 Mineral Claims, 50° 121° N.E. . .	71	Riondel, 49° 116° N.W. ....	41
Raha Mineral Claims, 50° 120° N.W. ....	69	electrical installations .....	160
Ramage, B. ....	42, 129	Rita, 49° 115° N.W. ....	52
Rand, W. ....	27	Ritchie, A. C. ....	9
Reco Mountain, 50° 117° S.E. . .	45	Rizona Mining Corporation Limited .....	78
Red Bird, 49° 117° S.E. ....	40	Road Group, 50° 120° S.W. ....	69
Red Gulch, 53° 121° S.W., placer .....	78	Robb Creek, 50° 117° S.E. ....	45
Red Line Creek, 50° 117° N.E. ....	53	Robertson, T. H., instructor .....	A 55
Red Ridge area .....	30	Rock Creek, 49° 118° S.W. ....	34
Reeves MacDonald, 49° 117° S.E. ....	A 45, 40	rock samples .....	A 53
Reeves MacDonald Mines Limited .....	40	rock specimens .....	A 63
Ren Group, 49° 118° S.W. ....	64	Rod Group, 50° 120° S.W. ....	69
Renn, R. J. ....	45	Rollie Creek, 52° 121° N.E., placer . . .	79
Rennie, C. C. ....	25	Ronald Group, 49° 117° S.E. ....	63
reports on geological, geophysical, and geochemical work .....	61-75	Rosco Group, 50° 116° S.W. ....	66
Reschke Coal Ltd., 56° 122° S.E. ....	155	Roscoe Lake Property, 50° 120° S.W. ....	69
Rest Creek, 49° 117° S.E. ....	38	Rosedale, 49° 121° S.W., building-stone .....	86
Retallack, 50° 117° S.E. ....	44	Ross, Hon. F. M. ....	20
Revelstoke, 50° 118° N.E., placer .....	81	Rossland Claims, 49° 117° S.W. ....	63
lode .....	53	Rotter, F. ....	104
review, general .....	A 8	Routledge, T. C. ....	102
lode metals .....	3	Routledge Gravel Ltd. ....	102
Rex Group, 49° 115° S.E. ....	62	Roxey Creek, 50° 122° N.W. ....	15
Rexspar Uranium & Metals Mining Com- pany Limited .....	30	Royal Oak, 48° 123° S.E. ....	103
Rhodes, H. W. ....	101	rubble, riprap, production .....	A 15, A 25, A 32
Rib Group, 55° 127° S.W. ....	73	Rudy Mineral Claims, 50° 121° S.E. ....	71
Richards, R. E. C. ....	14	Rudy Mineral Claims, 50° 120° S.W. ....	69
Richmix Clay Limited .....	87	Russell, J. A. ....	38
		Ruth-Hope, 49° 117° N.E. ....	A 46, 46
		Ryan Trophy, John T. ....	131
		Ryder, W. ....	119

