Minister of Mines and Petroleum Resources

PROVINCE OF BRITISH COLUMBIA

ANNUAL REPORT

for the Year Ended December 31

1961

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1962

BRITISH COLUMBIA
DEPARTMENT OF MINES AND PETROLEUM RESOURCES
VICTORIA, B.C.

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V.C., P.C., C.B., D.S.O., M.C.,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

The Annual Report of the Mineral Industry of the Province for the year 1961 is herewith respectfully submitted.

W. K. KIERNAN,
Minister of Mines and Petroleum Resources.

Minister of Mines and Petroleum Resources Office,
March 31, 1962.

Herbert Pearson, mining statistician from 1928 to 1961, died in Victoria on January 15, 1962. He was born in Cheshire, England, in 1896, and served in the Royal Navy from November, 1914, until he was invalided out in 1919. He joined the staff of the Department of Mines in 1921 and became mining statistician in 1928. In 1939 he was transferred to the Bureau of Economics and Statistics and remained the officer responsible for collecting and compiling British Columbia mineral statistics until his retirement on August 31, 1961. He was Acting Director of the Bureau of Economics and Statistics during 1942–43, and thereafter until 1955 was Office Manager.

In his capacity as mining statistician he had frequent contacts with many of the office men in mining companies, and with the staff of the Department of Mines.

From 1915 until hospitalized in 1918, Mr. Pearson served on H.M.S. " Collingwood " in the Atlantic and North Sea areas. That period included the Battle of Jutland. During the 1939 visit of the late King George VI and Queen Elizabeth, Mr. Pearson was presented to His Majesty, who was also on H.M.S. " Collingwood " at the Jutland action.

Mr. Pearson was active in the Canadian Legion, and was president of the Britannia Branch in 1942.

His death came suddenly, only five months after retirement. He is survived by his wife, one son, and four granddaughters.

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ANNUAL REPORT OF THE MINISTER OF MINES AND PETROLEUM RESOURCES, 1961

Introduction

A Report of the Minister of Mines of the Province of British Columbia has been published each year from 1874 to 1959. Beginning in 1960, it is the Report of the Minister of Mines and Petroleum Resources.

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 and Petroleum Resources 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 and Petroleum Resources 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 *

Mineral products of British Columbia had a value of more than $181,000,000 in 1961, only exceeded by the value of more than $190,000,000 in 1956. Prices for copper, lead, and zinc were substantially higher in 1956 than in 1961. Greater production of gold, silver, copper, and zinc and materially higher prices for copper, lead, and zinc gave those five metals a combined value for 1956 nearly $26,000,000 greater than their 1961 value. The 1956 production also included more than $6,000,000 for tungsten, of which there was no production in 1961. In 1961 greater production of iron, asbestos, sulphur, and natural gas and the addition of nickel, petroleum, and liquid by-products of natural gas went a long way toward making up for the decreases in principal metals, tungsten, and coal.

The 1961 total value, $181,079,785, compares favourably with the ten-year average, $167,239,104, and represents a small gain over 1960, $179,595,802. It should be noted that the 1960 figure includes the value of a considerable quantity of copper concentrates carried forward into that year because a strike affecting the Tacoma smelter prevented their shipment in 1959, and that the 1961 figure excludes the value of a considerable quantity of copper concentrates produced at the Craigmont mine, awaiting shipment on December 31st.

The metals gold, silver, copper, lead, and zinc account for 60.4 per cent of the total value of all products in 1961. Other metals, iron, nickel, and by-products of silver-lead-zinc ores, contributed 10.3 per cent; industrial minerals contributed 8.45 per cent; structural materials, 10.95 per cent; and fuels—coal, 3.6 per cent, and natural gas plus oil plus liquid by-products of natural gas, 6.2 per cent.

The United States dollar was at a discount in Canada in the first half of 1961 but was at a premium in the second half and averaged a premium of about 1.3 cents for the twelve months of 1961. This gave British Columbia producers of the principal metals, prices in Canadian funds that were above quotations in United States funds. The United States price for silver advanced sharply in the last six weeks of 1961. The United States price for copper ranged from 26.3 cents to 30 cents a pound; the average for the year in Canadian funds, 28.288 cents a pound, is lower than the 1960 or the ten-year average prices. United States prices for lead and zinc were relatively stable. Lead was steady at 11 cents a pound until the end of October, then fell, and at the end of 1961 was steady at 10.25 cents a pound. Zinc remained between 11.5 and 12 cents a pound. Converted into Canadian funds, the prices for lead and zinc are lower than in 1960 and well below the ten-year average.

Production of lead in 1961 was greater than for any year since 1943; however, the price was the lowest since 1947, and the value of lead produced has been exceeded in four years of the past decade. Increased output of lead came mainly from Fort Steele and Nelson Mining Divisions and from the fuming of current and reclaimed slags at the Trail smelter. Zinc output was below the ten-year average in both quantity and value. Compared with 1960, the zinc output of Fort Steele, Nelson, and Vancouver Mining Divisions decreased and that of Golden Mining Division increased. Copper increased materially in the Nicola Mining Division, but due mainly to stockpile differences the Nicola gain was less than the losses in other mining divisions.

* By Hartley Sargent.

Gold output declined mainly in Lillooet and Osoyoos Mining Divisions because the Pioneer mine did not produce and the French mine was closed in May, 1961.

Developments of recent years indicate that the increased output of copper and iron now assured or partly in effect will result in a substantially increased value for metals in 1962 and a still greater value in 1963. The developments include bringing the Craigmont mine into production in the autumn of 1961, and provision for bringing the Kennedy Lake, Zeballos, and Jedway iron mines and the Sunro, Coast Copper, and Bethlehem copper mines into production in 1962.

The value of industrial minerals, structural materials, and fuels has increased notably in the last decade; their combined value in 1952 was $23,509,504 and in 1961 was $53,102,693. The greatest gain in that period was in industrial minerals, attributable mainly to asbestos and to sulphur. The substantial gain in structural materials is distributed through that group. In the fuels group, coal has declined since 1956, although the 1961 output exceeded that of 1958 and subsequent years. Production of natural gas, liquid by-products of natural gas, and crude petroleum all began during the decade. Since 1959 their combined value has exceeded that of coal, and in 1960 and 1961 the value of natural gas alone exceeded that of coal. The completion late in 1961 of the Western Pacific pipe-line from Taylor on the Peace River to a junction with the Trans-Mountain pipe-line at Kamloops provided for oil and liquid by-products of natural gas from northeastern British Columbia access to refineries serving most of the Province, assuring greatly increased production of oil.

The first commercial production of pig iron in British Columbia began in January, 1961, when the plant of The Consolidated Mining and Smelting Company of Canada, Limited, at Kimberley began producing. The plant operated for most of the year at its rated capacity of 100 tons of pig iron daily. The feed for the new plant is iron residue from part of the iron sulphides separated from the Sullivan ore in the concentrator, and used for making sulphuric acid. The residue is prepared by pelletizing and sintering, and fed to an electric furnace where it is reduced to metallic iron and cast as pig iron. The intention has been announced to expand the plant to produce 300 tons of pig iron a day. Along with this increase will go the doubling of capacity to produce sulphuric acid, and fertilizer made by its use. The production of pig iron does not add materially to the value shown for mineral production, as the credit taken is the value of comparable iron ore less the cost of preparing, the roasting-plant residue, for charging into the electric furnace. The industry thus created is a substantial employer of labour directly, and also provides a market for a substantial quantity of coke breeze from the Crowsnest Pass area and of some dolomite quarried near Bull River.

Developments in lode-mining in recent years have included much activity in the Merritt-Ashcroft area and on Vancouver and Queen Charlotte Islands, including exploration and the preparation of four copper mines and three iron mines for production. By far the greater part of the ore they will produce in the next few years will be mined in open pits. In 1961 the total of ore mined at lode-metal operations amounted to 8,392,161 tons. Of this quantity, more than 3,200,000 tons came from open-pit mines. The proportion from open-pit mines will be substantially greater by the end of 1962, and the total tonnage will also increase. However, it is apparent also that some of the iron mines will develop underground operations. Another change in mining practice is the use of a mixture of ammonium nitrate and fuel oil for blasting, both in underground and open-pit operations. This practice has developed rapidly in a very few years, and the use of conventional explosives has been greatly reduced.

Exploration for lode-metal deposits was carried on vigorously in many parts of the Province. Exploration for iron was mainly on Vancouver Island, Moresby Island, and near Kitimat in the mainland coastal area. Exploration for copper was mainly in the Princeton-Kamloops area, on Vancouver Island, and in the area extending northwesterly from Portland Canal to the middle section of the Stikine River. It is apparent that large quantities of milling-grade ore exist in the latter area. During the year, milling-grade copper ore from Mount Washington on Vancouver Island, from Quadra Island, and from Pender Harbour have been taken to Britannia for custom milling. Interest in molybdenum continued, and work was done on properties at Boss Mountain, in the Smithers and Alice Arm areas, and in several other localities. The Noranda company is driving a long adit on the Boss Mountain property. Silver-lead-zinc exploration was concentrated mainly in the Kootenays, and included work west of the Columbia River, north of Revelstoke. This latter area has received little attention until the past few years. It may be thought of as a continuation of the belt that has been so productive of silver-lead-zinc ore south of Nelson and in the Kootenay Lake area.

Exploration for petroleum and natural gas was directed toward the Palæozoic rocks of the Fernie basin, the Devonian of the Fort Nelson area, the Mississippian of the Rocky Mountain foothills, the Tertiary and Cretaceous strata of the Nanaimo-Bellingham basin, and the Tertiary of Graham Island.

Seismic surveys in northeastern British Columbia were considerably increased compared with 1960, and a marine seismic survey was made near Point Roberts. Geological mapping was done by nine companies in northeastern British Columbia and two in the Fernie-Flathead area, and one company made an underwater geological survey off the east coast of Graham Island. Exploration in northeastern British Columbia included three structural test-holes.

Exploratory drilling included ninety-two wildcat wells in northeastern British Columbia, two in the Vancouver-Chilliwack area, and one on Graham Island. A further 142 holes were drilled as development or outpost wells, making a total of 237 wells drilled. The exploratory drilling in northeastern British Columbia resulted in three discoveries of oil and twenty-two of natural gas. The oil discoveries were in the Triassic Boundary Lake zone, indicating a southward extension of the Boundary Lake field and in the Triassic Halfway formation north of Beatton River. Discoveries of natural gas in Middle Devonian carbonate rocks were made west of the Clarke Lake field (one), north of the Kotcho Lake field (two), and west of Kotcho Lake (one). Discoveries were also made in the Upper Devonian, and in the Mississippian Rundle group in the Kotcho Lake area, and in the Permian Belloy formation west of Fort St. John. A total of eleven gas discoveries were made in Triassic rocks, six in the Halfway formation and five in the Upper Schooler Creek formation, north of Fort St. John, and four discoveries of gas were made in the Bullhead group, 25 to 50 miles north of Fort St. John.

The number of lode-mineral claims recorded in 1961 was 19,064, 7,316 more than in 1960; the number of certificates of work issued was 16,665, 3,508 more than in 1960.

Revenue to the Government from petroleum and natural gas amounted to $15,690,202, including rentals, fees, and miscellaneous, $6,545,301; sale of Crown reserves, $7,641,891; royalties, $1,479,193; and miscellaneous fees, $23,817. Land held for petroleum and natural gas, under permits, leases, licences, and drilling reservations, amounted to 33,925,009 acres.

The average number employed through 1961 in placer, lode, coal, industrial-mineral, and structural-material mining was 11,034. Major expenditures by those branches of the industry included: Salaries and wages, $47,657,250; fuel and elec-

tricity, $8,545,316; process supplies (inclusive of explosives, chemicals, drill-steel lubricants, etc.), $16,268,411; Federal taxes, $12,688,742; Provincial taxes, $2,475,567; municipal and other taxes, $2,334,795; levies for workmen's compensation (including silicosis), unemployment insurance, and other items, $2,207,376. Dividends amounted to $20,720,239. The lode-mining industry spent $30,304,050 in freight and treatment charges on ores and concentrates. Returns from some operators in the metal-mining and industrial-mineral sections of the industry indicate that they spent more than $10,000,000* on roads, new construction, machinery, major repairs, and alterations.

Information supplied by the Canadian Petroleum Association indicates that, exclusive of expenditures for land acquisition and rentals, the petroleum and natural-gas industry spent $59,400,000 in British Columbia. The number directly employed by fifty-two operating and development companies at December 31st was 824. The expenditure is broken down into: Exploration, $41,900,000; development drilling, $11,100,000; capital expenditures, field equipment, secondary recovery, pressure-maintenance projects, etc., $3,100,000; operation of wells, flow-lines, etc., $1,400,000; taxes, royalties, and other expenses, $1,900,000.

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.

The tabulated statistics are designed to cover mineral production in quantity and value, employment, principal expenditures of the mineral industry, and dividends paid. The data are arranged so as to facilitate comparison of the production records for the various mining divisions, and from year to year (1951, 1958).†

In the 1960 Report, Tables I and II were given new forms, Table VIII has been amalgamated with Table VII, and subsequent tables were renumbered.

From time to time, revisions have been made to earlier figures as additional data became available or errors came to light.

METHODS 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, from the operators of custom smelters, and from the records of the Petroleum and Natural Gas Branch of the Department of Mines and Petroleum Resources. The values are in Canadian funds. Weights are avoirdupois pounds and tons (2,000 lb.) and troy ounces.

* This does not include expenditures at some of the properties being explored or prepared for production.

† In these notes, references such as (1958) are to this section of the Report of the Minister of Mines for the year indicated, where additional information will be found.

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 Department of Mines and Petroleum Resources.

Placer Gold

The value of placer gold in dollars is obtained from returns received annually from the operators (1958). A fineness of 822½ is taken as the average for crude placer gold (p. A 16).

Lode Metals, Gross and Net Contents, and Calculated Value

The gross contents are compiled from the returns made each year by the producers and for any metal are the total assay contents, obtained by multiplying the assay by the weight of ore, concentrates, or bullion.

The value for each principal metal is calculated by multiplying the quantity (gross for gold, net for silver, copper, lead, and zinc) by the average price for the year. The net contents are calculated by taking a percentage of the gross content: in lead ores and concentrates and zinc concentrates—silver, 98 per cent; lead, 95 per cent; 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.

Other metals, including by-product metals refined in British Columbia and iron, tin, and tungsten exported as ores and concentrates, are treated similarly, except that quantities and values for several are as reported by shippers for sales in the year. The value of by-product iron ore used in making pig iron at Kimberley has been computed from the value per ton of ore of comparable grade, at the point of export from British Columbia, less the cost of preparing the by-product ore for charging into the pig-iron furnace at Kimberley.

Average Metal Prices

The methods of computing prices have varied because of changing conditions (1958). The prices are now arrived at by methods given in footnotes to the table of average prices on page A 16.

Fuel

Coal

All coal produced, including that used in making coke, is shown as primary mine production (1959, tables renumbered in 1960). 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 " (p. 253).

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* For zinc concentrates shipped to foreign smelters the net contents are calculated as the assay content less eight units of zinc per ton of concentrate.

*Natural Gas**

Commercial production of natural gas began in 1954. The production shown in Tables I, III, and VIIA is the total dry and residue gas sold; that is, the quantity delivered to the main transmission-line. The quantity is net after deducting gas used on leases, metering difference, and gas used or lost in the cleaning plant. The gross well output is shown in Table 11, page 202. The quantity is reported as thousands of cubic feet at standard conditions (standard conditions—14.4 pounds per square inch pressure, 60° F. temperature up to and including the year 1960, and thereafter 14.65 pounds per square inch pressure, 60° F. temperature).

*Natural-gas Liquid By-products**

This heading covers condensate removed from natural gas in preparation for transmission through the main gas pipe-line. The by-products consist of butane, propane, and natural gasoline.

*Petroleum**

Production of petroleum began in 1955, and is shown in Tables I, III, and VIIA. The quantity is " net sales " (*see* Tables 10 and 17, pp. 200 and 221), reported in barrels (35 imperial gallons=1 barrel).

CO-OPERATION WITH DOMINION BUREAU OF STATISTICS

In the interests of uniformity and to avoid duplication of effort, beginning with the statistics for 1925, the Dominion Bureau of Statistics and the various Provincial Departments have co-operated in the collection and processing of mineral statistics.

Producers of metals, industrial minerals, structural materials, coal, and petroleum and natural gas are requested to submit returns in duplicate on forms prepared for use by the Province and by the Dominion Bureau of Statistics.

So far as possible both organizations follow the same practice in processing the data. The final compilation by the Dominion Bureau is usually published considerably later than the Report of the Minister of Mines and Petroleum Resources for British Columbia. Differences between the figures published by the two organizations arise mainly from the facts that the Dominion Bureau bases its quantities of lode metals on returns made by smelter operators, whereas the British Columbia mining statistician uses the returns covering shipments from individual mines in the same period, and the Dominion Bureau uses average prices for metals considered applicable to the total Canadian production, whereas the British Columbia mining statistician uses prices considered applicable to British Columbia production. Peat, included under the classification of fuel by the Dominion Bureau, has not been regarded as mineral or fuel, and accordingly has not been included in the British Columbia statistics of mineral production.

* For petroleum, natural gas, and liquid by-products, production figures are supplied by the Petroleum and Natural Gas Branch of the Department of Mines and Petroleum Resources and are compiled from the monthly disposition report, and Crown royalty statement filed with the Department by the producers.

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

Year	Gold,[1] 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 ,,	5.256 ,,	6.194 ,,	.....
1928	.....	.....	58.176 ,,	14.570 ,,	4.575 ,,	5.493 ,,	.....
1929	.....	.....	52.993 ,,	18.107 ,,	5.050 ,,	5.385 ,,	.....
1930	.....	.....	38.154 ,,	12.982 ,,	3.927 ,,	3.599 ,,	.....
1931	.....	.....	28.700 ,,	8.116 ,,	2.710 ,,	2.554 ,,	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	28.37	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 ,,	15.874 ,,	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 ,,	14.926 ,,	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
1959	27.61	33.57	87.469 ,,	27.708 ,,	11.670 ,,	10.978 ,,	7.93
1960	27.92	33.95	88.633 ,,	28.985 ,,	11.589 ,,	12.557 ,,	6.64
1961	**29.24**	**35.46**	**93.696 ,,**	**28.288 ,,**	**11.011 ,,**	**11.695 ,,**	**6.80**

[1] 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.