## S

	PAGE		PAGE
S. and S. Gravel Pit .....	101	silver, deposit ( <i>see</i> table) .....	165
S.B., 51° 118° S.E. ....	53	price .....	A 8, A 13
S. H. Marriott Sand and Gravel .....	103	production .....	A 14-A 22, A 26, A 43
S.U.B. Quarries Ltd. ....	100	Silver Bell Group, 50° 116° N.E. ....	65
Saad, Ronald .....	151	Silver Bell No. 5, 49° 119° S.W. ....	32
Saanich, 48° 123° N.E., sand and gravel .....	103	Silver Creek, 55° 125° N.W. ....	11
safety .....	128	Silver Giant, 50° 116° N.E. ....	85
safety lamps .....	141	Silver King, 49° 117° S.E. ....	A 45, 37
St. Joseph Group, 49° 115° S.W. ....	62	Silver King Mines Limited .....	48
St. Mary River, 49° 115° N.W. ....	51	Silver Mountain, 49° 117° N.E. ....	A 46, 45
Salamet Group, 49° 118° S.W. ....	64	Silver Mountain Mines, Ltd. ....	45
Salmo, 49° 117° S.E. ....	38	Silver Ridge Mining Company Limited .....	47
electrical installations .....	159	Silver Standard, 55° 127° S.W. ....	A 43, 9
placer .....	81	Silver Standard Mines Limited .....	9
Salmo Prince Groups, 50° 120° N.W. ....	69	Silver Tip Group, 59° 130° N.W. ....	13
Sammy, 49° 119° S.E. ....	34	Silversmith, 49° 117° N.E. ....	A 46, 46
sand and gravel .....	98	electrical installations .....	160
production .....	A 15, A 25, A 32	Similkameen, 49° 119° S.W., placer .....	80
Sandbert, A. E. ....	79	Similkameen Mining Division, prospecting .....	A 62
Sanders, Harry .....	149	Similkameen River, 49° 120° S.W. ....	30
Sandon, 49° 117° N.E. ....	45	placer .....	80
electrical installations .....	160	Simpson, E. O. T. ....	146
Sargent, Hartley, Chief, Mineralogical Branch .....	A 2, A 55	Simpson, Hunter H. ....	10
Sawtooth, 49° 119° S.E. ....	33	Singel, H. E. ....	45, 46
Sax Claims, 55° 129° S.W. ....	74	Singleton, Eric .....	152
Scaman, George .....	99	Sirak, M. B. ....	43
Scamans Gravel Pit .....	99	Sirdar, 49° 116° S.W., building-stone .....	86
Schmalz, Harry .....	78	electrical installations .....	162
Schulman, I. ....	26	Sirola, W. M. ....	22
Schultz Brothers .....	81	Skagit River, 49° 121° S.F. ....	54
Sclippa, Louis .....	149	Skeena Mining Division, prospecting .....	A 62
Scorgie, W. J. ....	49	Skeena Silver Group, 50° 121° S.E. ....	71
Scott, C. B. ....	101	Skookumchuck, 49° 115° N.W. ....	52
Scott, John W. ....	30	Sku, 50° 121° S.E. ....	24
Scott Bros. Ltd. ....	101	Skyline Group, 57° 130° N.W. ....	74
Scott Fraction, 49° 117° S.F. ....	63	slate .....	87
Scranton, 49° 117° N.E. ....	43	Slec, Thomas .....	151
Scranton Mines Limited .....	43	Slocan King, 49° 117° N.E. ....	46
Seabee Claims, 55° 129° N.E. ....	74	Slocan Lake, 49° 117° N.E. ....	47, 160
Seel, Heinz K. F. ....	53	Slocan Mining Division, prospecting .....	A 62
selenium, production .....	A 29	Slocan Monitor Mines Limited .....	45
Selkirk Ptarmigan Mines Limited, The .....	53	Slocan Star, 49° 117° N.E. ....	A 46, 46
Seraphim, R. H. ....	59	Slocan Van Roi Mines Limited .....	48
Serpentine, 59° 129° S.W. ....	75	Smillie, L. D. ....	57
Shaak, A. ....	57	Smith, D. E. ....	103
shale .....	88	Smith, David, Inspector and Resident Engi- neer .....	A 55
Sharp, H. A., engineering assistant .....	A 57	report by .....	6-13, 78, 83, 154-155
Sharpe, J. W. ....	101	Smith, T. S. ....	26
Shawatum (Ten Mile) Creek .....	55	Smithers, 54° 127° N.E. ....	10
Shearer, John C. ....	154	Snap, 50° 117° S.E. ....	45
Sheep Creek, 49° 117° S.E. ....	38	Snoqboo Exploration .....	79
silica .....	104	Snowball Groups, 50° 117° S.E. ....	66
Sheep Creek Mines Limited, Lucky Jim .....	45	sodium carbonate, production .....	A 15, A 31
Mineral King .....	52	Somerville, A. ....	146
prosecutions .....	125	South End Group, 49° 118° S.W. ....	64
silica .....	104	Spanish Creek, 52° 121° N.E., placer .....	80
Shepherd, A. F., geologist .....	A 55, A 56	Spankie, D. F. ....	102
Sheritt Lee Mines Ltd. ....	36	Spec Claims, 58° 135° N.W. ....	75
Shirling, D. ....	52	Spider, 50° 117° N.W. ....	A 46, 49
Shrieves, Albert .....	99	Spillimacheen, 50° 116° N.E., barite .....	85
Shulman, Isaac .....	15	Spokane, 49° 116° N.W. ....	A 46
Shuswap Lake, 50° 119° N.E. ....	104	Spoon Group, 49° 115° N.W. ....	61
Shuttleworth, H. R. ....	15	Springer, K. J. ....	35
Sibilleau, S. ....	46	Springer Creek, 49° 117° N.E. ....	49
Sieger, Fred .....	78	Spruce Creek, 59° 133° N.W., placer .....	78
Sieger, Karl .....	120	Staal, R. ....	86
Silbak Premier, 56° 130° S.F. ....	A 44, 6	Standard, 49° 117° N.E. ....	47
Silbak Premier Mines Limited .....	6	Star, Retallack, 50° 117° S.E. ....	44
silica .....	104		