TABLE I.—MINERAL PRODUCTION: TOTAL TO DATE, LATEST DECADE, AND LATEST YEAR

	Total Quantity to Date	Total Value to Date	Total Quantity, 1952–61	Total Value, 1952–61	Quantity, 1961	Value, 1961
Principal Metals		$		$		$
Gold—placer ..... crude oz.	5,220,779	96,529,305	75,433	2,119,153	3,416	99,884
" lode ..... fine oz.	15,870,009	460,281,415	2,153,858	73,678,269	159,821	5,667,253
Silver ..... oz.	431,160,086	265,076,396	79,491,998	69,031,818	7,373,568	6,908,738
Copper ..... lb.	3,012,370,068	503,240,551	353,901,695	110,890,409	31,692,412	8,965,149
Lead ..... lb.	13,582,977,263	1,025,568,809	3,082,837,362	409,477,253	384,284,524	42,313,569
Zinc ..... lb.	11,453,071,945	956,923,509	4,037,321,654	479,428,074	387,951,190	45,370,891
Totals	.....	3,307,619,985	.....	1,144,624,976	.....	109,325,484
Miscellaneous Metals						
Antimony ..... lb.	40,760,499	10,474,104	16,209,012	5,827,480	1,331,297	469,948
Bismuth ..... lb.	5,410,349	9,209,919	1,734,298	3,692,690	283,363	637,567
Cadmium ..... lb.	27,437,159	39,410,710	13,479,206	21,636,076	907,432	1,451,891
Chromite ..... tons	796	32,295	.....	.....	.....	.....
Cobalt ..... lb.	1,730	420	.....	.....	.....	.....
Iron concentrates ..... tons	7,909,076	56,971,285	7,720,764	55,936,557	1,315,188	11,494,260
Magnesium ..... lb.	204,632	88,184	.....	.....	.....	.....
Manganese ..... tons	1,724	32,668	.....	.....	.....	.....
Mercury ..... lb.	4,163,662	10,409,609	75	250	.....	.....
Molybdenite (MoS_2) ..... lb.	52,171	46,198	9,023	9,500	.....	.....
Nickel ..... lb.	10,712,030	7,667,255	10,430,577	7,579,531	4,180,677	3,194,037
Palladium ..... oz.	749	30,462	.....	.....	.....	.....
Platinum ..... oz.	1,400	134,483	10	844	.....	.....
Selenium ..... lb.	731	1,389	.....	.....	.....	.....
Tin ..... lb.	13,818,533	10,694,786	7,033,140	5,120,750	1,119,350	727,578
Tungsten (WO_3) ..... lb.	16,019,324	38,663,751	12,567,014	35,204,550	.....	.....
Other	.....	3,941,542	.....	3,970,605	.....	676,327
Totals	.....	187,809,060	.....	138,928,833	.....	18,651,608
Industrial Minerals						
Arsenious oxide ..... lb.	22,019,420	273,201	.....	.....	.....	.....
Asbestos ..... tons	230,800	64,863,967	230,800	64,863,967	45,113	11,129,704
Barite ..... tons	189,860	2,363,886	131,018	2,128,341	17,722	178,316
Bentonite ..... tons	791	16,858	.....	.....	.....	.....
Diatomite ..... tons	1,803	45,082	476	14,607	214	8,817
Fluorspar ..... tons	35,341	784,964	.....	.....	.....	.....
Fluxes ..... tons	3,660,654	5,967,386	856,256	2,381,413	53,335	190,500
Granules ..... tons	161,030	2,154,645	125,913	1,663,453	17,463	253,015
Gypsum and gypsite ..... tons	2,124,372	8,787,802	1,150,069	3,186,170	131,000	392,000
Hydro-magnesite ..... tons	2,253	27,536	.....	.....	.....	.....
Iron oxide and ochre ..... tons	18,108	155,050	.....	.....	.....	.....
Magnesium sulphate ..... tons	13,894	254,352	.....	.....	.....	.....
Mica ..... lb.	12,822,050	185,818	2,459,300	36,037	250,000	8,025
Natro-alunite ..... tons	522	9,398	.....	.....	.....	.....
Perlite ..... tons	1,112	11,120	1,112	11,120	.....	.....
Phosphate rock ..... tons	3,842	16,894	.....	.....	.....	.....
Sodium carbonate ..... tons	10,492	118,983	.....	.....	.....	.....
Sulphur ..... tons	4,518,783	47,713,998	2,182,781	25,645,613	242,377	3,207,284
Talc ..... tons	1,805	34,871	.....	.....	.....	.....
Totals	.....	133,785,811	.....	99,930,721	.....	15,367,661
Structural Materials						
Clay products	.....	43,752,952	.....	18,737,836	.....	2,366,464
Cement	.....	106,680,051	.....	59,858,273	.....	7,118,379
Lime and limestone	.....	30,742,637	.....	14,837,895	.....	1,864,315
Rock[1]	.....	28,426,741	.....	16,123,283	.....	1,016,086
Sand and gravel	.....	101,219,600	.....	67,826,902	.....	7,439,710
Stone	.....	8,621,435	.....	1,389,526	.....	70,300
Not assigned	.....	7,010,452	.....	.....	.....	.....
Totals	.....	326,453,868	.....	178,773,715	.....	19,875,254
Fuels						
Coal[2] ..... tons	135,342,692	563,108,381	11,124,699	76,985,661	919,142	6,247,594
Natural gas—						
To pipe-line ..... M s.c.f.	306,191,359	23,689,398	306,191,359	23,689,398	95,967,110	8,818,891
Liquid by-products[3] ..... bbl.	3,801,400	2,379,900	3,801,400	2,379,900	1,287,672	892,892
Petroleum crude ..... bbl.	3,697,821	7,077,840	3,697,821	7,077,840	997,260	1,900,401
Totals	.....	596,255,519	.....	110,132,799	.....	17,859,778
Grand totals	.....	4,551,924,243	.....	1,672,391,044	.....	181,079,785[4]

[1] Rubble, riprap, and crushed stone.
[2] Quantity from 1836 to 1909 is gross mine output and includes material lost in picking and washing. For 1910 and subsequent years the quantity is that sold and used.
[3] Includes propane, butane, and natural-gasoline shipments.
[4] Does not include 68,834 tons of peat moss valued at $3,534,751.

TABLE II.—TOTAL VALUE OF PRODUCTION, 1836–1961

1836–1900	$153,077,874	1955	$174,711,086
1901–10	221,928,930	1956	190,067,465
1911–20	331,995,328	1957	172,895,401
1921–30	532,582,031	1958	146,757,699
1931–40	522,040,932	1959	149,501,696
1941–50	941,577,899	1960	179,595,802
1951	176,330,205	1961	181,079,785
1952	171,309,429		
1953	153,188,210	Total	$4,551,924,243
1954	153,284,471		

TABLE III.—QUANTITY AND VALUE OF MINERAL PRODUCTS FOR YEARS 1952 TO 1961

Description	1952		1953		1954		1955		1956	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Principal Metals		$		$		$		$		$
Gold—placer, crude ..... oz.	17,554	494,756	14,245	403,230	8,684	238,967	7,666	217,614	3,865	109,450
,, lode, fine ..... oz.	251,393	8,615,238	253,553	8,727,294	258,388	8,803,279	242,477	8,370,306	191,743	6,603,628
Silver ..... oz.	8,796,720	7,315,088	8,376,953	7,017,709	9,825,153	8,153,108	7,902,145	6,942,113	8,404,600	7,511,443
Copper ..... lb.	42,005,512	13,054,893	49,021,013	14,869,544	50,150,087	14,599,693	44,328,031	16,932,549	43,360,575	17,251,872
Lead ..... lb.	284,949,396	45,936,692	297,634,712	39,481,244	332,474,456	45,482,505	302,567,640	45,161,245	283,718,073	44,702,619
Zinc ..... lb.	372,871,717	59,189,656	382,300,862	40,810,618	334,124,560	34,805,755	429,198,565	52,048,909	443,853,004	58,934,801
Totals		134,606,323		111,309,639		112,083,307		129,672,736		135,113,813
Miscellaneous Metals										
Antimony ..... lb.	2,333,239	1,028,025	1,551,043	570,474	1,302,333	382,104	2,021,721	667,776	2,140,432	768,843
Bismuth ..... lb.	142,246	312,941	71,298	157,569	225,351	493,519	160,767	356,903	156,753	346,424
Cadmium ..... lb.	726,172	1,561,270	787,158	1,550,701	680,734	1,123,211	1,593,591	2,677,233	1,937,927	3,236,338
Indium ..... oz.	404	889	6,752	9,588	477	1,278	104,774	232,389	363,192	795,390
Iron concentrates ..... tons	900,481	5,474,924	991,248	6,763,105	535,746	3,733,891	610,930	3,228,756	369,955	2,190,847
Mercury ..... lb.	.....	.....	.....	.....	.....	.....	75	250	.....	.....
Platinum ..... oz.	2	176	.....	.....	4	408	.....	.....	.....	.....
Tin ..... lb.	212,113	250,293	1,092,228	581,746	587,528	280,437	391,228	311,613	756,934	637,792
Tungsten (WO_3) ..... lb.	1,434,640	4,565,024	2,168,977	5,950,323	2,172,163	5,752,172	1,914,000	5,460,967	2,264,775	6,351,376
Totals		13,193,542		15,583,506		11,767,020		12,935,897		14,327,010
Industrial Minerals										
Asbestos ..... tons	20	23,000	3,102	988,716	8,599	2,920,751	17,187	4,265,971	20,356	6,620,060
Barite ..... tons	848	13,408	3,560	52,845	5,056	115,337	9,465	238,825	11,436	287,626
Diatomite ..... tons	12	240	.....	.....	.....	.....	14	280	40	800
Fluxes (quartz, limestone) ..... tons	55,588	141,478	37,358	110,698	39,897	40,804	111,759	208,198	176,311	392,429
Granules (quartz, limestone, granite) ..... tons	1,610	21,026	4,620	59,321	4,541	65,507	6,355	73,858	13,220	173,214
Gypsum and products ..... tons	91,112	235,453	172,665	387,655	175,480	421,734	149,719	383,934	72,973	391,919
Mica ..... lb.	314,000	3,001	604,000	11,338	284,000	5,326	505,300	2,861	200,000	1,100
Perlite ..... tons	.....	.....	1,112	11,120	.....	.....	.....	.....	.....	.....
Sulphur ..... tons	182,607	1,745,258	151,954	1,590,055	219,999	2,308,422	216,520	2,624,171	212,885	2,523,190
Totals		2,182,864		3,211,748		5,877,881		7,798,098		10,390,338
Structural Materials										
Brick—common ..... No.	830,815	28,248	1,382,883	51,381	1,289,911	35,550	4,853,940	232,139	2,248,447	75,767
,, face, paving, sewer ..... No.	2,566,540	121,254	4,307,894	226,459	5,651,262	316,676	3,901,866	248,913	6,913,682	485,176
,, firebrick, blocks	.....	435,681	.....	426,783	.....	372,528	.....	578,578	.....	600,753
Clays ..... tons	11,483	51,797	5,226	31,990	6,609	36,425	8,033	46,757	7,985	30,263
Structural tile, hollow blocks	.....	60,273	.....	123,469	.....	122,903	.....	114,460	.....	129,257
Drain-tile, sewer-pipe, flue-linings	.....	468,110	.....	627,097	.....	753,297	.....	801,019	.....	696,385
Pottery—glazed or unglazed	.....	6,536	.....	30,012	.....	31,081	.....	38,035	.....	38,385
Other clay products	.....	11,296	.....	19,267	.....	32,697	.....	55,514	.....	69,659
Cement	.....	3,603,273	.....	5,071,260	.....	4,935,298	.....	5,474,875	.....	6,339,071
Lime and limestone ..... tons	321,710	1,552,772	338,005	1,357,958	317,976	1,555,002	318,152	1,711,348	396,012	1,220,792
Rubble, riprap, crushed rock ..... tons	739,504	982,792	770,415	1,122,516	920,707	1,253,856	890,613	962,272	2,028,143	2,210,315
Sand and gravel	.....	3,839,965	.....	4,388,594	.....	4,850,469	.....	4,886,890	.....	8,535,348
Stone ..... tons	122,308	434,964	2,611	78,252	3,055	99,392	26,079	148,454	35,266	139,150
Totals		11,596,961		13,555,038		14,395,174		15,299,254		20,570,321
Fuel										
Coal[1] ..... tons	1,402,347	9,729,739	1,384,138	9,528,279	1,308,284	9,154,544	1,332,874	8,986,501	1,417,209	9,346,518
Natural gas ..... M s.c.f.	.....	.....	.....	.....	60,883	6,545	168,651	18,130	187,846	20,143
Petroleum, crude ..... bbl.	.....	.....	.....	.....	.....	.....	582	480	148,454	299,322
Totals	.....	.....	.....	.....	.....	9,161,089	.....	9,005,111	.....	9,665,983
Provincial totals	.....	171,309,429	.....	153,188,210	.....	153,284,471	.....	174,711,086	.....	190,067,465

Description	1957		1958		1959		1960		1961	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Principal Metals		$		$		$		$		$
Gold—placer, crude oz.	2,936	80,990	5,650	157,871	7,570	208,973	3,847	107,418	3,416	$99,884
,, lode, fine oz.	223,403	7,493,470	194,354	6,604,149	173,146	5,812,511	205,580	6,979,441	159,821	5,667,253
Silver oz.	8,129,047	7,076,904	7,040,416	6,086,299	6,197,159	5,420,593	7,446,237	6,599,823	7,373,568	6,908,738
Copper lb.	31,387,441	8,170,465	12,658,649	2,964,529	16,233,546	4,497,991	33,064,429	9,583,724	31,692,412	8,965,149
Lead lb.	281,603,346	39,568,086	294,573,159	34,627,075	287,423,357	33,542,306	333,608,699	38,661,912	384,284,524	42,313,569
Zinc lb.	449,276,797	50,206,681	432,002,790	43,234,839	402,342,850	44,169,198	403,399,319	50,656,726	387,951,190	45,370,891
Totals		112,598,296		93,674,762		93,651,572		112,589,044		109,325,484
Miscellaneous Metals										
Antimony lb.	1,360,731	577,344	858,633	284,208	1,657,797	540,276	1,651,786	538,482	1,331,297	469,948
Bismuth lb.	145,634	314,569	154,034	308,068	181,843	345,502	213,009	419,628	283,363	637,567
Cadmium lb.	1,946,397	3,172,627	1,425,108	2,166,164	1,695,821	2,170,651	1,778,866	2,525,990	907,432	1,451,891
Indium oz.	384,360	693,770	75,434	117,677						
Iron concentrates tons	357,342	2,200,637	630,271	4,193,442	849,248	6,363,848	1,160,355	10,292,847	1,315,188	11,494,260
Molybdenite (MoS_2) lb.							9,023	9,500		
Nickel lb.			1,408,490	996,507	1,061,532	743,072	3,779,878	2,645,915	4,180,677	3,194,037
Platinum oz.			4	260						
Tin lb.	709,102	555,936	795,496	625,260	747,443	627,852	621,718	522,243	1,119,350	727,578
Tungsten (WO_3) lb.	1,921,483	5,240,479	690,976	1,884,209						
Others						632,933		760,364		676,327
Totals		12,755,362		10,575,795		11,424,134		17,714,969		18,651,608
Industrial Minerals										
Asbestos tons	31,714	9,245,800	30,078	8,203,384	33,883	9,742,504	40,748	11,724,077	45,113	11,129,704
Barite tons	20,072	433,200	16,144	341,700	23,142	187,368	23,573	279,716	17,722	178,316
Diatomite tons	120	2,400	27	540	5	100	44	1,430	214	8,817
Fluxes (quartz, limestone) tons	137,433	442,204	90,635	311,630[2]	70,570	248,913	83,370	294,559	53,335	190,500
Granules (quartz, limestone, granite) tons	17,295	221,864	22,674	284,330	19,072	254,251	19,063	257,067	17,463	253,015
Gypsum and products tons	66,499	142,751	70,498	211,494	112,223	282,030	107,900	337,200	131,000	392,000
Mica lb.	180,000	1,200					122,000	3,186	250,000	8,025
Sulphur tons	228,882	2,887,465	211,300	2,410,395	251,552	3,253,677	264,765	3,095,696	242,377	3,207,284
Totals		13,376,884		11,763,473		13,968,843		15,992,931		15,367,661
Structural Materials										
Brick—common No.	663,828	24,345	427,550	15,125	385,810	11,954	2,262,653	187,673	244,532	14,809
,, face, paving, sewer No.	4,660,231	345,081	4,871,562	344,133	5,412,822	428,100	1,775,591	145,091	3,728,779	326,346
,, firebrick, blocks		658,873		405,485		538,566		621,865		584,969
Clays tons	3,849	29,495	4,105	12,579	6,250	17,001	8,003	22,671	7,908	28,396
Structural tile, hollow blocks		200,216		122,877		149,383		83,842		45,753
Drain-tile, sewer-pipe, flue-linings		697,611		639,173		680,702		616,858		686,998
Pottery—glazed or unglazed		47,612		68,387		46,902		48,825		11,890
Other clay products		38,868		32,416		80,910		346,883		667,303
Cement		7,078,108		6,755,619		7,049,638		6,432,752		7,118,379
Lime and limestone tons	334,303	1,494,578	269,747	997,819	519,580	1,481,292	565,945	1,602,019	758,882	1,864,315
Rubble, riprap, crushed rock tons	2,364,301	4,272,768	1,866,950	2,098,952	1,169,854	1,128,353	1,148,305	1,075,373	1,539,640	1,016,086
Sand and gravel		10,503,274		8,442,676		7,342,698		7,597,278		7,439,710
Stone tons	2,403	236,110	2,141	64,335	13,710	69,710	4,328	48,859	5,400	70,300
Totals		25,626,939		19,999,576		19,025,209		18,829,989		19,875,254
Fuels										
Coal[1] tons	1,085,657	7,340,339	796,413	5,937,860	690,011	5,472,064	788,658	5,242,223	919,142	6,247,594
Natural gas delivered to pipe-line M s.c.f.	7,126,346	433,830	58,039,491	3,368,327	64,525,633	3,921,583	80,115,399	7,101,949	95,967,110	8,818,891
Natural-gas liquid by-products[3] bbl.	27,964		489,458	428,297	816,905	465,063	1,179,401	593,648	1,287,672	892,892
Petroleum, crude bbl.	345,320	763,751	506,414	1,009,609	861,165	1,573,228	838,626	1,531,049	997,260	1,900,401
Totals		8,537,920		10,744,093		11,431,938		14,468,869		17,859,778
Provincial totals		172,895,401		146,757,699		149,501,696		179,595,802		181,079,785

[1] The quantity of coal is that sold and used.

[2] Includes 32 tons of fluorspar mined in 1958.

[3] Butane, propane, natural gasoline.