	PAGE		PAGE
Star, Highland Valley, 50° 120° N.W.	22	Sullivan, 49° 115° N.W.	A 45, 51
Star Group, 55° 127° S.W.	73	electrical installations	160
statistics	A 10	sulphur, deposits ( <i>see table</i> )	165
statistical tables	A 13	production	A 15, A 24, A 31
Stavert, R. E.	51	Sultana Group, 55° 127° S.W.	73
Steane, H. A.	38	Summer, E. B.	155
Steele, J. S.	40	Sun Group, 49° 117° S.E.	A 45
Stella 1-4, 48° 124° N.E.	61	Sun Group, 55° 127° S.W.	73
Stenwall, J.	81	Sunloch, 48° 124° S.E.	60
Stephens, C. O.	9	Sunnyside, 48° 124° N.E.	60
Stone, J. I.	14	Sunrise, 49° 117° N.E.	44
Streit, J. B.	13	Sunro Mines Limited	60
Stromgren, N. P.	101	Sunshine Group, 49° 116° N.W.	62
Stronach, Charles	145	Sunshine Lardeau Mines Limited	49
Stronach No. 2 mine, 49° 124° S.E.	145	Sunshine No. 2 Mineral Claim, 49° 117° S.E.	63
structural materials	83	Sunshine Nos. 10, 11, 15, and 16, 50° 120° S.W.	70
employment	A 41	Sunshine Properties Ltd.	100
production	A 14, A 15, A 21, A 26, A 32	Surrey, 49° 122° S.W., clay and shale	88
structural tile, production	A 15, A 25, A 32	Surrey, Corporation of the District of	100
Stucco Supply Company	104	Sutherland, G. K.	6
Stump Lake Group, 50° 120° S.E.	69	Sutherland Brown, A., geologist	A 55, A 56
Stulkawhits (Texas) Creek	55	Swakum Mountain, 50° 120° S.W.	28
Sullivan, G. G.	49, 60		