TABLE IV.—MINERAL PRODUCTION VALUE, 1895–1961

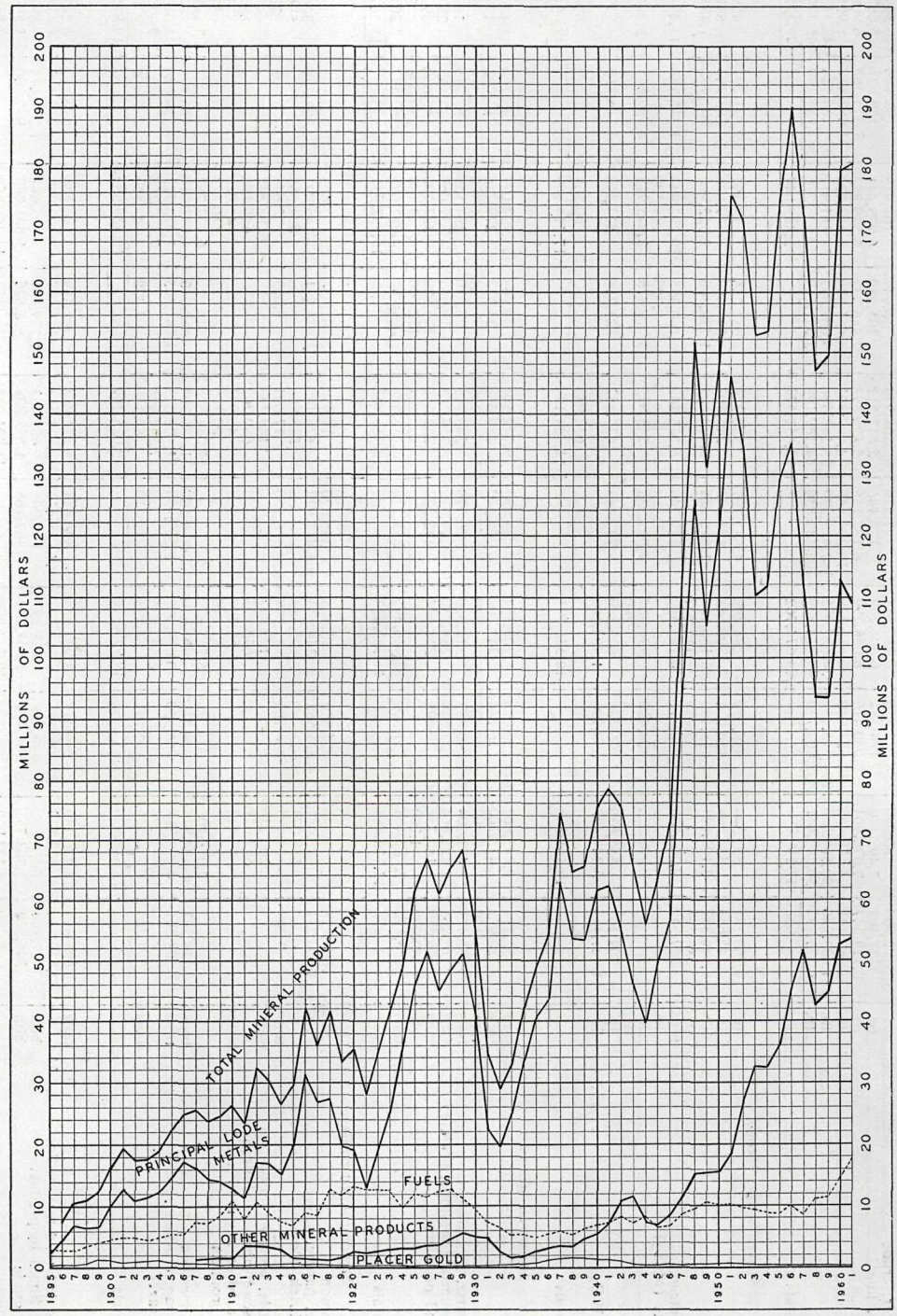

TABLE V.—PRINCIPAL LODE-METALS PRODUCTION, 1911–1961

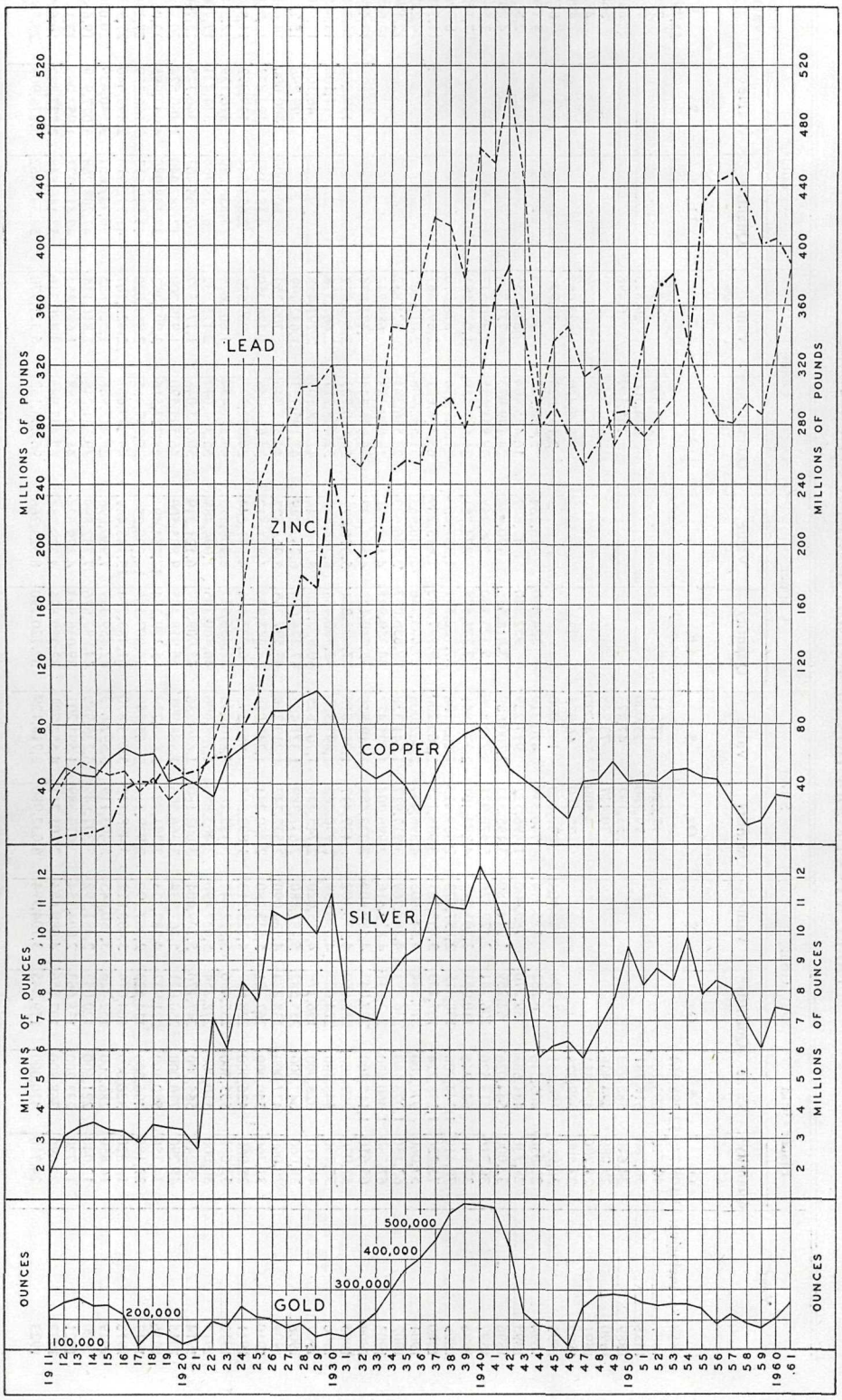

TABLE VI.—PRODUCTION OF PRINCIPAL METALS, 1858–1961

Year	Placer Gold		Gold		Silver		Copper		Lead[3]		Zinc[3 4]		Total Value
	Quantity[1]	Value	Quantity[2]	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
	Oz.	$	Oz.	$	Oz.	$	Lb.	$	Lb.	$	Lb.	$	$
1858–86, inclusive	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	4,000							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	110,061	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	232,831	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	222,042	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	238,660	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		17,100	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		46,100	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	15,223,707
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	228,617	4,725,513	1,892,364	958,293	36,927,656	4,571,644	26,872,397	1,069,521	2,634,544	129,092	11,880,063
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	164,674	3,403,812	3,498,172	3,215,870	61,483,754	15,143,449	43,899,661	2,928,107	41,772,916	2,899,040	27,910,278
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	120,048	2,481,392	3,377,849	3,235,980	44,887,676	7,832,899	39,331,218	2,816,115	47,208,268	3,077,979	19,665,965
1921	13,720	233,200	135,663	2,804,154	2,673,389	1,591,201	39,036,993	4,879,624	41,402,288	1,693,354	49,419,372	1,952,065	13,153,598
1922	21,690	368,800	197,856	4,089,684	7,101,311	4,554,781	32,359,896	4,329,754	67,447,985	3,480,316	57,146,548	2,777,322	19,600,657
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

	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	305,140,792	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	302,567,640	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	223,403	7,495,170	8,129,047	7,076,904	31,387,441	8,170,465	281,603,346	39,568,086	449,276,797	50,206,681	112,598,296
1958	5,650	157,871	194,354	6,604,149	7,040,416	6,086,299	12,658,649	2,964,529	294,573,159	34,627,075	432,002,790	43,234,839	93,674,762
1959	7,570	208,973	173,146	5,812,511	6,197,159	5,420,593	16,233,546	4,497,991	287,423,357	33,542,306	402,342,850	44,169,198	93,651,572
1960	3,847	107,418	205,580	6,979,441	7,446,237	6,599,823	33,064,429	9,583,724	333,608,699	38,661,912	403,399,319	50,656,726	112,589,044
1961	3,416	99,884	159,821	5,667,253	7,373,568	6,908,738	31,692,412	8,965,149	384,284,524	42,313,569	387,951,190	45,370,891	109,325,484
Totals	5,220,779	96,529,305	15,870,009	460,281,415	431,160,086	265,076,396	3,012,370,068	503,240,551	13,582,977,263	1,025,568,809	11,453,071,945	956,923,509	3,307,619,985

[1] Ounces of crude gold.

[2] Ounces of fine gold.

[3] 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.

[4] 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, 1960 AND 1961, AND

Division	Period	Placer Gold		Principal Lode Metals	Miscellaneous Metals	Industrial Minerals	Structural Materials
		Quantity[1]	Value				
		Oz.	$	$	$	$	$
Alberni	1960	.....	.....	511	.....	.....	84,361
	1961	**4**	**117**	**5,095**	.....	.....	**85,576**
	To date	1,617	33,253	11,697,294	.....	9,398	1,144,945
Atlin	1960	1,959	54,700	1,156	.....	.....	22,481
	1961	**2,271**	**66,404**	.....	.....	.....	**16,050**
	To date	734,309	17,344,720	37,483,344	562,122	20,325	291,719
Cariboo	1960	1,634	45,625	666,212	.....	4,616	785,135
	1961	**645**	**18,860**	**720,827**	.....	**16,842**	**733,870**
	To date	2,602,922	53,944,751	39,626,641	23,730	188,262	5,506,368
Clinton	1960	.....	.....	.....	.....	.....	.....
	1961	**48**	**1,404**	.....	.....	.....	.....
	To date	10,141	242,238	847,454	900	162,427	110,928
Fort Steele	1960	6	168	59,647,970	522,243	643,145	249,941
	1961	**12**	**351**	**56,145,948**	**837,578**	**610,950**	**249,246**
	To date	20,487	467,103	1,601,232,180	10,896,793	5,542,597	4,908,614
Golden	1960	.....	.....	3,098,048	43,181	616,916	81,596
	1961	.....	.....	**3,557,806**	**59,539**	**570,316**	**114,986**
	To date	469	11,268	44,801,748	526,647	4,512,896	1,592,211
Greenwood	1960	.....	.....	3,842,662	8,323	.....	36,885
	1961	**18**	**526**	**3,592,712**	**8,822**	.....	**33,876**
	To date	5,074	115,662	124,701,692	97,236	2,323,897	839,320
Kamloops	1960	5	139	.....	35,968	.....	495,977
	1961	**1**	**29**	.....	.....	.....	**637,651**
	To date	27,556	603,620	3,044,836	101,646	6,528,308	8,569,889
Liard	1960	.....	.....	.....	.....	12,306,732	203,145
	1961	**72**	**2,105**	.....	.....	**12,223,362**	**216,995**
	To date	50,154	1,247,291	6,312	79	67,189,218	1,755,412
Lillooet	1960	30	838	4,815,524	.....	.....	140,967
	1961	**32**	**936**	**3,787,608**	.....	.....	**132,255**
	To date	91,891	1,893,549	126,694,031	48,350	5,129	1,455,157
Nanaimo	1960	.....	.....	624,206	10,256,879	23,302	1,555,579
	1961	.....	.....	**577,450**	**11,384,260**	**19,445**	**1,907,459**
	To date	866	19,300	7,796,247	56,757,509	745,783	33,450,455
Nelson	1960	.....	.....	12,419,532	712,603	.....	106,553
	1961	**4**	**117**	**15,505,864**	**909,050**	.....	**183,675**
	To date	3,585	88,988	180,283,288	41,428,922	64,126	2,932,999
New Westminster	1960	11	307	392,131	2,645,915	120,441	4,716,804
	1961	**16**	**468**	**417,194**	**3,194,037**	**114,437**	**5,086,910**
	To date	11,608	243,614	1,235,293	7,667,255	787,371	69,582,745
Nicola	1960	.....	.....	1,589	.....	.....	22,529
	1961	.....	.....	**1,855,744**	.....	.....	**37,031**
	To date	234	4,764	2,428,461	.....	10,050	495,140
Omineca	1960	179	4,998	33,916	941	.....	299,196
	1961	**278**	**8,129**	**34,002**	**1,542**	.....	**346,610**
	To date	52,932	1,402,660	17,379,510	15,633,718	11,460	3,556,792
Osoyoos	1960	.....	.....	237,680	.....	407,823	684
	1961	.....	.....	**119,560**	.....	**309,573**	**51,450**
	To date	208	4,639	51,051,405	1,020	3,734,302	1,024,656
Revelstoke	1960	.....	.....	278,186	12,069	.....	45,630
	1961	**3**	**88**	.....	.....	.....	**35,911**
	To date	7,582	164,477	11,053,917	185,244	.....	1,290,149
Similkameen	1960	3	84	23,549	.....	.....	71,260
	1961	**2**	**58**	.....	.....	.....	**73,175**
	To date	12,148	288,211	120,061,655	128,661	18,558	2,332,327
Skeena	1960	.....	.....	467,671	.....	.....	181,166
	1961	.....	.....	**344,680**	.....	.....	**183,562**
	To date	4,603	105,569	210,645,048	337,504	1,240,215	7,104,665
Slocan	1960	.....	.....	6,910,292	151,792	.....	109,665
	1961	.....	.....	**5,970,229**	**167,459**	.....	**61,975**
	To date	366	9,397	184,719,885	3,048,364	.....	927,532
Trail Creek	1960	2	56	55,803	.....	.....	66,474
	1961	.....	.....	**86,043**	.....	.....	**116,386**
	To date	851	24,260	82,871,278	35,774	.....	1,837,883
Vancouver	1960	.....	.....	6,903,597	46,952	56,206	5,018,309
	1961	.....	.....	**4,634,683**	.....	**101,426**	**4,553,416**
	To date	182	5,306	208,476,451	968,758	6,371,700	47,549,908
Vernon	1960	18	503	34	9,500	.....	144,814
	1961	**10**	**292**	.....	.....	.....	**48,131**
	To date	2,705	72,282	188,345	9,500	3,978	2,652,402
Victoria	1960	.....	.....	772,520	.....	60	4,390,838
	1961	.....	.....	.....	.....	**60**	**4,969,058**
	To date	628	15,680	8,775,561	35,437	188,246	114,277,401
Not assigned[4]	1960	.....	.....	11,288,837	3,268,603	1,813,690	.....
	1961	.....	.....	**11,870,155**	**2,089,321**	**1,401,250**	.....
	To date	1,577,661	18,176,703	133,988,804	49,313,891	34,127,565	11,264,251
Totals	1960	**1 3,847**	107,418	112,481,626	17,714,969	15,992,931	18,829,989
	1961	**1 3,416**	**99,884**	**109,225,600**	**18,651,608**	**15,367,661**	**19,875,254**
	To date	5,220,779	96,529,305	3,211,090,680	187,809,060	133,785,811	326,453,868

[1] Crude gold—equivalent in fine gold: 1960, 3,164 oz.; 1961, 2,817 oz. The year of first recorded production for the major placer-producing mining divisions was: Atlin, 1898; Cariboo, 1858; Lillooet, 1874; Quesnel, 1858.

[2] Quantity from 1836 to 1909 is gross mine output and includes material lost in picking and washing. For 1910 and subsequent years the quantity is that sold and used. Year of first production by mining divisions: Cariboo, 1942; Fort Steele, 1898; Kamloops, 1893; Liard, 1923; Nanaimo, 1836; Nicola, 1907; Omineca, 1918; Osoyoos, 1926; Similkameen, 1909; Skeena, 1912.

TOTAL TO DATE, BY MINING DIVISIONS—SUMMARY

Fuels								Division Totals
Coal		Petroleum		Natural Gas (Direct to Pipe-line)		Liquid By-products[3]		
Quantity[2]	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Tons	$	Bbl.	$	M S.C.F.	$	Bbl.	$	$
								84,872
								90,788
								12,884,890
								78,337
								82,454
								55,702,230
								1,501,588
								1,490,399
290	1,100							99,290,852
								1,404
								1,363,947
674,042	4,618,360							65,681,827
834,716	**5,425,265**							**63,269,338**
53,198,320	230,500,591							1,853,547,878
								3,839,741
								4,302,647
								51,444,770
								3,887,870
								3,635,936
								128,077,807
								532,084
								637,680
15,087	59,765							18,908,064
2,293	21,526	838,626	1,531,049	80,115,399	7,101,949	1,179,401	593,648	21,758,049
2,062	**17,000**	**997,260**	**1,900,401**	**95,967,110**	**8,818,891**	**1,287,672**	**892,892**	**24,071,646**
96,848	675,856	3,697,821	7,077,840	306,191,359	23,689,398	3,801,400	2,379,900	104,021,306
								4,957,329
								3,920,799
								130,096,216
105,499	530,154							12,990,120
76,009	**736,814**							**14,625,428**
74,051,038	298,518,486							397,287,780
								13,238,688
								16,598,706
								224,798,323
								7,875,598
								8,813,046
								79,516,278
								26,301
213	2,183							**1,894,492**
159	**1,717**							14,017,216
2,929,632	11,078,801							399,499
5,417	60,448							**454,307**
5,850	**64,024**							40,699,073
427,001	2,714,933							646,187
								480,583
								55,821,030
1,122	5,008							335,885
								35,999
								12,693,787
1,194	9,552							104,445
346	**2,774**							**76,007**
4,623,317	19,553,725							142,383,137
								648,837
								528,242
37	116							219,433,117
								7,171,749
								6,199,663
								188,705,178
								122,333
								202,429
								84,769,195
								12,025,064
								9,289,525
								263,372,123
								154,851
								48,423
								2,926,507
								5,163,418
								4,969,118
								123,292,325
								16,371,130
								15,360,726
								246,871,214
788,658	5,242,223	838,626	1,531,049	80,115,399	7,101,949	1,179,401	593,648	179,595,802
919,142	**6,247,594**	**997,260**	**1,900,401**	**95,967,110**	**8,818,891**	**1,287,672**	**892,892**	**181,079,785**
135,342,692	563,108,381	3,697,821	7,077,840	306,191,359	23,689,398	3,801,400	2,379,900	4,551,924,243

[3] Includes propane, butane, and natural gasoline.

[4] *Re* " not assigned," *see* footnotes under Tables VIIB and VIIC.

NOTE.—For individual metals, industrial minerals, and structural materials, *see* Tables VIIB, VIIC, VIID, and VIIE.

TABLE VIIb.—PRODUCTION, 1960 AND 1961, AND TOTAL TO DATE, BY MINING DIVISIONS—PRINCIPAL LODE METALS

Division	Period	Lode Gold		Silver		Copper		Lead		Zinc		Division Total
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
		Oz.	$	Oz.	$	Lb.	$	Lb.	$	Lb.	$	$
Alberni	1960	15	509	2	2							511
	1961	**139**	**4,929**	**98**	**91**			**690**	**75**			**5,095**
	To date	301,243	11,270,553	162,523	78,086	2,290,699	343,518	118,627	5,137			11,697,294
Atlin	1960	34	1,154	3	2							1,156
	1961											
	To date	344,197	12,126,732	3,375,333	2,893,942	24,777,661	8,160,266	23,765,211	3,437,907	91,067,749	10,864,497	37,483,344
Cariboo	1960	19,552	663,791	2,732	2,421							666,212
	1961	**20,243**	**717,817**	**3,213**	**3,010**							**720,827**
	To date	1,101,178	39,539,305	126,824	82,673	2,352	920	24,560	3,724	505	19	39,626,641
Clinton	1960											
	1961											
	To date	23,390	827,328	31,564	14,214	57,548	5,905	193	7			847,454
Fort Steele	1960	362	12,290	5,177,507	4,588,980			259,357,600	30,056,952	199,010,500	24,989,748	59,647,970
	1961	**367**	**13,014**	**5,199,531**	**4,871,753**			**281,169,600**	**30,959,585**	**173,592,100**	**20,301,596**	**56,145,948**
	To date	5,281	151,078	208,066,428	120,904,084	28,592	6,193	11,546,216,601	841,212,936	8,314,996,600	638,957,889	1,601,232,180
Golden	1960			194,659	172,532	147,739	42,822	9,054,501	1,049,326	14,600,369	1,833,368	3,098,048
	1961			**283,669**	**265,787**	**40,590**	**11,482**	**9,435,501**	**1,038,943**	**19,167,112**	**2,241,594**	**3,557,806**
	To date	169	4,844	3,468,025	2,635,908	1,094,088	342,943	223,095,645	21,182,385	248,754,975	20,635,668	44,801,748
Greenwood	1960	18,861	640,331	957,789	848,917	7,307,427	2,118,058	877,617	101,707	1,064,340	133,649	3,842,662
	1961	**17,207**	**610,160**	**943,009**	**883,562**	**6,744,419**	**1,907,861**	**782,690**	**86,182**	**897,363**	**104,947**	**3,592,712**
	To date	1,176,673	25,874,964	33,903,657	20,809,954	458,306,147	75,351,859	16,525,392	1,330,423	17,617,130	1,334,492	124,701,692
Kamloops	1960											
	1961											
	To date	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	1960											
	1961											
	To date	114	4,120	540	446	56	22	10,102	1,724			6,312
Lillooet	1960	141,087	4,789,903	28,907	25,621							4,815,524
	1961	**106,226**	**3,766,774**	**22,236**	**20,834**							**3,787,608**
	To date	3,619,739	126,135,458	880,704	555,982	400	41	62,513	2,548	15	2	126,694,031
Nanaimo	1960	1,517	51,502	31,522	27,939	1,879,473	544,765					624,206
	1961	**1,269**	**44,999**	**32,351**	**30,312**	**1,775,097**	**502,139**					**577,450**
	To date	89,128	2,095,459	669,619	425,315	28,198,826	5,275,473					7,796,247
Nelson	1960	274	9,302	122,762	108,808			20,227,114	2,344,120	79,281,898	9,957,302	12,419,532
	1961	**565**	**20,035**	**185,788**	**174,076**	**4,615**	**1,305**	**39,997,332**	**4,404,106**	**93,256,453**	**10,906,342**	**15,505,864**
	To date	1,329,986	41,593,017	8,224,085	5,021,897	14,802,985	1,683,575	325,627,292	38,765,342	760,915,513	93,219,457	180,283,288

		Oz.	$	Oz.	$	Lb.	$	Lb.	$	Lb.	$	$
New Westminster	1960					1,352,874	392,131					392,131
	1961			**49**	**46**	**1,474,646**	**417,148**					**417,194**
	To date	4,449	113,528	14,203	6,662	4,033,551	1,113,503	28,425	1,119	12,755	481	1,235,293
Nicola	1960			17	15	5,430	1,574					1,589
	1961	**16**	**567**	**8,063**	**7,555**	**6,528,767**	**1,846,858**	**3,696**	**407**	**3,052**	**357**	**1,855,744**
	To date	8,541	235,481	275,499	134,158	7,089,909	1,956,945	2,239,124	90,923	323,735	10,954	2,428,461
Omineca	1960	22	747	13,977	12,388			97,985	11,355	75,062	9,426	33,916
	1961	**15**	**532**	**11,352**	**10,636**			**111,115**	**12,235**	**90,632**	**10,599**	**34,002**
	To date	25,090	774,426	9,557,879	7,594,030	6,750,202	1,545,334	28,019,982	3,553,069	31,603,719	3,912,651	17,379,510
Osoyoos	1960	6,435	218,468	1,811	1,605	59,650	17,290	1,802	209	864	108	237,680
	1961	**3,332**	**118,153**	**1,233**	**1,155**			**1,227**	**135**	**1,003**	**117**	**119,560**
	To date	1,647,920	50,238,942	592,518	388,781	2,843,616	417,190	129,123	5,798	9,420	694	51,051,405
Revelstoke	1960	8	272	2,950	2,615			92,889	10,765	2,106,665	264,534	278,186
	1961											
	To date	37,300	1,069,260	4,107,618	2,766,476	153,686	51,037	36,343,774	3,853,894	27,194,200	3,313,250	11,053,917
Similkameen	1960	538	18,265	223	198	17,548	5,086					23,549
	1961											
	To date	184,012	6,327,260	4,219,439	2,582,266	601,187,921	111,134,861	382,544	13,304	72,275	3,964	120,061,655
Skeena	1960	7,548	256,255	199,498	176,821			112,695	13,060	171,494	21,535	467,671
	1961	**6,471**	**229,462**	**110,593**	**103,621**			**53,109**	**5,848**	**49,154**	**5,749**	**344,680**
	To date	2,407,874	60,739,375	68,677,739	43,937,433	689,106,270	98,025,648	59,912,896	5,426,103	17,028,222	2,516,489	210,645,048
Slocan	1960	123	4,176	521,900	462,576			26,303,094	3,048,266	27,038,893	3,395,274	6,910,292
	1961	**133**	**4,716**	**450,278**	**421,892**			**22,684,369**	**2,497,776**	**26,043,994**	**3,045,845**	**5,970,229**
	To date	15,788	455,724	70,341,972	45,174,307	229,696	43,512	876,282,964	71,825,379	693,060,075	67,220,963	184,719,885
Trail Creek	1960	395	13,410	1,020	904	143,095	41,476	57	7	51	6	55,803
	1961	**518**	**18,368**	**1,359**	**1,273**	**234,734**	**66,402**					**86,043**
	To date	2,950,615	62,617,907	3,624,266	2,069,217	121,577,851	18,158,785	135,754	11,004	119,621	14,365	82,871,278
Vancouver	1960	8,590	291,631	74,091	65,669	17,911,128	5,191,540	209,794	24,313	10,595,235	1,330,444	6,903,597
	1961	**3,213**	**113,933**	**53,718**	**50,332**	**13,466,438**	**3,809,386**	**59,194**	**6,518**	**5,596,531**	**654,514**	**4,634,683**
	To date	455,806	14,550,604	4,886,187	3,007,370	960,466,782	161,546,792	18,153,821	1,829,920	213,382,130	27,541,765	208,476,451
Vernon	1960	1	34									34
	1961											
	To date	5,224	176,082	12,823	8,084	654	100	24,913	2,933	10,816	1,146	188,345
Victoria	1960			14,062	12,464	2,622,243	760,056					772,520
	1961											
	To date	37,663	812,730	876,220	506,255	36,028,550	7,152,805	210,097	19,848	3,568,709	283,923	8,775,561
Not assigned[1]	1960	218	7,401	100,805	89,346	1,617,822	468,926	17,273,551	2,001,832	69,453,948	8,721,332	11,288,837
	1961	**107**	**3,794**	**67,028**	**62,803**	**1,423,106**	**402,568**	**29,986,001**	**3,301,759**	**69,253,796**	**8,099,231**	**11,870,155**
	To date	50,761	938,910	4,759,909	3,296,872	46,930,443	9,743,656	425,129,613	32,948,352	1,032,895,758	87,061,014	133,988,804
Totals	1960	205,580	6,979,441	7,446,237	6,599,823	33,064,429	9,583,724	333,608,699	38,661,912	403,399,319	50,656,726	112,481,626
	1961	**159,821**	**5,667,253**	**7,373,568**	**6,908,738**	**31,692,412**	**8,965,149**	**384,284,524**	**42,313,569**	**387,951,190**	**45,370,891**	**109,225,600**
	To date	15,870,009	460,281,415	431,160,086	265,076,396	3,012,370,068	503,240,551	13,582,977,263	1,025,568,809	11,453,071,945	956,923,509	3,211,090,680

[1] 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.

TABLE VIIc.—PRODUCTION, 1960 AND 1961, AND TOTAL TO DATE, BY MINING DIVISIONS—MISCELLANEOUS METALS

Division	Period	Antimony		Bismuth		Cadmium		Chromite		Iron Concentrates		Manganese		Mercury	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
		Lb.	$	Lb.	$	Lb.	$	Tons	$	Tons	$	Tons	$	Lb.	$
Atlin	1960														
	1961														
	To date					319,212	561,762								
Cariboo	1960														
	1961														
	To date														
Clinton	1960														
	1961														
	To date							126	900						
Fort Steele	1960														
	1961									**51,171**	**110,000**				
	To date					1,837	3,823			51,171	110,000				
Golden	1960					30,409	43,181								
	1961					**37,212**	**59,539**								
	To date	40,062	14,906			310,455	511,741								
Greenwood	1960					5,861	8,323								
	1961					**5,514**	**8,822**								
	To date					39,241	65,841	670	31,395						
Kamloops	1960									4,058	35,968				
	1961														
	To date									21,167	95,851			10,987	5,795
Liard	1960														
	1961														
	To date														
Lillooet	1960														
	1961														
	To date	13,466	4,321											1,783	3,555
Nanaimo	1960									1,156,297	10,256,879				
	1961									**1,264,017**	**11,384,260**				
	To date									7,834,988	56,757,509				
Nelson	1960					501,833	712,603								
	1961					**568,156**	**909,050**								
	To date					4,446,178	7,510,233								
New Westminster	1960														
	1961														
	To date														
Omineca	1960					663	941								
	1961					**964**	**1,542**								
	To date	104,489	15,217			262,114	518,118							4,150,892	10,400,259
Osoyoos	1960														
	1961														
	To date											161			
Revelstoke	1960					8,499	12,069								
	1961														
	To date	9,394	3,455			103,612	176,102								

		Lb.	$	Lb.	$	Lb.	$	Tons	$	Tons	$	Tons	$	Lb.	$
Similkameen	1960														
	1961														
	To date														
Skeena	1960					141,890	316,764								
	1961					106,896	151,792			1,200	6,000				
	To date					**104,662**	**167,459**					541	8,160		
Slocan	1960					1,699,057	3,032,071								
	1961														
	To date	31,865	8,133							550	1,925				
Trail Creek	1960					115	210								
	1961					33,065	46,952								
	To date														
Vancouver	1960					473,365	968,758								
	1961														
	To date														
Vernon	1960														
	1961											1,167	24,508		
	To date														
Victoria	1960					7,000	10,929								
	1961					1,091,640	1,550,129								
	To date					**190,924**	**305,479**								
Not assigned[2 3 4]	1960	1,651,786	538,482	213,009	419,628	19,633,083	25,734,358			1,160,355	10,292,847				
	1961	**1,331,297**	**469,948**	5,410,349	9,209,919					**1,315,188**	**11,494,260**				
	To date	40,561,223	10,428,072			1,778,866	2,525,990			7,909,076	56,971,285	1,724	32,668	4,163,662	10,409,609
Totals	1960	1,651,786	538,482	213,009	419,628	**907,432**	**1,451,891**								
	1961	**1,331,297**	**469,948**	**283,363**	**637,567**	27,437,159	39,410,710	796	32,295						
	To date	40,760,499	10,474,104	5,410,349	9,209,919										

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

2 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 at the Trail smelter.

3 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.

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

Principal productive periods: Antimony, 1939–61; bismuth, 1929–61; cadmium, 1928–61; chromite, 1918 and 1929; indium, 1942–61; iron concentrates, 1951–61; manganese, 1918–20; mercury, 1940–44; molybdenite, 1914–18; nickel, 1958–61; palladium, 1928; platinum, 1887–1951; tin, 1941–61; tungsten, 1937–58.

TABLE VIIc.—PRODUCTION, 1960 AND 1961, AND TOTAL TO DATE, BY MINING DIVISIONS—MISCELLANEOUS METALS—*Continued*

Division	Period	Molybdenite (MoS_2)		Nickel		Palladium		Platinum		Tin		Tungsten (WO_3)		Other Value	Division Totals
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value		
		Lb.	$	Lb.	$	Oz.	$	Oz.	$	Lb.	$	Lb.	$	$	$
Atlin	1960														
	1961														
	To date											292	360		562,122
Cariboo	1960														
	1961														
	To date							59	2,299			27,698	21,431		23,730
Clinton	1960														
	1961														
	To date														900
Fort Steele	1960									621,718	522,243				522,243
	1961									**1,119,350**	**727,578**				**837,578**
	To date									13,818,533	10,694,786			88,1845	10,896,793
Golden	1960														43,181
	1961														**59,539**
	To date														526,647
Greenwood	1960														8,323
	1961														**8,822**
	To date														97,236
Kamloops	1960														35,968
	1961														
	To date														101,646
Liard	1960														
	1961														
	To date							2	79						79
Lillooet	1960														
	1961														
	To date	2,448	2,440					3	113			32,353	37,921		48,350
Nanaimo	1960														10,256,879
	1961														**11,384,260**
	To date														56,757,509
Nelson	1960														712,603
	1961														**909,050**
	To date	25,058	18,378									13,739,939	33,900,311		41,428,922
New Westminster	1960			3,779,878	2,645,915										2,645,915
	1961			**4,180,677**	**3,194,037**										**3,194,037**
	To date			10,712,030	7,667,255										7,667,255
Omineca	1960														941
	1961														**1,542**
	To date	1,608	1,840					3	154			2,210,892	4,697,710	4206	15,633,718
Osoyoos	1960														
	1961														
	To date	1,020	1,020												1,020
Revelstoke	1960														12,069
	1961														
	To date											7,784	5,687		185,244

		Lb.	$	Lb.	$	Oz.	$	Oz.	$	Lb.	$	Lb.	$	$	$
Similkameen	1960														
	1961														
	To date							1,280	128,661						128,661
Skeena	1960														
	1961														
	To date	13,022	13,020									366	331	1,3897	337,504
Slocan	1960														151,792
	1961														**167,459**
	To date														3,048,364
Trail Creek	1960														
	1961														
	To date					749	30,462	53	3,177						35,774
Vancouver	1960														46,952
	1961														
	To date														968,758
Vernon	1960	9,023	9,500												9,500
	1961														
	To date	9,023	9,500												9,500
Victoria	1960														
	1961														
	To date														35,437
Not assigned	1960													760,364	3,268,603
	1961													**676,327**	**2,089,321**
	To date													3,941,542	49,313,891
Totals	1960	9,023	9,500	3,779,878	2,645,915					621,718	522,243			760,364	17,714,969
	1961			**4,180,677**	**3,194,037**					**1,119,350**	**727,578**			**676,327**	**18,651,608**
	To date	52,171	46,198	10,712,030	7,667,255	749	30,462	1,400	134,483	13,818,533	10,694,786	16,019,324	38,663,751	4,031,535	187,809,060

[5] Magnesium, 204,632 lb., 1941 and 1942.
[6] Cobalt, 1,730 lb., 1928.
[7] Selenium, 731 lb., 1931.

TABLE VIID.—PRODUCTION, 1960 AND 1961, AND TOTAL

Division	Period	Asbestos		Barite		Diatomite		Fluxes (Quartz and Limestone)		Granules (Quartz, Limestone, and Granite)	
		Quantity	Value[1]	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
		Tons	$	Tons	$	Tons	$	Tons	$	Tons	$
Alberni	1960										
	1961										
	To date										
Atlin	1960										
	1961										
	To date										
Cariboo	1960					44	1,430				
	1961					**214**	**8,817**				
	To date					1,803	44,782			48	168
Clinton	1960										
	1961										
	To date										
Fort Steele	1960										
	1961										
	To date			8	80						
Golden	1960			23,573	279,716						
	1961			**17,722**	**178,316**						
	To date			189,852	2,363,806						
Greenwood	1960										
	1961										
	To date							1,790,502	1,540,319		
Kamloops	1960										
	1961										
	To date										
Liard	1960	40,748	11,724,077								
	1961	**45,113**	**11,129,704**								
	To date	230,800	64,863,967								
Lillooet	1960										
	1961										
	To date										
Nanaimo	1960							18,629	23,302		
	1961							**12,459**	**19,445**		
	To date							687,433	745,783		
Nelson	1960										
	1961										
	To date							7,601	8,174	2	51
New Westminster	1960									8,869	120,441
	1961									**8,004**	**114,437**
	To date									62,875	787,371
Nicola	1960										
	1961										
	To date										
Omineca	1960										
	1961										
	To date										
Osoyoos	1960							64,735	271,197	10,194	136,626
	1961							**40,869**	**170,995**	**9,459**	**138,578**
	To date							574,030	2,621,448	58,808	791,369
Similkameen	1960										
	1961										
	To date									250	1,700
Skeena	1960										
	1961										
	To date							601,019	1,050,722		
Vancouver	1960										
	1961										
	To date									29,692	418,606
Vernon	1960										
	1961										
	To date										
Victoria	1960							6	60		
	1961							**7**	**60**		
	To date							69	940	9,605	157,080
Not assigned	1960										
	1961										
	To date										
Totals	1960	40,748	11,724,077	23,573	279,716	44	1,430	83,370	294,559	19,063	257,067
	1961	**45,113**	**11,129,704**	**17,722**	**178,316**	**214**	**8,817**	**53,335**	**190,500**	**17,463**	**253,015**
	To date	230,800	64,863,967	189,860	2,363,886	1,803	44,782	3,660,654	5,967,386	161,030	2,154,645

[1] Does not include value of containers.
[2] Includes 51 tons of residue from Trail smelter and no value assigned.
[3] Arsenious oxide: Omineca, 1928, 16,997 lb., $340; Osoyoos, 1917–30 and 1942, 22,002,423 lb., $272,861.
[4] Bentonite: 1926–44, 791 tons.
[5] Fluorspar: Greenwood, 1918–29 and 1942, 35,309 tons, $783,578; Osoyoos, 1958, 32 tons, $1,386.
[6] Hydromagnesite: Atlin, 1915–16, 1,450 tons, $20,325; Clinton, 1921, 803 tons, $7,211.
[7] Iron oxide and ochre: Golden, 1927–39, 27 tons, $920; Nelson, 1948–50, 7,292 tons, $55,901; Vancouver, 1918–50, 10,669 tons, $97,389; Victoria, 1923, 120 tons, $840.
[8] Magnesium sulphate: Clinton, 1918–20, 1,923 tons, $39,085; Kamloops, 1918–42, 8,742 tons, $193,967; Osoyoos, 1915–19, 3,229 tons, $21,300.

TO DATE, BY MINING DIVISIONS—INDUSTRIAL MINERALS

Gypsum and Gypsite		Mica		Sulphur		Other Value	Division Totals	Period	Division
Quantity	Value	Quantity	Value	Quantity	Value				
Tons	$	Lb.	$	Tons	$	$	$		
.....	.....	.....	.....	.....	.....	.....	.....	1960	Alberni.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
.....	.....	.....	.....	.....	.....	9,3989	9,398	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Atlin.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
.....	.....	.....	.....	.....	.....	20,3256	20,325	To date	
.....	.....	122,000	3,186	.....	.....	.....	4,616	1960	Cariboo.
.....	.....	**250,000**	**8,025**	.....	.....	.....	**16,842**	**1961**	
.....	.....	10,013,800	143,012	.....	.....	30014	188,262	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Clinton.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
873	6,236	.....	.....	.....	.....	156,1916 8 12	162,427	To date	
.....	.....	.....	.....	40,577	643,145	.....	643,145	1960	Fort Steele.
.....	.....	.....	.....	**40,730**	**610,950**	.....	**610,950**	**1961**	
112,878	298,824	.....	.....	288,605	5,226,799	16,89411	5,542,597	To date	
107,9002	337,200	.....	.....	.....	.....	.....	616,916	1960	Golden.
131,000	**392,000**	.....	.....	.....	.....	.....	**570,316**	**1961**	
761,046	2,147,814	.....	.....	.....	.....	1,2767 13	4,512,896	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Greenwood.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
.....	.....	.....	.....	.....	.....	783,5785	2,323,897	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Kamloops.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
1,246,918	6,323,178	424,700	2,075	.....	.....	203,0558 12	6,528,308	To date	
.....	.....	.....	.....	37,958	582,655	.....	12,306,732	1960	Liard.
.....	.....	.....	.....	**52,681**	**1,093,658**	.....	**12,223,362**	**1961**	
.....	.....	.....	.....	133,431	2,325,251	.....	67,189,218	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Lillooet.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
.....	.....	.....	.....	.....	.....	5,12913	5,129	To date	
.....	.....	.....	.....	.....	.....	.....	23,302	1960	Nanaimo.
.....	.....	.....	.....	.....	.....	.....	**19,445**	**1961**	
.....	.....	.....	.....	.....	.....	.....	745,783	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Nelson.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
.....	.....	.....	.....	.....	.....	55,9017	64,126	To date	
.....	.....	.....	.....	.....	.....	.....	120,441	1960	New Westminster.
.....	.....	.....	.....	.....	.....	.....	**114,437**	**1961**	
.....	.....	.....	.....	.....	.....	.....	787,371	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Nicola.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
2,407	10,050	.....	.....	.....	.....	.....	10,050	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Omineca.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
.....	.....	.....	.....	.....	.....	11,4603 10	11,460	To date	
.....	.....	.....	.....	.....	.....	.....	407,823	1960	Osoyoos.
.....	.....	.....	.....	.....	.....	.....	**309,573**	**1961**	
.....	.....	1,588,800	25,938	.....	.....	295,5473 5 8	3,734,302	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Similkameen.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
.....	.....	.....	.....	.....	.....	16,8584	18,558	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Skeena.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
.....	.....	634,250	10,815	41,624	178,678	.....	1,240,215	To date	
.....	.....	.....	.....	4,801	56,206	.....	56,206	1960	Vancouver.
.....	.....	.....	.....	**8,841**	**101,426**	.....	**101,426**	**1961**	
.....	.....	.....	.....	627,397	5,855,705	97,3897	6,371,700	To date	
.....	.....	.....	.....	.....	.....	.....	.....	1960	Vernon.
.....	.....	.....	.....	.....	.....	.....	.....	**1961**	
.....	.....	160,500	3,978	.....	.....	.....	3,978	To date	
.....	.....	.....	.....	.....	.....	.....	60	1960	Victoria.
.....	.....	.....	.....	.....	.....	.....	**60**	**1961**	
.....	.....	.....	.....	.....	.....	30,2267 13	188,246	To date	
.....	.....	.....	.....	181,369	1,813,690	.....	1,813,690	1960	Not assigned.
.....	.....	.....	.....	**140,125**	**1,401,250**	.....	**1,401,250**	**1961**	
.....	.....	.....	.....	3,427,726	34,127,565	.....	34,127,565	To date	
107,9002	337,200	122,000	3,186	264,705	3,095,696	.....	15,992,931	1960	Totals.
131,000	**392,000**	**250,000**	**8,025**	**242,377**	**3,207,284**	.....	**15,367,661**	**1961**	
2,124,372	8,787,802	12,822,050	185,818	4,518,783	47,713,998	1,703,527	133,785,811	To date	

9 Natro-alunite: 1912–27, 522 tons.
10 Perlite: 1953, 1,112 tons, $11,120.
11 Phosphate rock: 1927–33, 3,842 tons.
12 Sodium carbonate: Clinton, 1921–49, 9,524 tons, $109,895; Kamloops, 1931–35, 968 tons, $9,088.
13 Talc: Golden, 1927, 5 tons, $356; Lillooet, 1916–36, 296 tons, $5,129; Victoria, 1919–35, 1,504 tons, $29,386.
14 Volcanic ash: Cariboo, 30 tons.