## T

T.P.C. Group, 49° 115° N.W.	62	topographic mapping and air photography	A 64
Takomkane (Big Timothy) Mountain, 52° 120° S.W.	15	Tor Group, 57° 125° S.W.	74
talc, production	A 31	Torbrit Silver Mines Limited	6
Tamarac, 49° 117° S.E.	37	Toric, 55° 129° N.W.	A 44, 6
Tarnowski, M.	48	Torrent, 49° 115° N.W.	52
Taylor, Reginald	150	Torwest Resources Limited	22, 28
Taylor, Robert	150	Totem Group, 56° 125° S.W.	74
Taylor, Thomas	149	Towgood, C. E.	47
Taylor, W.	27	Tradedollar Group, 49° 115° S.W.	61
Taylor, W. H.	28	Trail, 49° 117° S.W.	36, 99
Tecumseh, 49° 117° N.E.	44	Trailer Special Placer-mining Lease, 59° 133° N.E.	75
Telkwa, 54° 127° N.E., coal	154	Tranquil Creek, 49° 125° S.W.	59
Texada Island, 49° 124° N.E.	57	Tranquil Inlet, 49° 125° S.W.	59
Texada Mines Ltd.	57	Transcontinental Resources Limited	48
fatal accident	121	Treacy, J. E.	82
Texas, 50° 117° S.E.	45	Tregilges, John	34
Texas Gulf Sulphur Company	9	Trettin, H. P.	A 56
Thelma, 50° 120° S.W.	28	Trojan Consolidated Mines Ltd.	21
Thickett, C.	49	Trojan Group, 50° 120° N.W.	70
Thomas, J. S.	15	Trophy Mountain Property, 51° 119° N.W.	72
Thomas, John	129, 144, 146	Trout Group, 49° 115° N.W.	61
Thompson, F. R.	40	Troutline Creek, 59° 129° S.W.	83
Thompson, R. N., petroleum engineer	A 57	Trouton, W. R.	100
Thrall, R. A.	84, 104	Trouton Excavating Ltd.	100
Three Forks, 50° 117° S.E.	44	Tsable River, electrical installations	163
Tiger, 55° 129° N.W.	7	Tsable River mine, 49° 124° N.W.	146
Tiger Fractional Mineral Claim, 49° 117° S.W.	64	Tulameen River, 49° 120° N.W., placer	80
tin, deposits ( <i>see table</i> )	165	Tully, W. M.	97
production	A 15, A 23, A 29	tungsten, deposits ( <i>see table</i> )	165
Toad River, 58° 125° N.W.	13	production	A 15, A 23, A 29
Teby Creek, 50° 116° S.E.	52	Tungsten King, 49° 117° S.E.	39
Tofin Property, 50° 121° N.E.	71	Turner, H. M.	43
Tofino Gold Mines Ltd.	59	Turner, J.	46
Toketic Group, 50° 121° S.E.	71	Twelve Mile Creek, 49° 117° N.P.	44
Tonia, 49° 115° N.W.	61	Tymchuk, Michael	151
Footsee Lake, 59° 130° N.W.	13	Tyner Lake, 50° 120° S.W.	27
		Tyner Lake Property, 50° 120° S.W.	27

## U

	PAGE		PAGE
USS 1-7, 49° 121° S.W.	65	Uphill, C.	45
Undun Mine, 49° 123° S.W.	144	uranium, deposits (see table)	165
Union Bay Washery, 49° 123° S.W., electrical installations	162	Urquhart Gulch, 53° 121° S.W., placer	79
Unsworth, J.	144	Utica, 49° 117° N.E.	A 47, 44
Unuk River, 56° 130° S.W.	6	Utica Mines (1937) Limited	44

## V

Val Group, 49° 117° S.E.	63	Venus, 50° 116° N.E.	66
Valley Concrete Limited	99	Venus Group, 51° 121° S.W.	72
Valley Granite Products Ltd.	86	Verkerk, William	150
Van Roi, 49° 117° N.E.	A 47, 48	Vernon, 50° 119° S.E., placer	81
Vananda, 49° 124° N.W., limestone	96, 97	Victor, 49° 117° N.E.	A 47, 46
Vancouver Granite Co. Limited	87	electrical installations	160
Vancouver Island	57	Victoria Mining Division, prospecting	A 62
electrical installations	161	Victoria Tile & Brick Supply Co. Ltd.	88
Vancouver Island Inspection District	143	Victory Group, 49° 117° S.E.	64
Vancouver Mining Division, prospecting	A 62	Violamac, 49° 117° N.E., electrical installations	160
Vanex, 50° 120° S.W.	29	Violamac Mines Limited	45, 46, 47
Vanex Minerals Limited	29	electrical installations	160
Vaughn K Group, 56° 130° S.E.	74	Vittoni, B.	147
Venango, 49° 117° S.E.	37	Vulcan, 49° 116° N.E.	51
Venango Gold Mines Limited	37		