First production: Arsenious oxide, 1917; asbestos, 1952; barite, 1940; bentonite, 1926; diatomite, 1928; fluorspar, 1918; flux, 1911; granules, 1930; gypsum and gypsite, 1911; hydromagnesite, 1904; 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 VIIe.—PRODUCTION, 1960 AND 1961, AND TOTAL TO DATE, BY MINING DIVISIONS—STRUCTURAL MATERIALS

Division	Period	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	Unclassified Material	Division Totals
		$	$	$	$	$	$	$	$	$	$	$	$	$	$	$
Alberni	1960				1,608	82,753										84,361
	1961				**830**	**84,746**										**85,576**
	To date				55,642	1,089,303										1,144,945
Atlin	1960				6,000	16,481										22,481
	1961					**16,050**										**16,050**
	To date		1,108		97,478	193,133										291,719
Cariboo	1960				253,232	531,903										785,135
	1961				**1,056**	**730,814**								**2,000**		**733,870**
	To date		7,500		959,899	4,505,892	1,193	184	4,651	15,807				11,242		5,506,368
Clinton	1960															
	1961															
	To date				1,606	109,322										110,928
Fort Steele	1960				62,948	178,875								8,118		249,941
	1961				**140,499**	**108,747**										**249,246**
	To date		5,350	71,941	1,173,949	3,641,456	7,800							8,118		4,908,614
Golden	1960				15,314	66,282										81,596
	1961				**8,149**	**94,683**								**12,154**		**114,986**
	To date		1,000	24,000	110,339	1,443,218								13,654		1,592,211
Greenwood	1960				2,546	34,339										36,885
	1961					**33,876**										**33,876**
	To date		102,442	30,500	168,319	416,776	114,361			6,922						839,320
Kamloops	1960				386,129	109,848										495,977
	1961				**250,291**	**387,360**										**637,651**
	To date		12,000	18,000	4,574,618	3,892,892	72,379									8,569,889
Liard	1960				3,100	200,045										203,145
	1961				**2,405**	**214,590**										**216,995**
	To date				32,665	1,722,747										1,755,412
Lillooet	1960				10,849	130,118										140,967
	1961				**9,276**	**122,979**										**132,255**
	To date		100	2,000	311,438	1,141,619										1,455,157
Nanaimo	1960		1,375,485	4,275	6,528	169,291										1,555,579
	1961		**1,601,464**	**10,450**	**97,580**	**197,965**										**1,907,459**
	To date		26,513,904	3,199,257	172,150	2,386,152	1,104,295	38,939		35,758						33,450,455
Nelson	1960				1,846	104,707										106,553
	1961				**60,728**	**122,947**										**183,675**
	To date		34,543	356,679	346,240	2,173,563	19,110	2,864								2,932,999
New Westminster	1960		162,318		183,448	2,553,613	183,936	122,800	583,103	22,671	83,842	559,809	48,825	212,439		4,716,804
	1961		**209,175**		**351,375**	**2,590,022**	**1,320**	**316,331**	**536,902**	**28,396**	**45,753**	**619,396**	**5,091**	**383,149**		**5,086,910**
	To date		1,359,390	9,310	8,606,089	25,968,438	1,612,599	4,816,407	11,463,096	850,452	2,810,730	10,834,903	329,390	921,941		69,582,745
Nicola	1960				10,660	11,869										22,529
	1961				**7,350**	**29,681**										**37,031**
	To date			8,000	115,716	371,424										495,140
Omineca	1960				1,745	297,451										299,196
	1961				**33,226**	**313,384**										**346,610**
	To date		3,077		593,715	2,954,726	5,274									3,556,792

		$	$	$	$	$	$	$	$	$	$	$	$	$	$	$
Osoyoos	1960					684										684
	1961					**51,450**										**51,450**
	To date		32,070	14,850	145,557	832,179										1,024,656
Revelstoke	1960				2,774	42,856										45,630
	1961				**3,241**	**32,670**										**35,911**
	To date		1,000	5,575	325,520	958,054										1,290,149
Similkameen	1960					71,260										71,260
	1961				**175**	**73,000**										**73,175**
	To date		11,571	24,000	511,219	1,772,182				1,363				11,992		**2,332,327**
Skeena	1960		50,725		44,476	85,965										181,166
	1961		**39,954**		**38,484**	**105,124**										**183,562**
	To date	10,500	1,433,635	144,000	1,230,104	4,273,177				4,925				8,324		7,104,665
Slocan	1960				24,250	85,415										109,665
	1961				**6,814**	**55,161**										**61,975**
	To date		1,000	115,143	101,078	710,311										927,532
Trail Creek	1960			5,584		60,890										66,474
	1961			**8,500**	**500**	**107,356**										**116,386**
	To date		28,000	75,734	212,542	1,521,607										1,837,883
Vancouver	1960	2,922,279		39,000	48,988	1,970,169		22,291	15,582							5,018,309
	1961	**3,142,150**		**51,350**		**1,316,928**	**10,014**	**10,015**	**22,959**							**4,553,416**
	To date	10,607,387	40,885	3,936,376	7,648,356	24,228,312	142,208	241,216	580,778	12,724			23,362	88,304		47,549,908
Vernon	1960				8,204	136,610										144,814
	1961				**2,747**	**45,384**										**48,131**
	To date		46,499	81,052	194,169	2,169,428	131,467	6,202	1,011	5	18,224	4,325		20		2,652,492
Victoria	1960	3,510,473	13,491		728	655,854	3,737		23,180			57,049		126,326		4,390,838
	1961	**3,976,229**	**13,722**		**1,360**	**604,763**	**3,475**		**25,108**			**67,602**	**6,799**	**270,000**		**4,969,058**
	To date	96,062,164	792,065		455,878	12,743,689	1,814,647	23,052	95,930	1,050	705,821	1,030,346	134,504	418,255		114,277,401
Not assigned	1960															
	1961															
	To date		315,498	505,018	282,455									3,150,8281	7,010,4522	11,264,251
Totals	1960	6,432,752	1,602,019	48,859	1,075,373	7,597,278	187,673	145,091	621,865	22,671	83,842	616,858	48,825	346,883		18,829,989
	1961	**7,118,379**	**1,864,315**	**70,300**	**1,016,086**	**7,439,710**	**14,809**	**326,346**	**584,969**	**28,396**	**45,753**	**686,998**	**11,890**	**667,303**		**19,875,254**
	To date	106,680,051	30,742,637	8,621,435	28,426,741	101,219,600	5,025,333	5,128,864	12,145,466	929,006	3,534,775	11,869,574	487,256	4,632,678	7,010,452	326,453,868

[1] Includes $3,150,828 of unclassified clay products, 1886–1910.
[2] Includes a value of $7,010,452 that cannot be allotted to a particular class of structural material.

TABLE VIIIA.—QUANTITY[1] 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	1912	3,172,015	$10,786,812
1860	15,956	56,988	1913	2,642,637	9,197,460
1861	15,427	55,096	1914	2,285,964	7,745,847
1862	20,292	72,472	1915	2,064,173	7,114,178
1863	23,906	85,380	1916	2,542,524	8,900,675
1864	32,068	115,528	1917	2,429,818	8,484,343
1865	36,757	131,276	1918	2,666,896	12,833,994
1866	28,129	100,460	1919	2,397,172	11,975,671
1867	34,988	124,956	1920	2,852,535	13,450,169
1868	49,286	176,020	1921	2,670,314	12,836,013
1869	40,098	143,208	1922	2,726,793	12,880,060
1870	33,424	119,372	1923	2,636,740	12,678,548
1871	55,458[2]	164,612	1924	2,027,843	9,911,935
1872	55,458[2]	164,612	1925	2,541,212	12,168,905
1873	55,459[2]	164,612	1926	2,406,094	11,650,180
1874	91,334	244,641	1927	2,553,416	12,269,135
1875	123,362	330,435	1928	2,680,608	12,633,510
1876	155,895	417,576	1929	2,375,060	11,256,260
1877	172,540	462,156	1930	1,994,493	9,435,650
1878	191,348	522,538	1931	1,765,471	7,684,155
1879	270,257	723,903	1932	1,614,629	6,523,644
1880	299,708	802,785	1933	1,377,177	5,375,171
1881	255,760	685,171	1934	1,430,042	5,725,133
1882	315,997	846,417	1935	1,278,380	5,048,864
1883	238,895	639,897	1936	1,352,301	5,722,502
1884	441,358	1,182,210	1937	1,446,243	6,139,920
1885	409,468	1,096,788	1938	1,388,507	5,565,069
1886	365,832	979,908	1939	1,561,084	6,280,956
1887	462,964	1,240,080	1940	1,662,027	7,088,265
1888	548,017	1,467,903	1941	1,844,745	7,660,000
1889	649,411	1,739,490	1942	1,996,000	8,237,172
1890	759,518	2,034,420	1943	1,854,749	7,742,030
1891	1,152,590	3,087,291	1944	1,931,950	8,217,966
1892	925,495	2,479,005	1945	1,523,021	6,454,360
1893	1,095,690	2,934,882	1946	1,439,092	6,732,470
1894	1,134,509	3,038,859	1947	1,696,350	8,680,440
1895	1,052,412	2,824,687	1948	1,604,480	9,765,395
1896	1,002,268	2,693,961	1949	1,621,268	10,549,924
1897	999,372	2,734,522	1950	1,574,006	10,119,303
1898	1,263,272	3,582,595	1951	1,573,572	10,169,617
1899	1,435,314	4,126,803	1952	1,402,313	9,729,739
1900	1,781,000	4,744,530	1953	1,384,138	9,528,279
1901	1,894,544	5,016,398	1954	1,308,284	9,154,544
1902	1,838,621	4,832,257	1955	1,332,874	8,986,501
1903	1,624,742	4,332,297	1956	1,417,209	9,346,518
1904	1,887,981	4,953,024	1957	1,085,657	7,340,339
1905	2,044,931	5,511,861	1958	796,413	5,937,860
1906	2,126,965	5,548,044	1959	690,011	5,472,064
1907	2,485,961	7,637,713	1960	788,658	5,242,223
1908	2,362,514	7,356,866	1961	919,142	6,247,594
1909	2,688,672	8,574,884			
1910	3,389,476	11,108,335	Totals	135,342,692	$563,108,381
1911	2,540,022	8,071,747			

[1] Quantity from 1836 to 1909 is gross mine output and includes material lost in picking and washing. For 1910 and subsequent years the quantity is that sold and used.

[2] A combined total for 1871, 1872, and 1873 has previously been noted in Annual Reports and the above breakdown is estimated.

TABLE VIIIB.—QUANTITY[1] AND VALUE OF COAL SOLD AND USED[2], 1951–61

Year	District and Mining Division	Total Sales[2]	Used under Companies' Boilers[2]	Used in Making Coke[2]	Total Sold and Used[2]		District Totals, 1961	
		Tons	Tons	Tons	Tons	$	Tons	$
	Vancouver Island	.....	.....	.....	.....	.....	**76,009**	**736,814**
1951	Nanaimo	391,687	3,425	.....	395,112	3,486,615		
1952	,,	267,346	2,986	.....	270,332	2,749,206		
1953	,,	204,931	1,798	.....	206,729	2,059,828		
1954	,,	181,534	536	.....	182,070	2,029,099		
1955	,,	173,861	465	.....	174,326	1,769,682		
1956	,,	172,140	389	.....	172,529	1,629,168		
1957	,,	163,574	439	.....	164,013	1,849,306		
1958	,,	153,892	404	.....	154,296	1,615,470		
1959	,,	136,879	361	.....	137,240	1,415,971		
1960	,,	105,231	268	.....	105,499	530,154		
1961	,,	**76,009**	.....	.....	**76,009**	**736,814**		
	Nicola-Princeton	.....	.....	.....	.....	.....	**505**	**4,491**
1951	Nicola	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	12,904		
1956	,,	1,170	.....	.....	1,170	12,092		
1957	,,	1,081	.....	.....	1,081	11,615		
1958	,,	543	.....	.....	543	5,919		
1959	,,	416	.....	.....	416	3,710		
1960	,,	213	.....	.....	213	2,183		
1961	,,	**159**	.....	.....	**159**	**1,717**		
1951	Similkameen	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	,,	146	.....	.....	146	1,122		
1959	,,	1,161	.....	.....	1,161	8,527		
1960	,,	1,194	.....	.....	1,194	9,552		
1961	,,	**346**	.....	.....	**346**	**2,774**		
	Northern	.....	.....	.....	.....	.....	**7,912**	**81,024**
1951	Liard	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	,,	3,194	.....	.....	3,194	28,738		
1959	,,	3,319	.....	.....	3,319	31,040		
1960	,,	2,293	.....	.....	2,293	21,526		
1961	,,	**2,062**	.....	.....	**2,062**	**17,000**		
1951	Omineca	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	,,	30,015	.....	.....	30,015	227,010		
1956	,,	8,553	.....	.....	8,553	71,234		
1957	,,	4,991	.....	.....	4,991	47,414		
1958	,,	4,677	.....	.....	4,677	44,972		
1959	,,	5,453	.....	.....	5,453	55,318		
1960	,,	5,417	.....	.....	5,417	60,448		
1961	,,	**5,850**	.....	.....	**5,850**	**64,024**		
	East Kootenay	.....	.....	.....	.....	.....	**834,716**	**5,425,265**
1951	Fort Steele	889,669	15,977	236,871	1,142,517	6,413,374		
1952	,,	822,071	15,813	245,528	1,083,412	6,591,942		
1953	,,	878,865	12,729	230,814	1,122,408	7,031,158		
1954	,,	820,081	15,310	218,923	1,054,314	6,648,655		
1955	,,	803,125	16,560	230,464	1,050,149	6,564,544		
1956	,,	890,100	19,518	248,595	1,158,213	7,228,993		
1957	,,	677,534	17,830	199,754	895,118	5,310,835		
1958	,,	401,875	7,274	224,408	633,557	4,241,619		
1959	,,	358,682	10,813	172,927	542,422	3,957,498		
1960	,,	472,782	13,800	187,460	674,042	4,618,360		
1961	,,	**619,828**	**14,698**	**200,190**	**834,716**	**5,425,265**		
1951	Provincial totals	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	,,	564,327	7,678	224,408	796,413	5,937,860		
1959	,,	505,910	11,174	172,927	690,011	5,472,064		
1960	,,	587,130	14,068	187,460	788,658	5,242,223		
1961	,,	**704,254**	**14,698**	**200,190**	**919,142**	**6,247,594**	**919,142**	**6,247,594**

[1] 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 this and succeeding Annual Reports.

[2] 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.

TABLE IX.—COKE AND BY-PRODUCTS PRODUCTION FOR YEARS 1895 TO 1925 AND 1926 TO 1961

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[1]	Total Production Value of Coke Industry
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value				
	Tons	$	Tons	$	Tons	$	Tons	$	Tons	$	$	$	$	$
1895–1925	7,955,795	25,673,600	4,920,457	25,673,600	.....	.....	.....	.....	4,920,457	25,673,600	.....	.....	.....	25,673,600
1926	299,839	1,338,565	105,227	795,841	42,209	244,469	42,468	221,600	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	35,900	327,215	39,464	178,682	170,645	1,101,401	1,222,379	44,402	18,080	2,386,262
1928	210,207	940,668	68,734	429,590	32,322	263,781	41,711	187,882	142,767	881,253	1,313,407	45,313	14,036	2,254,009
1929	226,363	950,243	75,426	574,279	33,339	308,867	46,573	214,732	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	31,904	298,004	45,751	232,917	151,363	1,089,722	1,547,092	65,770	11,935	2,714,519
1931	211,334	924,279	73,248	548,550	27,717	236,537	41,836	210,470	142,801	995,557	1,541,454	66,506	32,603	2,636,120
1932	151,750	710,432	33,090	247,615	25,436	217,221	44,645	237,174	103,171	702,010	1,589,656	54,771	14,109	2,360,546
1933	107,400	554,152	6,097	44,813	24,263	213,750	34,156	214,454	64,516	473,017	1,473,433	45,610	3,666	1,995,726
1934	141,384	571,167	24,840	154,105	23,512	213,653	51,184	198,217	99,536	565,975	1,439,287	43,939	4,756	2,053,957
1935	127,776	494,492	27,066	160,565	14,911	109,684	46,111	160,694	88,088	430,943	1,430,057	44,876	3,081	1,908,957
1936	125,810	436,595	34,009	191,843	.....	.....	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	.....	.....	59,141	330,821	107,534	608,547	1,746,047	46,698	.....	2,401,292
1938	176,877	623,649	54,602	315,294	.....	.....	58,643	345,790	113,245	661,084	1,770,839	44,324	.....	2,476,247
1939	171,242	569,945	50,153	286,491	7,196	37,015	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	29,124	151,931	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	27,044	6,556,142
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
1959	173,227	1,135,222	.....	.....	134,134	1,789,906	.....	.....	134,134	1,789,906	14,600	76,891	.....	1,881,397
1960	186,960	1,124,760	.....	.....	139,040	1,948,370	.....	.....	139,040	1,948,370	.....	108,360	.....	2,056,730
1961	200,190	1,201,140	.....	.....	160,703	2,240,236	.....	.....	160,703	2,240,236	.....	115,291	.....	2,355,527
Totals	16,272,587	69,566,206	6,223,241	35,571,124	2,793,894	30,448,232	1,829,283	11,777,717	10,845,515	77,797,073	83,269,939	4,071,816	553,717	165,692,545

[1] "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.

TABLE X.—DIVIDENDS PAID BY MINING COMPANIES, 1897–1961

Dividends Paid during 1960 and 1961

	1960	1961
Bralorne Pioneer Mines Ltd.	$638,940	$642,040
Cassiar Asbestos Corporation Ltd.	2,376,000	2,376,000
Consolidated Mining and Smelting Co. of Canada, Ltd.	16,380,344	16,380,368
Crow's Nest Pass Coal Co. Ltd.	372,708	489,326
Highland-Bell Ltd.	156,986	160,750
Reeves MacDonald Mines Ltd.	467,600	467,600
Sheep Creek Mines Ltd.	150,000	187,500
Others	53,365	16,655
Totals	$20,595,943	$20,720,239

Dividends Paid Yearly, 1917 to 1961, Inclusive

Year	Amount Paid	Year	Amount Paid
1917	$3,269,494	1941	$16,598,110
1918	2,704,469	1942	13,627,104
1919	2,494,283	1943	11,860,159
1920	1,870,296	1944	11,367,732
1921	736,629	1945	10,487,395
1922	3,174,756	1946	15,566,047
1923	2,983,570	1947	27,940,213
1924	2,977,276	1948	37,672,319
1925	5,853,419	1949	33,651,096
1926	8,011,137	1950	34,399,330
1927	8,816,681	1951	40,921,238
1928	9,572,536	1952	32,603,956
1929	11,263,118	1953	22,323,089
1930	10,543,500	1954	25,368,262
1931	4,650,857	1955	35,071,583
1932	2,786,958	1956	36,262,682
1933	2,471,735	1957	24,247,420
1934	4,745,905	1958	14,996,123
1935	7,386,070	1959	16,444,281
1936	10,513,705	1960	20,595,943
1937	15,085,293	1961	20,720,239
1938	12,068,875		
1939	11,865,698	Total	$663,166,111
1940	14,595,530		

TABLE X.—DIVIDENDS PAID BY MINING COMPANIES, 1897–1961—*Continued*

Lode-gold Mines[1]

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.[2]	Bridge River	Gold	17,759,500
Bralorne Pioneer Mines Ltd.[2]	Bridge River	Gold	1,884,885
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[3]
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[3]
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[4]
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.[2]	Bridge River	Gold	10,048,914
Poorman	Nelson	Gold	25,000
Premier Gold Mining Co. Ltd.	Premier	Gold	18,858,075[5]
Privateer Mine 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[3]
Reno Gold Mines Ltd.	Sheep Creek	Gold	1,433,640[3]
Sheep Creek Gold Mines Ltd.[7]	Sheep Creek	Gold	3,796,875[6]
Silbak Premier Mines Ltd.	Premier	Gold	2,425,000[5]
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[3]
Miscellaneous mines		Gold	108,623
Total, lode-gold mines			$79,986,755

[1] The gold-copper properties of Rossland are included in this table.

[2] Early in 1959 Bralorne Mines Ltd. and Pioneer Gold Mines of B.C. Ltd. were merged under the name of Bralorne Pioneer Mines Ltd., and dividend payments for 1959 and subsequent years are entered under the new company listing.

[3] Includes "*return of capital*" and "*liquidating*" payments.

[4] Former Kelowna Exploration Company Limited; changed in January, 1951.

[5] 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.

[6] In several years, preceding 1953, company revenue included profits from operations of the Lucky Jim zinc-lead mine.

[7] Since March, 1956, company name is Sheep Creek Mines Ltd.

TABLE X.—DIVIDENDS PAID BY MINING COMPANIES, 1897–1961—*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[1]
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	514,661,351[2]
Couverapee	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	1,950,640
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[3]
Queen Bess	Alamo	Silver-lead-zinc	25,000
Rambler-Cariboo	Rambler	Silver-lead-zinc	467,250
Reeves MacDonald Mines Ltd.	Remac	Silver-lead-zinc	3,565,450
Reco	Cody	Silver-lead-zinc	334,992
Ruth Mines Ltd.	Sandon	Silver-lead-zinc	125,490
St. Eugene	Moyie	Silver-lead-zinc	566,000
Sheep Creek Mines Ltd.	Invermere	Silver-lead-zinc	243,750
Silversmith and Slocan Star[4]	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
Standard 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			$546,403,998

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

TABLE X.—DIVIDENDS PAID BY MINING COMPANIES, 1897–1961—*Continued*

Copper Mines

Company or Mine	Locality	Class	Amount Paid
Britannia M. & S. Co.[1]	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.[2]	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

[1] 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 30, 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.

[2] 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	17,953,940
Canadian Collieries Resources Ltd.	Nanaimo	Coal	828,271
Total, coal mines			$34,806,211

Aggregate of All Classes

Lode-gold mining	$79,986,755
Silver-lead-zinc mining and smelting	546,403,998
Copper-mining	49,970,647
Coal-mining	34,806,211
Miscellaneous, structural, and placer gold	14,437,188
Total	$725,604,799

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 XI.—PRINCIPAL ITEMS OF EXPENDITURE, REPORTED FOR OPERATIONS OF ALL CLASSES

Class	Salaries and Wages	Fuel and Electricity	Process Supplies
Lode-mining	$33,257,369	$4,694,429	$11,998,998
Placer-mining	74,233	21,411	3,385
Fuel—coal, coke and gas plant	3,437,044	290,184	642,731
,, petroleum and natural gas	3,230,0251	361,7181	1,518,7161
Miscellaneous metals and industrial minerals	6,840,946	1,422,080	1,916,014
Structural materials industry	4,047,658	2,117,212	1,707,283
Totals, 1961	**$50,887,275**	**$8,907,034**	**$17,787,127**
Totals, 1960	52,694,818	7,834,728	21,496,912
1959	49,961,996	7,677,321	17,371,638
1958	48,933,560	8,080,989	15,053,036
1957	56,409,056	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	19,654,724
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	17,500,663
1949	41,023,786	7,206,637	17,884,408
1948	38,813,506	6,139,470	11,532,121
1947	22,160,338	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	5,788,671	6,138,084
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	6,845,330
1936	17,887,619	2,724,144	4,434,501
1935	16,753,367	2,619,639	4,552,730
Grand totals, 1935–61	$1,017,351,599	$172,701,604	$368,515,320

1 These figures for the petroleum and natural-gas industry are from returns made on Dominion Bureau of Statistics forms by thirty-one operators. The sum of the expenditures reported for salaries and wages, fuel and electricity, and process supplies is $5,110,459. The Canadian Petroleum Association supplied figures indicating expenditures by fifty-two companies in British Columbia in 1961, amounting to $59,400,000, which includes $5,592,000 for salaries and wages; expenditures for fuel and electricity and process supplies are not reported by the Canadian Petroleum Association. The items reported are given in the last paragraph of the Review on page A 13.

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

TABLE XII.—AVERAGE NUMBER EMPLOYED IN THE MINING INDUSTRY,[1] 1901–61

Year	Placer-mining	Lode-mining			In Concentrators	In Smelters	Coal-mining			Structural Materials		Industrial and Miscellaneous	Total[2]
		Under	Above	Total			Under	Above	Total	Quarries and Pits	Plants		
1901	.....	2,736	1,212	3,948	.....	.....	3,041	931	3,974	.....	.....	.....	7,922
1902	.....	2,219	1,126	3,345	.....	.....	3,101	910	4,011	.....	.....	.....	7,356
1903	.....	1,662	1,088	2,750	.....	.....	3,137	1,127	4,264	.....	.....	.....	7,014
1904	.....	2,143	1,163	3,306	.....	.....	3,278	1,175	4,453	.....	.....	.....	7,759
1905	.....	2,470	1,240	3,710	.....	.....	3,127	1,280	4,407	.....	.....	.....	8,117
1906	.....	2,680	1,303	3,983	.....	.....	3,415	1,390	4,805	.....	.....	.....	8,788
1907	.....	2,704	1,239	3,943	.....	.....	2,862	907	3,769	.....	.....	.....	7,712
1908	.....	2,567	1,127	3,694	.....	.....	4,432	1,641	6,073	.....	.....	.....	9,767
1909	.....	2,184	1,070	3,254	.....	.....	4,713	1,705	6,418	.....	.....	.....	9,672
1910	.....	2,472	1,237	3,709	.....	.....	5,903	1,855	7,758	.....	.....	.....	11,467
1911	.....	2,435	1,159	3,594	.....	.....	5,212	1,661	6,873	.....	.....	.....	10,467
1912	.....	2,472	1,364	3,837	.....	.....	5,275	1,855	7,130	.....	.....	.....	10,967
1913	.....	2,773	1,505	4,278	.....	.....	4,950	1,721	6,671	.....	.....	.....	10,949
1914	.....	2,741	1,433	4,174	.....	.....	4,267	1,465	5,732	.....	.....	.....	9,906
1915	.....	2,709	1,435	4,144	.....	.....	3,708	1,283	4,991	.....	.....	.....	9,135
1916	.....	3,357	2,036	5,393	.....	.....	3,694	1,366	5,060	.....	.....	.....	10,453
1917	.....	3,290	2,198	5,488	.....	.....	3,760	1,410	5,170	.....	.....	.....	10,658
1918	.....	2,626	1,764	4,390	.....	.....	3,658	1,769	5,247	.....	.....	.....	9,637
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	3,757	1,565	5,322	493	324	124	14,172
1927	415	2,671	1,916	4,587	854	2,842	3,646	1,579	5,225	647	138	122	14,830
1928	355	2,707	2,469	5,176	911	2,748	3,814	1,520	5,334	412	368	120	15,424
1929	341	2,926	2,052	4,978	966	2,948	3,675	1,353	5,028	492	544	268	15,565
1930	425	2,316	1,260	3,576	832	3,197	3,389	1,256	4,645	843	344	170	14,032
1931	688	1,463	834	2,297	581	3,157	2,957	1,125	4,082	460	526	380	12,171
1932	874	1,355	900	2,255	542	2,036	2,628	980	3,608	536	329	344	10,524
1933	1,134	1,786	1,335	3,121	531	2,436	2,241	853	3,094	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	2,814	931	288	825	14,179
1937	1,371	3,603	1,818	5,421	1,168	3,027	2,286	867	3,153	724	327	938	16,129
1938	1,303	3,849	2,266	6,115	919	3,158	2,088	874	2,962	900	295	369	16,021
1939	1,252	3,905	2,050	5,955	996	3,187	2,167	809	2,976	652	311	561	15,890
1940	1,004	3,923	2,104	6,027	1,048	2,944	2,175	699	2,874	827	334	647	15,705
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	2,981	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	3,399	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	3,923	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	1,861	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
1959	99	1,937	1,761	3,698	618	3,008	765	291	1,056	1,357	484	459	10,779
1960	86	1,782	1,959	3,741	648	3,034	894	288	1,182	1,704	557	589	11,541
1961	**74**	**1,785**	**1,582**	**3,367**	**626**	**3,118**	**705**	**237**	**942**	**1,828**	**508**	**571**	**11,034**

[1] Mining industry includes all branches of the mineral industry except petroleum and natural gas.

[2] 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 XIII.—LODE-METAL MINES—TONNAGE, NUMBER OF MINES, NET AND GROSS VALUE,[4] 1901–61

Year	Tonnage[1]	Number of Shipping Mines	Number of Mines Shipping over 100 Tons	Gross Value as Reported by Shipper[2]	Freight and Treatment[2]	Net Value to Shipper[3]	Gross Value of Lode Metals Produced[4]
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	1,706,679	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	51,508,031
1927	5,416,411	132	52	.....	.....	27,750,364	44,977,082
1928	6,241,672	110	49	.....	.....	29,070,075	48,281,825
1929	6,977,903	106	48	.....	.....	34,713,887	51,720,436
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	53,878,093
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	126	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	18,585,133	100,128,727	121,696,891
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	66,739,892	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	95,644,930	30,273,900	65,370,185	119,409,764
1958	6,402,198	57	28	83,023,111	28,068,396	54,955,069	100,591,049
1959	6,990,985	60	44	92,287,277	27,079,911	65,208,728	100,549,519
1960	8,242,703	67	31	114,852,061	29,505,158	85,346,903	125,674,531
1961	8,392,161	59	39	112,488,918	30,304,050	82,184,868	123,913,897

[1] Includes ores of iron, mercury, nickel, tungsten, and silica (flux).

[2] Data not collected before 1937.

[3] 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."

[4] Gross value calculated by valuing gold, silver, copper, lead, zinc, mercury (1938–44, 1955), and nickel (1936–37, 1958–60) at yearly average prices, and iron (1901–03, 1907, 1918–23, 1928, 1948–60) and tungsten (1939–45, 1947–58) at values given by operators.

TABLE XIV.—LODE-METAL PRODUCTION IN 1961

Property or Operator	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Contents					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
NORTHERN BRITISH COLUMBIA			Tons		Oz.	Oz.	Lb.	Lb.	Lb.	Lb.
Atlin Mining Division										
Nil										
Liard Mining Division										
Nil										
CENTRAL BRITISH COLUMBIA										
Cariboo Mining Division										
Cariboo Gold Quartz and Aurum	Wells	The Cariboo Gold Quartz Min-Co. Ltd., Vancouver	37,944	Bullion	20,243	3,213				
Clinton Mining Division										
Nil										
Omineca Mining Division										
Cronin Babine	Smithers	P. Kindrat, Smithers, lessee from New Cronin Babine Mines Ltd., Vancouver	1,212[1]	Lead concentrates, 80 tons; zinc concentrates, 93 tons	14	11,572		116,673	106,542	1,377
		S. Piskulski, Terrace	2	Crude ore	1	11		291	83	
COAST AND ISLANDS										
Alberni Mining Division										
Musketeer	Tofino	Copper Town Mines, Vancouver	339	Concentrates, 14 tons	139	103	98	1,380		
Nanaimo Mining Division										
Copper Road	Quadra Island	R. I. Bennett, Heriot Bay	87	Crude ore		87	13,433			
Merry Widow and Kingfisher	Benson Lake	Empire Development Co. Ltd., Vancouver	535,833	Iron concentrates, 364,772 tons						

			Tons		Oz.	Oz.	Lb.	Lb.	Lb.	Lb.
Mount Washington	Courtenay	Mt. Washington Copper Co. Ltd., Courtenay	5,305	Crude ore	77	8,050	230,276			
Nimpkish	Beaver Cove	Nimpkish Iron Mines Ltd., Vancouver	666,361	Iron concentrates, 423,826 tons						
Prescott, Paxton, Yellow Kid, Yellow Jacket	Texada Island	Texada Mines Ltd., Vancouver	893,892	Iron concentrates, 475,419 tons; copper concentrates, 7,352 tons	1,192	25,726	1,622,896			
New Westminster Mining Division										
Pride of Emory	Choate	Giant Mascot Mines Ltd., Vancouver	260,583	Nickel concentrates, 21,293 tons			1,734,123			
Valley View and Blue Bell	Agassiz	Steve Romaniuk and Mike Romaniuk, Harrison Hot Springs, lessees from George Dietrich, Agassiz	50	Crude ore		50	1,141			
Skeena Mining Division										
Silbak Premier	Premier	Silbak Premier Mines Ltd., Vancouver	831	Crude ore, 831 tons; tailings, 22 tons	6,471	112,850		55,993	57,828	
Vancouver Mining Division										
Britannia	Britannia Beach	Howe Sound Co. (Britannia Division), Britannia Beach	461,601	Copper concentrates and precipitates, 22,064 tons; zinc concentrates, 5,352 tons; tailings, 7,876 tons	3,211	55,397	13,637,206	118,388	6,452,851	
Cambrian Chieftain	Pender Harbour	Colonial Mines, Vancouver	389	Crude ore	2	1,130	53,764			
Victoria Mining Division										
Nil										
SOUTH CENTRAL BRITISH COLUMBIA										
Greenwood Mining Division										
Bounty Fraction	Beaverdell	Sheritt Lee Mines Ltd., Vancouver	13	Crude ore		1,543		1,404	2,657	
Cariboo-Amelia	Rock Creek	McKinney Gold Mines Ltd., Vancouver	5,086	Siliceous ore	5,432	6,024		11,307	81,297	
Highland-Bell	Beaverdell	Mastodon-Highland Bell Mines Ltd., Vancouver	18,954	Lead concentrates, 1,641 tons; zinc concentrates, 827 tons; jig concentrates, 250 tons	590	892,153		754,375	971,485	7,877
Mother Lode	Greenwood	Consolidated Woodgreen Mines Ltd., Vancouver	201,123	Copper concentrates, 4,163 tons	3,811	15,049	1,890,000			
Phoenix	Greenwood	Phoenix Copper Co. Ltd., Grand Forks	420,372	Copper concentrates, 9,909 tons	7,371	48,009	4,995,139			
Providence	Greenwood	S. J. Kleman, Greenwood	5	Crude ore	3	729		294	284	

TABLE XIV.—LODE-METAL PRODUCTION IN 1961—*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
SOUTH CENTRAL BRITISH COLUMBIA—*Continued*			Tons		Oz.	Oz.	Lb.	Lb.	Lb.	Lb.
Kamloops Mining Division										
Nil										
Lillooet Mining Division										
Bralorne	Bridge River	Bralorne Pioneer Mines Ltd., Vancouver	154,040	Bullion; gold concentrates, 2,336 tons	105,510	22,578				
Pioneer	Bridge River	Bralorne Pioneer Mines Ltd., Vancouver		Mill residue, 61 tons	716					
Nicola Mining Division										
Craigmont	Merritt	Craigmont Mines Ltd., Vancouver	484,073	Copper concentrates, 11,672 tons (13,184 tons stockpiled)		7,797	6,645,487			
Stump Lake	Nicola	D. C. McWilliams and H. Riesterer, Vancouver	37	Clean-up	16	670		3,890	3,591	
Osoyoos Mining Division										
Fairview	Oliver	The Consolidated Mining & Smelting Co. of Canada, Ltd., Trail	15,038	Silica flux						
French	Hedley	French Mines Ltd., Vancouver	5,366	Bullion; slag, 6 tons	1,927	313				
Nickel Plate	Hedley	Hedley Syndicate, c/o Wright Bros. & Associates Ltd., Vancouver		Mill clean-up; bullion; gold concentrates, 23 tons	785	57				
Norex	Oliver	Norex Mines Ltd., Oliver	590	Crude ore	620	886		1,292	1,180	
Similkameen Mining Division										
Nil										
Vernon Mining Division										
Nil										

			Tons		Oz.	Oz.	Lb.	Lb.	Lb.	Lb.
Fort Steele Mining Division										
Sullivan	Kimberley	The Consolidated Mining & Smelting Co. of Canada, Ltd., Trail	2,461,695	Lead concentrates, 206,966 tons; zinc concentrates, 199,177 tons; tin concentrates, 607 tons	367	5,305,644	824,200	295,968,000	204,226,000	.....
Golden Mining Division										
Lucky Jim	Law Creek	R. J. Coffey, San Antonio, Texas	5	Crude ore	.....	223	.....	5,130	160	.....
Mineral King	Toby Creek	Sheep Creek Mines Ltd., Nelson	211,010	Lead concentrates, 7,227 tons; zinc concentrates, 19,247 tons	.....	289,236	47,753	9,926,976	22,246,496	53,160
Nelson Mining Division										
Gold Belt	Salmo	A. Endersby, Fruitvale	117	Crude ore	43	32	.....	346	470	.....
H.B.	Salmo	The Consolidated Mining & Smelting Co. of Canada, Ltd., Trail	472,731	Lead concentrates, 4,857 tons; zinc concentrates, 39,494 tons	.....	72,651	.....	7,306,800	44,177,400	372,075
Jersey	Salmo	Canadian Exploration Ltd., Vancouver	374,032	Lead concentrates, 13,325 tons; zinc concentrates, 26,755 tons	.....	61,672	.....	21,187,155	31,852,526	247,238
Kenville (White Lease)	Nelson	D. H. Norcross, Nelson	74	Crude ore	64	28	.....	148	148	.....
Kootenay Belle	Salmo	K-Belle Enterprise Co., Linden, Alta.	7,703	Crude ore	317	808	.....	15,669	16,204	.....
Lucky Strike	Nelson	L. C. de Kock, Nelson	1	Crude ore	2	23	.....	49	8	.....
New Arlington	Erie	G. D. Fox, Trail	161	Crude ore	114	320	.....	6,110	6,194	.....
Queen	Salmo	A. Endersby, Fruitvale	50	Crude ore	19	16	.....	157	257	.....
Queen Victoria	Beasley	Swift Copper Mines Ltd., Vancouver	60	Crude ore	.....	80	5,215	.....	.....	.....
Reeves MacDonald	Remac	Reeves MacDonald Mines Ltd., Vancouver	420,508	Lead concentrates, 12,043 tons; zinc concentrates, 30,380 tons	.....	53,875	.....	13,584,522	33,490,749	192,340
Waterbed	Ymir	M. M. Arishenkoff, Shoreacres	9	Crude ore	6	79	.....	1,497	1,077	.....
Revelstoke Mining Division										
Nil	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Slocan Mining Division										
Bess	Silverton	M. Tarnowski, Silverton	4	Crude ore	.....	629	.....	5,656	98	.....
Black Fox	Kaslo	New Ainsworth Base Metals Ltd., Vancouver	78[1]	Lead concentrates, 2 tons; zinc concentrates, 14 tons	.....	288	.....	2,623	11,281	90
Bluebell	Riondel	The Consolidated Mining & Smelting Co. of Canada, Ltd., Trail	252,821	Lead concentrates, 15,057 tons; zinc concentrates, 28,687 tons	.....	318,159	320,600	22,428,228	29,146,290	140,270
Caledonia	New Denver	Northwest Mining Partnership, Kellogg, Idaho	1,079	Lead concentrates, 112 tons; zinc concentrates, 172 tons	15	11,259	.....	153,779	209,384	777
Galena Farm	Silverton	F. Mills, Silverton	394[2]	Lead concentrates, 12 tons; zinc concentrates, 79 tons	1	1,911	.....	16,186	94,341	685

[1] Estimated. [2] Includes 350 tons stockpiled since 1959.

TABLE XIV.—LODE-METAL PRODUCTION IN 1961—*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
SOUTH CENTRAL BRITISH COLUMBIA—*Continued*										
Slocan Mining Division—Continued			Tons		Oz.	Oz.	Lb.	Lb.	Lb.	Lb.
Giant Western	Slocan	Giant Western Mines Ltd., Slocan	7	Crude ore	.....	32	.....	13	13	.....
Hewitt	New Denver	F. Pho and J. Heichert, New Denver	282	Lead concentrates, 24 tons; zinc concentrates, 40 tons	1	9,123	.....	27,853	48,861	341
Highlander	Ainsworth	T. G. Laughton, lessee from Yale Lead & Zinc Mines Ltd., Toronto	510	Lead concentrates, 47 tons; zinc concentrates, 16 tons	.....	1,021	.....	66,031	20,091	91
Lone Bachelor	Sandon	E. Perepolkin, Hills	182	Lead concentrates, 34 tons; zinc concentrates, 34 tons; crude ore, 36 tons	2	8,213	.....	96,370	50,301	260
Mammoth	Silverton	Loma Minerals Ltd., Calgary, lessee from Western Exploration Co. Ltd., Silverton	3,401	Lead concentrates, 208 tons; zinc concentrates, 310 tons	6	23,167	.....	291,768	355,685	2,506
Ottawa	Slocan	Ottawa Silver Mines Ltd., Spokane, Wash.	90	Crude ore	1	10,905	.....	698	333	.....
Richmond-Eureka	Sandon	Perepolkin, Fried, and De Rosa, c/o E. Perepolkin, Hills	575	Lead concentrates, 42 tons; zinc concentrates, 78 tons	3	6,645	.....	49,613	90,088	557
Slocan Prince	Slocan	J. K. Pearson, Calgary	2	Crude ore	.....	22	.....	20	70	.....
Utica	Kaslo	Standard Beryllium Corporation, Kaslo	900	Lead concentrates, 14 tons; zinc concentrates, 33 tons	2	6,008	.....	10,919	35,059	218
Victor	Sandon	Violamac Mines Ltd., New Denver	3,174	Lead concentrates, 413 tons; zinc concentrates, 422 tons	101	60,219	.....	613,485	504,252	3,361
Yale	Ainsworth	Yale Lead & Zinc Mines Ltd., Ainsworth	809[1]	Mill clean-up; lead concentrates, 83 tons; zinc concentrates, 64 tons	1	1,865	.....	115,042	73,835	359
Trail Creek Mining Division										
Velvet	Rossland	Mid-West Copper & Uranium Mines Ltd., Vancouver; Velvet Leasers, Rossland, lessees	8,153	Concentrates, 457 tons	518	1,431	239,313	.....	.....	.....

TABLE XV.—LODE-METAL MINES EMPLOYING AN AVERAGE OF TEN OR MORE PERSONS DURING 1961[1]

Name of Mine or Operator	Days Operating		Tons		Average Number Employed	
	Mine	Mill	Mined	Milled	Mine	Mill
Shipping Mines						
Bluebell (Cons. M. & S. Co. of Canada Ltd.)	254	354	252,821	252,821	272	19
Bralorne Pioneer Mines Ltd. (Bralorne Division)	365	365	154,040	154,040	336	20
Cariboo Gold Quartz Mining Co. Ltd.	280	365	37,944	37,944	97	9
Craigmont Mines Ltd.	365	107	484,073	484,073	218	11
Empire Development Co. Ltd. and Mannix Co. Ltd. (Iron Production Division)	170	140	535,833	535,833	80	8
Giant Mascot Mines Ltd.	365	365	260,583	260,583	143	22
H.B. (Cons. M. & S. Co. of Canada Ltd.)	365	365	472,731	472,731	105	12
Howe Sound Co. (Britannia Division)	280	279	461,601	461,601	310	27
Jersey (Canadian Exploration Ltd.)	365	365	374,032	374,032	152	11
Mastodon-Highland Bell Mines Ltd.	242	272	18,954	18,954	33	6
McKinney Gold Mines Ltd.	266	.....	5,086	.....	19	.....
Mineral King (Sheep Creek Mines Ltd.)	306	359	211,010	211,010	85	11
Mother Lode (Consolidated Woodgreen Mines Ltd.)	357	357	201,123	201,123	16	19
Nimpkish Iron Mines Ltd.	306	306	666,361	666,361	39	35
Phoenix Copper Co. Ltd.	260	365	420,372	420,372	48	19
Reeves MacDonald Mines Ltd.	252	349	420,508	420,508	87	22
Sullivan (Cons. M. & S. Co. of Canada Ltd.)	247	247	2,461,695	2,461,695	888	320
Texada Mines Ltd.	300	355	894,621	893,892	159	38
Velvet Leasers	252	276	8,153	8,153	19	1
Victor (Violamac Mines Ltd.)	254	.....	3,174	.....	13	.....
Non-shipping Mines						
Canam Copper Co. Ltd.	.....	.....	.....	.....	22	.....
Coast Copper (Cons. M. & S. Co. of Canada Ltd.)	.....	.....	.....	.....	21	.....
Newmont Mining Corporation of Canada Ltd.	.....	.....	.....	.....	26	.....

[1] 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.

Departmental Work

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.

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 101, 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 53.