## W

W.D., 49° 117° S.W.	A 47, 36	Western Gypsum Products Limited	89
W.P., 50° 120° S.W.	27	Western Mines Limited	43
W.P. Group, 50° 121° S.E.	71	Western Nickel Limited	55
W.S. Beale (1955) Ltd.	96	Westmont, 49° 117° N.E.	A 47, 48
Wagner, 50° 117° N.E.	50	Westmont Creek, 49° 117° N.E.	48
Wakelem, W.	145	Westville Property, 51° 119° S.E.	72
Walker, John Fortune, Deputy Minister	A 2, A 49	Whipsaw Creek, 49° 120° S.W., placer	80
Wallace, H. B.	79	White, Elizabeth U.	15
Wallace, Ray	79	White, Joseph	145
Wallace Mountain, 49° 119° S.E.	35, 36	White, W. H.	21
Walsh, Jones	150	White, 59° 129° S.W.	75
Walter, F. W.	81	White Creek, 49° 116° N.E.	51
Walton, T. T.	41	White mine, 49° 124° S.E., coal	145
Wardman, L., Electrical Inspector of Mines report by	A 54, 156	White Rock, 49° 122° S.W., sand and gravel	99
Warren Creek Mineral Claims, 50° 116° N.W.	66	Whittaker, John	151
Washington No. 1 Mineral Claim, 49° 119° S.E.	65	Whittal, N. R.	146
Weaver, William M.	56	Warton, 49° 119° S.E.	33
Webb, J. K.	54	Wickstrom, K. E.	36
Weber, R. G.	38	Wiedemeyer, Ella	81
Weber, W. S.	78	Wiedemeyer, Ervin	81
Webster, Arnold	151	Wiedemeyer, Robert	81
Webster, W. D.	96	Wild Horse River, 49° 115° N.W.	52
Wedeeene, 54° 128° S.W.	73	placer	82
Weich, A. C.	45	Williams, Arthur, instructor	A 55
Wellington, 50° 117° S.E.	44	Williams, James	79
Wells, A.	129	Williams Creek, 53° 121° S.W.	79
Wells, D. H.	79	Williams Lake, 52° 122° S.E.	15
Wells, E.	36	Willow River, 53° 121° S.W., placer	78
Wells, 53° 121° S.W.	14	Wilmot, A. D.	13
Wells-Barkerville area, 53° 121° S.W.	14	Wilson, R. R.	9
West Columbia Gold Placers Ltd.	81	Windermere, 50° 115° S.W.	52
West Kootenay Mine Safety Association Trophy	131	Witches Brook, 50° 120° S.W.	24, 70
West Kootenay Power and Light Company Limited	86	Wlad, Steven	80
West Vancouver Municipality, 49° 123° S.E.	102	Wojna, A. S.	45
Westcoast Transmission Company Limited	108, 109, 111	Wonderful, 49° 117° N.E.	47
Western Exploration Company Limited electrical installations	47, 160	Wood, L. G.	29
		Woodland Mineral Claim, 55° 129° N.W.	74
		Woodman, W. R.	79
		Wright, H. M.	43
		Wylie, J. W.	14
		Wynndel, 49° 116° S.W., sand and gravel	99

**Y**

	PAGE		PAGE
Yale Lead & Zinc Mines Limited .....	43	Young, D. B. ....	154
Yellow Jacket, 49° 124° N.W. ....	A 43	Yuill, J. ....	57
Yellow Kid, 49° 124° N.W. ....	A 43, 57	Yukon Consolidated Gold Corporation Limited, The .....	80
Ymir, 49° 117° S.E. ....	37	Yukon Western Mining and Prospecting Company Limited .....	49
Ymir Creek, 49° 117° S.E. ....	37		
Yorke-Hardy, W. D. ....	10		

**Z**

Zambon, J. ....	46	zinc, deposits ( <i>see table</i> ) .....	165
Zborovsky, A. ....	13	price .....	A 8, A 13
Zeigler, W. L. ....	40	production .....	A 14-A 22, A 26, A 43
		Zinc Group, 59° 129° S.E. ....	75

Printed by DON McDIARMID, Printer to the Queen's Most Excellent Majesty  
in right of the Province of British Columbia.

1959