Central Records Offices (Victoria and Vancouver)

Transcripts of all recordings 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 surveyed 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 101, 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	T. R. McKinnon	T. R. McKinnon.
Cariboo	Quesnel	F. E. P. Hughes	F. E. P. Hughes.
Clinton	Clinton	R. H. Archibald	R. H. Archibald.
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. Dalgleish	D. Dalgleish.
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	W. E. McLean	W. E. McLean.
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, 1961

Mining Division	Free Miners' Certificates		Lode-mining						Placer-mining					Revenue		
	Individual	Company	Mineral Claims Recorded	Certificates of Work	Cash in Lieu	Certificates of Improvements	Bills of Sale, etc.	Mineral Leases	Placer Claims Recorded	Placer Leases Granted	Certificates of Work	Cash in Lieu	Bills of Sale, etc.	Free Miners' Certificates	Mining Receipts	Total
Alberni	132	1	1,202	959	$4,400.00	.....	94	7	2	.....	4	.....	.....	$756.00	$11,675.25	$12,431.25
Atlin	127	2	616	181	900.00	.....	38	1	8	23	82	$3,850.00	13	835.00	11,812.00	12,647.00
Cariboo	1,068	12	2,171	319	1,300.00	.....	60	6	11	147	358	1,250.00	152	6,816.00	31,463.00	38,279.00
Clinton	38	.....	214	210	1,200.00	.....	4	.....	.....	16	6	.....	7	190.00	2,935.00	3,125.00
Fort Steele	205	2	305	525	2,300.00	.....	32	8	.....	22	35	500.00	11	1,225.00	7,885.37	9,110.37
Golden	111	2	131	279	1,600.00	.....	24	5	.....	4	4	250.00	26	740.00	3,716.00	4,456.00
Greenwood	114	2	379	591	2,100.00	.....	50	14	.....	5	7	.....	.....	776.00	7,621.25	8,397.25
Kamloops	401	5	3,690	2,032	2,900.00	.....	244	4	.....	8	4	.....	5	2,455.00	19,323.50	21,778.50
Liard	269	1	1,549	1,269	4,700.00	.....	76	.....	.....	12	21	1,250.00	.....	1,550.00	15,317.25	16,867.25
Lillooet	223	3	483	725	400.00	.....	67	3	.....	26	34	250.00	25	1,415.00	7,743.75	9,158.75
Nanaimo	130	1	310	992	6,840.00	.....	61	1	1	1	8	.....	15	700.00	10,870.50	11,570.50
Nelson	341	9	360	478	1,200.00	.....	54	6	.....	5	11	.....	.....	2,406.00	4,972.00	7,378.00
New Westminster	417	6	459	518	6,600.00	.....	159	3	4	21	12	250.00	.....	2,516.00	11,602.50	14,118.50
Nicola	103	.....	3,042	2,655	900.00	.....	176	.....	.....	.....	.....	.....	.....	515.00	18,511.00	19,026.00
Omineca	303	1	1,018	461	2,000.00	.....	58	.....	3	41	57	250.00	84	1,607.00	13,637.36	15,244.36
Osoyoos	191	5	282	191	600.00	.....	25	14	.....	.....	.....	.....	.....	1,255.00	2,968.20	4,223.20
Revelstoke	88	3	128	173	2,700.00	.....	16	1	.....	12	28	1,000.00	25	740.00	7,511.50	8,251.50
Similkameen	132	1	532	518	1,700.00	.....	33	5	6	25	59	.....	18	711.00	6,813.75	7,524.75
Skeena	209	3	734	2,279	3,900.00	.....	164	2	.....	2	3	.....	.....	1,295.00	12,047.25	13,342.25
Slocan	139	3	316	795	1,200.00	.....	53	16	.....	.....	.....	.....	.....	995.00	5,850.75	6,845.75
Trail Creek	82	1	71	31	.....	.....	3	7	.....	.....	.....	500.00	.....	510.00	1,215.50	1,725.50
Vancouver	1,852	206	592	230	4,500.00	.....	31	3	.....	.....	1	.....	.....	27,801.00	9,604.25	37,405.25
Vernon	189	.....	209	84	200.00	.....	10	4	1	7	8	.....	1	945.00	1,985.25	2,930.25
Victoria	316	39	271	170	500.00	.....	12	.....	.....	2	25	.....	.....	5,727.00	4,045.70	9,772.70
Totals for Province, 1961	7,180	308	19,064	16,665	$54,640.00	.....	1,544	110	36	379	767	$9,350.00	382	$64,481.00	$231,127.88	$295,608.88
Totals for Province, 1960	6,181	273	11,748	13,157	$47,540.00	39	1,364	100	30	248	811	$6,250.00	189	$55,410.50	$182,196.20	$237,606.70

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 and Petroleum Resources, 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 and Petroleum Resources, 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.

Coal Revenue, 1961

Licences—		
Fees	$575.00	
Rental	9,417.95	
		$9,992.95
Leases—		
Fees	$100.00	
Rental	286.95	
Cash in lieu	100.00	
		486.95
		$10,479.90

At the end of 1961, 33,925,009 acres, or approximately 53,000 square miles, of Crown petroleum and natural-gas rights, issued pursuant to the *Petroleum and Natural Gas Act,* were held in good standing. This acreage, held by operators ranging from small independent companies to major international ones, was comprised of:—

	Acres
424 permits	25,898,913
5 natural-gas licences	159,027
32 drilling reservations	546,699
2,006 leases	7,320,370
	33,925,009

Petroleum and Natural-gas Revenue, 1961

Rentals and fees—		
Permits	$2,856,551	
Drilling reservations	59,989	
Natural-gas licences	12,638	
Petroleum, natural-gas, and petroleum and natural-gas leases	3,616,123	
Total rentals		$6,545,301

Sale of Crown reserves—		
Permits	$1,493,679	
Drilling reservations	3,082,821	
Leases	3,065,391	
Total Crown reserve sales		$7,641,891
Royalties—		
Gas	$1,152,396	
Oil	207,392	
Processed products	119,405	
Total royalties		1,479,193
Miscellaneous fees		23,817
Total petroleum and natural-gas revenues		$15,690,202

ANALYTICAL AND ASSAY BRANCH

By S. W. Metcalfe, Chief Analyst and Assayer

Rock Samples

During 1961 the chemical laboratory in Victoria issued reports on 1,927 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 any 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	Spectrographic Analyses	Assays
Prospectors (not grantees)	1,308	1,285	3,066
Prospectors (grantees)	311	307	748
Departmental engineers	308	164	742
Totals	1,927	1,756	4,556

Samples submitted to the laboratory for identification are examined by the Mineralogical Branch of the Department. During the year such samples numbered 140.

Petroleum and Natural-gas Samples

Reports were issued on forty-six samples. Of this number, nineteen were samples of formation waters from wells being drilled for gas and oil in the Province; five were supposedly waters from the same source but actually were drilling-muds, and therefore no analyses were performed on them; eight were samples tested for oil seeps; seven were condensates; one was a tank-bottom sample in which the

* 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.

amount of water was determined; one was a sample of petroleum; four were samples submitted by engineers of the Petroleum and Natural Gas Branch; and one was a natural gas. Nineteen spectrographic analyses were reported on samples in this category.

Coal Samples

Reports were issued on forty-six samples of coal submitted by the Purchasing Commission for proximate analysis and calorific value.

Miscellaneous Samples

Reports were issued on eighty-seven samples of a miscellaneous nature.

For the Minister of Mines and Petroleum Resources, four samples of rock were spectrographed and assayed for both precious and base metals. One sample from the Deputy Minister of the same Department was treated similarly.

For the Petroleum and Natural Gas Branch of the Department, spectrographic analyses were performed on two glass vials made by different manufacturers. Three types of commercial gels used in oil drilling operations were examined to determine the nature of the thickening agent used, and in addition two samples from stockpiles of gel in the Peace River area were investigated for the same reason. A sample of bran from the same area was examined for chemicals which may be poisonous to cattle.

For the British Columbia Research Council, spectrograpic analyses were performed on five samples.

For the Purchasing Commission, five samples of anti-freeze were compared, and in addition two cements.

For the Department of Agriculture, five samples were spectrographed and four of these were analysed for their content of the oxides of calcium and magnesium. Nineteen quantitative spectrographic determinations were performed on each of twenty-six samples of soil and plant ash. A white powder on holly leaves was identified as calcium carbonate. A sample of gypsum also was examined.

For the Department of Lands and Forests (Forest Research), ten samples of soil were spectrographed and ninety chemical analyses were performed on the same samples.

For the Department of Highways (Materials Testing Branch), spectrographic analyses were performed on two copper tubes. One water sample was examined for its lead content and another for the presence of sulphur compounds. A white layer on a piece of concrete was examined and found to be calcium carbonate. The oil content of two samples of gasoline was determined, and a spectrographic analysis was performed on a sample of soil.

For the British Columbia Hydro, the nature of a sediment plugging plastic tubes at a dam-site was determined by spectrographic means.

For the Dominion Astrophysical Observatory, a metal plating was spectrographed.

For the Victoria City Water Works, two water samples were analysed for comparison purposes.

For citizens of the Province, the following materials were examined: A sample of pozzolan was spectrographed for the presence of rare metals; a fatty material found on a beach was examined; the chloride content of two waters was determined, and an analysis was performed on another water sample; a spectrographic analysis was performed on a rock sample, which was also assayed for precious and base metals. A sample of clay was submitted by a citizen who had obtained it in Denmark and wished to determine whether such a clay occurred in the Province; the X-ray diffraction pattern indicated that the clay mineral was illite.

X-ray Powder Diffraction Analyses

One hundred and five analyses of this type were performed for identification purposes.

Examination for Assayers

A Provincial Government examination for certificates of competency and licence to practise assaying in British Columbia was held at Victoria and Trail in December. Two candidates passed the examination, four were granted supplementals, and one 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
J. E. Merrett, Inspector and Resident Engineer	Vancouver
A. R. C. James, Inspector and Resident Engineer	Vancouver
J. D. McDonald, Inspector and Resident Engineer	Nelson
D. R. Morgan, Inspector and Resident Engineer	Fernie
David Smith, Inspector and Resident Engineer	Kamloops
W. C. Robinson, 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	Fernie Station
W. H. Childress	Nelson Station
T. H. Robertson	Kamloops Station
W. High (part time)	Cumberland Station

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.

Board of Examiners for Shiftbosses (Metalliferous Mines)

Robert B. Bonar, Chairman	Victoria
A. R. C. James, Member	Vancouver
J. E. Merrett, Member	Vancouver

The Board conducts written examinations in various mining centres for applicants for underground shiftboss certificates. The Board is also empowered to grant provisional certificates without examination under such conditions as the Board considers necessary.

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 Petroleum Resources 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 31, 1961, 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, W. G. Jeffery, W. C. Jones, A. F. Shepherd, and J. E. Hughes. In November Dr. Jeffery went on leave for a year in order to go to Ghana on a Canadian external aid mission.

Technical editing of the Annual Report of the Minister of Mines and Petroleum Resources 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, 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

A. Sutherland Brown with one assistant nearly completed the areal mapping of the Queen Charlotte Islands. A large part of Graham Island underlain by Tertiary volcanic rocks was mapped rapidly, using a helicopter after a previous photogeological study. The northern part of Moresby and eastern part of Graham Islands were mapped, using a land rover and inflatable speedboat.

J. M. Carr visited and examined many copper deposits in southern, central, and northwestern British Columbia, including the Princeton, Merritt, Poison Mountain, Taseko Lake, Granduc-Unuk, and Stikine River areas.

G. E. P. Eastwood with one assistant made petrographic and structural studies at several magnetite occurrences on Vancouver Island. The studies were concentrated mainly at Kennedy Lake and at the Merry Widow property (Mannix mine). At the latter the study was made in collaboration with W. G. Jeffery, who was carrying on 1-mile mapping in the area.

J. T. Fyles with three assistants continued mapping in the North Kootenay Lake-Duncan Lake area. The work included mapping at 500 feet to the inch and 1,000 feet to the inch in two localities near Ainsworth, and mapping at 2,000 feet to the inch in the vicinity of Duncan Lake. The work also included a reconnaissance west of Meadow Mountain.

Visits were paid to six mines or prospects in the Kootenay Lake-Salmo area and at the Wigwam property south of Revelstoke and a property on Ruddoch Creek, 60 miles northwest of Revelstoke.

S. S. Holland made studies regarding alluvial jade on the Fraser and Yalakom Rivers in the Lillooet area and on Wheaton Creek at the head of Turnagain River, visited placer ground in the Bridge River, Horsefly, Likely-Keithley Creek, and Manson Creek areas, and placer operations in the Wells-Barkerville area, and examined operations at Squaw Creek and McConnell Creek. He visited lode-metal properties in the Telkwa, Hazelton, Wedeene River, and Stewart areas, and an appraisal was made of the possibility of structural mapping on Bear Ridge in the Stewart area.

J. E. Hughes began a study of Devonian strata in the northern Rocky Mountains and in cores from drill-holes. The surface study was in the Stone Range and along Racing River, Alaska Highway, mileage 392 to 428. Cores examined were from holes in the Fort Nelson-Clarke Lake area.

W. G. Jeffery with four assistants continued mapping in an area in northern Vancouver Island, including Alice and Kathleen Lakes, and extending to Neroutsos Arm and Rupert Inlet. A preliminary geological map of the area has been prepared for publication at 1 mile to 1 inch.

W. C. Jones made studies regarding damsites involving geological mapping and evaluation of test-drill results, test-pit data, and seismic data for damsites on McGregor River, Clearwater River (Clearwater-Azure site), and Cariboo River (Cariboo Falls site), and mapped geologically the Hobson Lake-Summit Lake and Grand Canyon (Fraser River) sites.

J. W. McCammon examined industrial mineral and structural material occurrences or operations in many parts of the Province, completed a study of limestone deposits in the Vernon area, and examined molybdenite deposits at Towloon Lake, Sands Creek, and Takomkane (Boss) Mountain, and lead-zinc showings at Agate Bay on Adams Lake and at East Barriere Lake.

N. D. McKechnie examined and mapped lode-metal mines and prospects at Jordan River, Shawnigan Lake, Tranquil Inlet, and Mount Washington, on Vancouver Island, at Hedley, Olalla, Greenwood, Martel, and selected properties in the Merritt area.

The Department participated with the Geological Survey of Canada in an aeromagnetic survey that covered much of the area of moderate relief in central British Columbia. The area is of irregular outline and lies between 52 degrees 15 minutes and 56 degrees 00 minutes north latitude and mainly between 121 degrees 30 minutes and 125 degrees 00 minutes west longitude.

PETROLEUM AND NATURAL GAS BRANCH

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*. 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.

Investigations are made of complaints of property damage resulting from geophysical and test-hole drilling programmes. The " Geophysical Regulations " are administered by the Chief Petroleum and Natural Gas Commissioner.

Staff

J. D. Lineham, Chief of the Branch	Victoria
R. R. McLeod, Senior Petroleum Engineer and member 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
E. V. Rehwald, Petroleum Engineer	Victoria
T. A. Mackenzie, Statistician	Victoria
S. S. Cosburn, Geologist	Victoria
D. L. Griffin, Geologist	Victoria
D. M. Callan, Assistant Geologist	Victoria
P. K. Huus, Engineering Assistant	Victoria
M. B. Hamersley, Engineering Assistant	Victoria
G. E. Blue, District Engineer	Charlie Lake
H. B. Fulton, Field Geologist	Charlie Lake
D. L. Johnson, Field Engineer	Charlie Lake
H. A. Sharp, Engineering Assistant	Charlie Lake
M. A. Churchill, Engineering Assistant	Charlie Lake

The total Branch staff numbered twenty-five at the end of the year, including the above-named personnel, of whom seventeen were employed at headquarters and eight in the field office at Charlie Lake.

Staff Changes

There were no resignations from the professional or technical staff.

D. L. Johnson, a 1961 graduate in chemical engineering from the University of Alberta, joined the field staff as a petroleum engineer on July 3rd.

D. M. Callan returned from educational leave of absence on July 7th. Mr. Callan, who was awarded a diploma in petroleum reservoir engineering by the Imperial College of Science and Technology, London, England, resumed work with the Geology Section.

G. V. Rehwald was transferred on August 8th from the field office to Victoria to assume duties in the Reserves and Evaluation Section.

An additional man was employed on a permanent basis for sample-washing and core-handling duties at the field office.

Administration

The Petroleum and Natural Gas Branch is subdivided for administrative purposes into five sections, each of which is headed by a supervisor who is responsible for a specific phase of Branch work. There is a field office, including sample-washing and core-storage facilities, at Charlie Lake. The sections and respective section heads are as follows: Reservoir Engineering, R. R. McLeod; Reserves and Evaluation, A. N. Lucie-Smith; Development Engineering, W. L. Ingram; Geology, S. S. Cosburn; Statistics and Well Records, T. A. Mackenzie; and Field Office, G. E. Blue.

Board of Arbitration

Chairman: A. W. Hobbs, solicitor, Department of the Attorney-General. Members: R. R. McLeod, engineer, Department of Mines and Petroleum Resources; S. G. Preston, agrologist, Department of Agriculture.

The Board of Arbitration, responsible to the Minister of Mines and Petroleum Resources, held one hearing in 1961 at Fort St. John.

Eleven applications concerning right of entry came before the Board. Of these, one was settled by an award order of the Board, five were pending at the end of the year, three were concluded by agreement between parties subsequent to Board order, and two were settled by agreement between parties while a hearing was pending.

Conservation Committee

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

An application by Sun Oil Company to the Minister of Mines and Petroleum Resources for a Pool MPR (Maximum Permissible Rate) for its Blueberry Mississippian Oil Field was referred to the Conservation Committee. The application was made to enable the company to meet a temporary refinery commitment in excess of the sum of the individual MPR's of the four potential producers in the field at that time.

The decision reached by the Committee was that a Pool MPR was only justified after a field had been fully delimited by drilling and was about to enter into a unitized operation for the purpose of pressure maintenance or secondary recovery and therefore, in this particular instance, there was no justification for changing for the temporary benefit of one operator the existing policy of individual well MPR's.

The Minister did not approve the application of Sun Oil Company but agreed to consider overproduction on a temporary basis, provided the equity of other operators in the Province was not thereby affected.

GRUB-STAKING PROSPECTORS

Under authority of the *Prospectors' Grub-stake Act* the Department has provided grub-stakes each year since 1943 to a limited number of applicants able to qualify. The normal maximum grub-stake is $300, with an additional amount up to $200 for travelling expenses. A limited number of experienced prospectors of proven ability may be granted top priority grub-stakes of as much as $400, plus a maximum of $300 for travelling expenses, where prospecting is to be done in approved areas where air transportation is necessary.

To qualify at the present time, the Department requires that the applicant shall be a bona fide prospector holding a free miner's certificate. He must be a British subject, between the ages of 18 and 70 years, and must have resided in British Columbia during the year preceding the date of application. He must be able to identify common rocks and minerals. The grub-staked prospector is provided with maps, a current list of prices of metals and ores, and the latest Departmental information circulars on prospecting and related matters.

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. If he prospects a lesser time, the grant will be reduced proportionately. The grant is usually made in two payments: the first at the beginning of the season and the second after he has completed sixty days in the field and has submitted a diary. 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. A field engineer is employed who contacts as many prospectors as he is able during the field season and gives advice and direction to those who need it. Grantees are permitted a reasonable number of free assays.

The grub-stakes are granted with the object of maintaining the search for mineral occurrences with mine-making possibilities. Any discoveries made, staked, and recorded are exclusively the grantee's own property. The grants are not intended for the purpose of exploring and developing occurrences already found, but one year is allowed to prospect ground that has been staked by a grantee while on a grub-stake. The grantee must not accept pay from other sources for services rendered during the period credited to the grub-stake.

It is recognized that competent and experienced prospectors are capable of looking after themselves in wilderness areas. Nevertheless, experience has shown that less hazard may result when prospecting is done by two or three men in a team. A man working alone may be injured or be taken seriously ill and, if alone, he may have to endure extreme hardship and pain.

Grub-stake grantees are not working for the Government but are self-employed and are not covered under the provisions of the *Workmen's Compensation Act.* Therefore, it is recommended that prospectors make their own arrangements concerning insurance coverage to provide for medical and other expenditures that may be incurred in the event of an accident.

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
1959	21,575	38	195	202
1960	28,115	50	358	241
1961	29,175	47	309	325

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

One hundred and seventeen applications were received in 1961, and forty-eight grub-stakes were authorized. One of the grantees was unable to go out, and he returned his initial payment. Six other grantees were unable to complete the terms and conditions of the grant and received only partial payment. Fourteen prospectors were given grants for the first time, and three proved unsatisfactory. A few grantees used aircraft for transportation to their prospecting areas. Two grantees were affected by injury or sudden illness, but each man was accompanied by a partner who took care of him.

D. H. Rae again gave able service in interviewing applicants and supervising grantees in the field. He was able to contact thirty grantees in the field, of whom twenty-one were contacted at the actual scene of prospecting. The following notes have been largely compiled from Mr. Rae's observations while in the field and from information provided in the diaries of the grantees.

Alberni Mining Division.—Three miles from the head of Kennedy Lake a granodiorite contact was prospected; on Canoe Creek small limonite deposits were investigated. Near Taylor Arm on Sproat Lake, narrow quartz veins containing minor amounts of chalcopyrite were prospected.

The southwest portion of Tzartus Island (Barkley Sound) was prospected, and small outcrops of magnetite were investigated. Also in this area, along a granite-limestone contact, massive pyrrhotite containing minor amounts of chalcopyrite was given some attention. Some work was also done near Marble Cove, and in the Sarita River valley where considerable pyrrhotite was found. Sampling showed nothing of economic importance. Similar showings were found near Moyeha Bay. At Effingham Inlet a granite-limestone contact was investigated. A similar contact zone was found near Kildonan Lake and at Hecate Mountain.

Atlin Mining Division. — In the Sittakanay River valley considerable trail-cutting was done, several small gossans were prospected, and minor amounts of pyrrhotite and chalcopyrite were observed. Some work was done on King Solomon River, in the King Solomon Mountain area, at Mount Manville, and in the nearby Taku River valley. One mineralized zone showed low values in manganese. A shear zone 350 feet long and up to 20 feet wide returned disappointing assays. In the Kwashona Creek valley, field work indicated some small gossans, sparse chalcopyrite mineralization, and some pyrrhotite lenses, but nothing economic was reported.

Considerable work was done from a base camp off Windy Arm, covering part of Nakina River valley and the area adjacent to Yeth Creek and Katina Creek. In the vicinity of Chikoida Mountain, narrow stringers of asbestos fibre in serpentine were investigated, but the occurrence proved to extend over an area too small to be of importance. Some work was also done in the Tatshenshini River valley and on some of its tributaries. Nothing of commercial importance was reported, although numerous narrow quartz stringers containing minor amounts of galena and chalcopyrite were found. One wide, sparsely mineralized zone and a 10-foot-wide quartz vein were located high above the valley.

Cariboo Mining Division.—Some inconclusive work was done in the Goat River-Killam Creek-Isaac Lake areas. One narrow vein containing minor amounts of galena, sphalerite, and chalcopyrite was reported.

Near Davie Lake in the Chuchinka Creek valley, many rock samples were taken and brought in for identification, and some pyritic zones were sampled and assayed. Near Likely a pyritized zone (shear) was uncovered, but the assays of samples taken were too low to be of interest. Near Giscome a large area underlain by serpentine was prospected, but no asbestos was found. Some work was done in the Sinkut River area and in the valley of the Chilako River.

Clinton Mining Division.—Some work was done in the Churn Creek valley and in the Deep Creek and Potato Range areas. No useful information was reported.

A wide silicified zone containing appreciable amounts of arsenopyrite was prospected close to Kleena Kleene. Gold values in samples taken were sufficiently high to be of interest.

Fort Steele Mining Division.—Mount Anstey and parts of St. Mary River valley were given some attention; on Redding Creek an old tunnel on a mineralized zone showing disseminated molybdenite was cleaned out and sampled, but values were low.

Golden Mining Division.—In the Copper Creek valley an extensive outcrop of schist and faulted and broken argillite showed several small and unimportant gossans and numerous narrow quartz veins—sampling indicated values were too low. Brewer Creek valley, close to Dutch Creek, and the headwaters of Ben Abel Creek were also prospected.

Greenwood Mining Division.—Some work was done near Arlington Lakes, and pyritic quartz veins in pyroxenite were sampled. Some work was also done near Norwegian Creek and in the Granby River valley.

Kamloops Mining Division.—Placer possibilities at several locations on the North Thompson River south of Clearwater were investigated.

A great deal of work was done in the Criss Creek area, east of Deadman River. A series of siliceous dykes was found to contain low values in silver, molybdenum, and tungsten.

South of Walhachin, on the Thompson River, what appears to be a large body of magnetite containing low values in copper was prospected and staked.

Areas close to Notch Hill, near Walker Lake, and west of Stump Lake were investigated. Nothing of importance was reported. Some work was done near Skwaam Bay on Adams Lake. Work was also done near the old Vidette mine. Eight miles southwest of Kamloops a great deal of work was done on and adjoining the old Last Chance property. Results were encouraging and more work is to be done in this area.

The Forge Creek-Guichon Creek sector received some attention, with fairly encouraging results. A discovery was made on the north side of Kamloops Lake near Copper Creek, but details are not yet available.

Liard Mining Division.—In the vicinity of Ealue Lake considerable work was done on a wide mineralized zone in altered limestone showing some disseminated chalcopyrite and much pyrite. Sample assays were encouraging.

The area of the Racing River, and many of its tributaries, about 40 miles south of the Alaska Highway, received some attention. Many narrow quartz veins containing scattered amounts of chalcopyrite were observed.

Lillooet Mining Division.—Field work was carried on in several sectors, including La Rochelle Creek, Holbrook Creek, Marshall Creek, the headwaters of Blue Creek, and near the headwaters of Yalakom River. Molybdenite occurrences at the headwaters of Texas Creek were prospected. The Anderson Lake area near Gold Creek was given some attention, also parts of the Shulaps Range where serpentine containing small stringers of short fibre asbestos was reported.

Nanaimo Mining Division.—On Quadra Island, 6 miles north of Heriot Bay, serpentine containing very short fibre asbestos was investigated; minor amounts of malachite and chalcopyrite were also found in these outcrops. Some work was done near Hyacinthe Bay.

Nelson Mining Division.—A full season's work was carried out from a base camp on Summit Creek, between Bayonne and Blazed Creeks. The valleys of several creeks in this area were prospected.

New Westminster Mining Division.—Some work was done on the west side of Pitt Lake, close to the south end, where quartz veins mineralized with pyrite and minor amounts of chalcopyrite were uncovered.

Extensive serpentine outcrops were investigated in the Sowaqua Creek valley. Near Coquihalla Lakes a 20-foot-wide zone well mineralized with pyrite, galena, sphalerite, and rhodonite was thoroughly prospected. This zone has possibilities.

Nicola Mining Division.—In the Pete Hope-Plateau Lakes area, dyke rocks containing disseminated sulphides were investigated, as well as a narrow quartz vein well mineralized with chalcopyrite and galena.

Omineca Mining Division.—Field work was continued in the Manson Creek area. On Jackfish Creek a narrow silver-bearing vein was discovered, and on Boulder Creek scheelite float was found.

Considerable work was done on the north side of the Nation River commencing about 5 miles east of the Fort St. James–Manson Creek road. Narrow quartz stringers and sheets of coarse to fine mica were found in pinkish granite. Some work was also done near Twenty Mile Creek and up the east fork of Twin Creek; nothing of interest was reported.

About 10 miles west of Uslika Lake an interesting discovery was reported, and a 15-foot-wide zone mineralized with hematite and chalcopyrite was traced for about 2,000 feet. Assays of samples taken were very encouraging.

An extensive area adjacent to the Rottacker Creek valley was prospected, and several quartz veins from 3 to 8 feet wide were found in granodiorite. These were well mineralized with hematite and contained minor amounts of chalcopyrite.

Some prospecting was done at the northern end of the Nechako Valley, where quartz veins in limestone were investigated, and a large deposit of pure limestone was sampled.

A large area was prospected near the west end of Eutsuk Lake. On Chikamin Mountain, at 5,000 feet elevation on the south slope, a zone 30 feet wide showing minor chalcopyrite mineralization was uncovered. Two other vein outcrops, one 2 feet wide and one 9 feet wide, were found; both were sparsely mineralized but showed a wide range of sulphide minerals. At the southwest corner of St. Thomas Bay a large exposure of highly oxidized andesite was reported; argillaceous rocks here were heavily pyritized and in places showed minor amounts of galena.

In the Toodoggone Lake area, float well mineralized with chalcopyrite was found.

Osoyoos Mining Division.—Some prospecting was done around Mount Kobau, and a new vein was uncovered east of the old Smuggler mine southwest of Oliver. On the west side of Okanagan Lake close to Summerland considerable work was done on a wide pyritized shear zone. Several high assays in gold were reported but were not verified. Some work was done near Richter Pass and in the Apex Mountain area.

Revelstoke Mining Division.—Prospecting was done near Albert Canyon, lower Goldstream River, Frisby Creek, Ferguson, and the west side of Trout Lake. Nothing conclusive was reported.

A short time was spent prospecting in the vicinity of Moloch Creek, on the Tangier River where a granite-porphyry contact was investigated, and on Fang Creek where argillaceous schist containing large amounts of coarse cube pyrite was sampled.

Similkameen Mining Division.—In the Trout Creek area a zone 60 feet wide, mineralized with hematite and magnetite, was prospected. No further details are available. Several mineralized quartz veins were found on Siwash Creek, and a considerable amount of work was done on them. Near Teepee Lakes a mineralized shear zone was found.

Prospecting was done at a number of other places—in the Missezula Lake-Aspen Grove area, Lawless Creek, Mount Rabbitt, Mount Kennedy, Newton Creek, and along the Otter Lake fault.

Skeena Mining Division.—South of Stuart Anchorage on the east side of Pitt Island considerable work was done in endeavouring to prove further continuity of a small deposit of magnetite. At Baker Inlet on Grenville Channel, claims were staked and considerable work done on a deposit of sericite mica. An extensive

limestone deposit on the shoreline in Kumealon Inlet was prospected and sampled. At Refuge Bay on Porcher Island a wide pyritized quartz vein was prospected and sampled.

Some work was done in the Marmot River valley near Stewart, where narrow quartz veins showing considerable galena and pyrite were prospected.

A short time was spent at the headwaters of Kwinitsa Creek close to a granite-gneiss contact, where pyritized quartz veins proved to be too low grade to be of interest; narrow pegmatite dykes were also investigated in this area. Up the Khyex River, barren-looking quartz veins were found close to a granite-sedimentary contact. Bornite float found near Rainbow Lake stimulated interest in the immediate area, but nothing was found in place.

At Horetzky Creek (Kemano area) altered limestone along a granodiorite contact showed minor amounts of pyrite, pyrrhotite, and traces of chalcopyrite. Some work was done near Suquash Landing, at Alarm Cove on Denny Island, and on Dowager Island on Mathieson Channel; nothing of importance was reported from any of this work. Near Lagoon Bay (on Fisher Channel) a small deposit of volcanic glass was discovered.

A base camp was established close to the highway bridge on the Bella Coola–Anahim road at Kahylskt Creek (Burnt Bridge River) crossing. Much copper-bearing float was found on the steep mountainside and was finally traced to its source. The showing appears small, but the area warrants further intensive prospecting. From here work was also done up Nusatsum River and up the Talchako River.

Some prospecting was done on the Queen Charlotte Islands—near Ironside Mountain, west of Steel Creek, up the Coates River, Yakoun Lake, Shields Bay, and Harrison Island.

Vancouver Mining Division.—Near Cascade Point on Knight Inlet, quartz veins found in granite showed minor amounts of molybdenite.

Halfway up Jervis Inlet, on the west side, iron-stained rocks containing narrow quartz stringers were prospected without success. Near McCannel Lake an unsuccessful attempt was made to trace the source of molybdenite float.

Vernon Mining Division.—Prospecting was done east of Enderby and near Bessette Creek. Northing of importance was reported.

MINING ROADS AND TRAILS

Provision is made in the *Department of Mines and Petroleum Resources Act* whereby the Minister may, with the approval of the Lieutenant-Governor in Council, authorize the expenditure of public funds for the construction or repair of roads and trails into mining areas. Assistance on a half-cost basis may also be provided on roads and trails to individual properties.

Requests for road and trail assistance must be made to the Department before the commencement of work. The type of access upon which assistance may be given depends upon the value of the property, the stage of development, and the amount of work to be done. A trail is sometimes sufficient for initial exploration, and a tractor-road may be adequate for preliminary work. Subsequent development might warrant assistance on the construction of a truck-road. A carefully drawn sketch or plan of the location of the road is required to be submitted and, where warranted by the amount of assistance requested, a report on the property by a professional geological or mining engineer may be required. An engineer from the Department may be required to report on the property before a grant is made and to inspect the road after the work has been done.

Total mileages and disbursements under " Grants in Aid of Mining Roads and Trails " during the fiscal year ended March 31, 1961, were as follows:—

Mining-roads	Miles	Cost
Construction	64.6	$80,600.00
Maintenance	233.0	25,615.15
Photo interpretation and terrain analysis	80.0	2,000.00
Bridge-site survey	------	11,834.45
Total	------	$120,049.60

In addition to the above, work was continued on the Cassiar–Stewart road. This road is being constructed under the " Roads to Resources " agreement between Canada and British Columbia. The construction is being supervised by the Department of Highways on behalf of the Department of Mines and Petroleum Resources. At the north end of the road, construction of the 30.5-mile section from Sawmill Point on Dease Lake to Tanzilla River was completed. The Tanzilla River to Stikine River section, 26.6 miles long, was 98 per cent completed at the end of 1961, and the Stikine River to Eddontenajon Lake section of 24.7 miles was 75 per cent completed. In December a contract was awarded on the 40.1-mile section from Eddontenajon Lake to Burrage River. At the south end of the road the Bear Pass section was 85 per cent completed, and the Strohn Creek to the lower Bell-Irving section of 31.87 miles was 13 per cent completed.

The Fort Nelson River bridge, about 1 mile upstream from the confluence of the Muskwa River, which was damaged when the ice went out on April 25th, was repaired and again put into service. The approach access, 4 miles long, from the Alaska Highway at Mile 298.7 to the west end of the bridge was reconstructed to an all-weather standard.

MUSEUMS

The Department has a large exhibit of mineral and 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 Petroleum Resources 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 and Petroleum Resources, bulletins, and other publications of the Department, with prices charged for them, are listed in the Department of Mines and Petroleum Resources 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 and Petroleum Resources 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, Forests, and Water Resources.

JOINT OFFICES OF THE BRITISH COLUMBIA DEPARTMENT OF MINES AND PETROLEUM RESOURCES 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 available to the public in the one suite of offices at 739 West Hastings Street, Vancouver 1.

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

The four divisions comprising the Surveys and Mapping Branch—namely, the Legal Surveys, Topographic, Geographic, and Air Divisions—continued to supply basic data relating to Provincial surveys and cartography during 1961.

Field-notes were received by Legal Surveys Division for the survey of 631 lots, thirty of which were completed under authority of the *Mineral Act* and the remainder under the *Land Act*. The Departmental reference-map series showing the current status of Crown land alienation was also maintained, and four sheets covering the lower Fraser Valley west of Hope are being redrawn at a larger scale.

Subdivision surveys undertaken by Legal Surveys Division in 1961 included twenty-five lots at Bear Lake north of Prince George and forty-two lots in the Willow River area. As the result of burgeoning mining activity in the vicinity of Merritt, thirty-two new subdivision lots were surveyed near that village. In the Chief Lake and Chilako River areas, sixty-six old section and district lot corners were restored, while reposting on a smaller scale also took place at Nanoose, Clinton, Fort Fraser, South Hazelton, and Kaleden. Five widely separated highway surveys covered a total of 69.19 miles.

Accomplishments of the Topographic Division during 1961 included establishing field control for 29½ standard National Topographic map-sheets in the vicinity of Banks Island, Bella Bella, and Stuart Lake. Large-scale surveys were also completed in the McGregor River, Prince George, Quesnel, Hobson Lake, Clearwater River, Fraser River, Kamloops, Nanaimo, Port Hardy, and Nitinat areas.

Order in Council No. 2033/61, dated August 14th, set out new regulations governing well-site surveys under the *Petroleum and Natural Gas Act*. The responsibility for checking and examining well-site plans to see that they conform to the accuracy stated in the regulations was delegated to the Geographic Division.

Geographic Division also introduced a new system of road classification for use on Provincial maps at scales of 1 inch to 2 miles and 1:250,000. The system should be particularly helpful to persons who frequently travel off the network of main roads. New Provincial maps reproduced and printed during 1961 included three editions of regional map 1D (Northeastern British Columbia); two sheets at 1:250,000 scale, Nootka Sound (92E) and Taseko Lakes (92O); and two maps at 1-inch-to-2-miles scale, namely, Kaslo (82 F/NE) and Nakusp (82 K/SW). In addition, Merritt (92 I/SE) was completely revised. Ottawa mapping agencies supplied stocks of fourteen National Topographic map-sheets at 1:50,000 scale covering widely separated parts of the Province.

During 1961 the prices of reprints and enlargements of air photographs were increased. The rates now charged by the Air Division are similar to those of the National Air Photo Library at Ottawa. Aerial photographic operations accomplished 13,817 square miles and 2,807 lineal miles of new coverage, while 184,286 photo reprints were sold or loaned to various public and private agencies.

Indexes showing available published maps, reference maps, manuscripts, and aerial photographs may be found in the envelope attached to the back cover of the 1961 Lands Service Annual Report. Further details concerning Provincial maps, aerial photographs, and surveys are available from the Director, Surveys and Mapping Branch, Department of Lands, Forests, and Water Resources, Victoria, B.C.

Department of Mines and Technical Surveys

The Canadian Government Department of Mines and Technical Surveys performs many functions related to mining and the mineral industry in general. 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 mineral 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 at 739 West Hastings Street, Vancouver 1.

Field Work by Geological Survey of Canada in British Columbia, 1961

R. B. Campbell commenced field work in the Quesnel Lake East Half (93 A, E. ½) map-area.

D. B. Craig completed very detailed mapping of a well-exposed area in 82 L/16 map-area near Revelstoke.

D. C. Findlay completed detailed mapping and sampling of the Tulameen ultrabasic complex.

P. E. Fox commenced and completed a study of the Adamant batholith west of the upper Columbia River as part of the " Granites in Canada " investigation.

W. L. Fry made collections of plant remains from Mio-Pliocene rocks in the Kamloops-Quesnel area.

R. J. Fulton continued the study and mapping of the surficial deposits of the Nicola (92 I, E. ½) map-area.

H. Gabrielse completed the mapping of the Kechika (94 L) and Rabbit River (94 M) map-areas and also brought up to standard the work done by Operation Stikine in the Cry Lake (104 I) and Dease Lake East Half (104 J, E. ½) map-areas.

E. C. Halstead commenced the study and mapping of the surficial geology of the Nanaimo-Duncan-Gulf Islands map-areas (92 F/1, E. ½, G/4, C/16, B/13, B/14) together with A. Treichel, who studied the geohydrology of the same area.

R. L. Herr, B. S. Norford, and D. L. Scott carried out stratigraphic studies in southern British Columbia and Alberta.

D. W. Hyndman commenced detailed mapping in an area near Nakusp (82 K/4).

E. J. W. Irish continued field work in the Halfway River (94 B) map-area.

S. Leaming began a study of the sand and gravel deposits of the Strait of Georgia area.

G. B. Leech examined known mineral deposits in Fernie West Half (82 G, W. ½) map-area.

H. W. Little commenced 1-mile mapping of the Rossland-Trail (82 F/4) map-area.

E. W. Mountjoy completed the mapping of Mount Robson (83 E, S.E. ¼) map-area, part of which lies in British Columbia.

J. E. Muller completed the mapping of the Pine Pass (93 O) map-area and mapped one-half of the McLeod Lake (93 J) map-area in co-operation with H. W. Tipper.

K. H. Owens, F. Essex, J. Houlihan, J. Lee, and J. W. Kempt conducted an aeromagnetic survey of part of central British Columbia roughly between 121 degrees 30 minutes and 125 degrees west longitude and 52 degrees 15 minutes and 56 degrees north latitude. The cost of this survey was shared by the Department of Mines and Technical Surveys and the Department of Mines and Petroleum Resources.

B. R. Pelletier continued his stratigraphic studies of the Triassic formations in the Foothills and Rocky Mountains of northeastern British Columbia.

R. A. Price commenced a field and laboratory investigation of selected folds in the Foothills and Front Ranges, mainly in 82 G, East Half map-area.

J. E. Reesor continued his studies of granite and metamorphic complexes in the Valhalla Mountains.

D. F. Sangster began a study of contact metamorphic magnetite deposits on Vancouver and Texada Islands.

J. G. Souther completed the mapping of Chutine (104 F) and Tulsequah (104 K) map-areas and brought up to standard past work in Iskut (104 B), Telegraph Creek (104 G), and west half of Dease Lake (104 J) map-areas.

D. F. Stott completed the stratigraphic study of the Upper Cretaceous Smoky group, Lower Cretaceous Fort St. John group, upper part of the Lower Cretaceous Bullhead group, and equivalent strata in the foothills between Smoky River and Peace River.

G. C. Taylor continued the mapping of MacDonald Creek (94 K/10) map-area.

H. W. Tipper, with J. E. Muller, completed the mapping of McLeod Lake (93 J) map-area.

J. O. Wheeler completed the mapping of Rogers Pass (82 N, W. ½) map-area.

Publications of the Geological Survey

A total of nineteen publications of the Geological Survey of Canada relating to British Columbia was received by the British Columbia Department of Mines and Petroleum Resources in 1961.

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 seventeen publications of the Mines Branch pertaining to British Columbia was received in 1961 by the British Columbia Department of Mines and Petroleum Resources. They included tabular pamphlets dealing with coal mines, gold mines, stone quarries, petroleum refineries, and milling plants in Canada.

MINERAL RESOURCES DIVISION

The Mineral Resources Division, which was a division of the Mines Branch, has now been transferred from the Mines Branch to the office of the Deputy Minister of Mines and Technical Surveys.

The Mineral Resources Division publishes studies on mineral resources, mineral economics, mineral legislation, mineral taxation, mining technology, and other miscellaneous mineral-industry subjects. A total of seven publications published by this Division was received by the library.