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The Royal Bank of Canada

APR 8 1930

Gold mining  
and mining  
CanadaPublished by Authority of Hon. James Malcolm, M.P.,  
Minister of Trade and Commerce

Annual Bulletin

79-29-3-30

675 copies

DOMINION BUREAU OF STATISTICS - CANADA

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*Summary review* 9. THE GOLD MINING INDUSTRY IN CANADA, 1928.

- Including:
- (a) The Alluvial Gold Mining Industry.
  - (b) The Auriferous Quartz Mining Industry.
  - (c) The Copper-Gold-Silver Mining Industry.

Definition of the Industry:- Gold mining in Canada falls naturally into two main industries: (1) the taking of gold from the gravels of the rivers and streams, or what is known as "alluvial gold mining" and (2) the recovery of lode gold which is called auriferous quartz mining. But gold is often associated with other metals, more particularly with copper, and for that reason the review of Canada's copper-gold-silver mining industry is included here to complete this bulletin on Canada's gold mining industry.

Production of gold during 1928, from all sources in Canada, amounted to 1,890,552 fine ounces valued at \$39,082,005 as against an output of 1,852,785 fine ounces valued at \$38,300,464 in 1927. This was the largest output ever recorded.

The total 1928 output was recovered from the following sources: fine gold contained in crude bullion made by gold mines, 1,607,337 fine ounces; alluvial gold, 40,855 fine ounces; fine gold in blister copper and base bullion made at Canadian smelters from Canadian ores, 90,929 fine ounces; the estimated recovery of gold in ores and concentrates exported to foreign smelters, 148,207 fine ounces; and 3,264 fine ounces from miscellaneous sources.

Six provinces and the Yukon produced gold as follows: Nova Scotia, 1,290 fine ounces; Quebec, 60,006 fine ounces; Ontario, 1,578,434 fine ounces; Manitoba, 19,813 fine ounces; Alberta, 68 fine ounces; British Columbia, 196,617 fine ounces; Yukon, 34,364 fine ounces. Gold from Nova Scotia was produced in the form of crude bullion and was shipped to the Royal Mint at Ottawa for refining. The greater part of the Quebec output was contained in the blister copper made at the Noranda smelter; the remainder was made up from the gold contained in concentrates shipped from the Tetreault silver-lead-zinc property and from high-grade ore taken from a property in the process of development.

In Ontario the Porcupine area contributed 979,416 fine ounces; Kirkland Lake produced 591,797 fine ounces; Sudbury district copper-nickel pres yielded 3,850 fine ounces and 3,371 fine ounces were recovered from miscellaneous sources.

Manitoba's production consisted of 19,813 fine ounces which was contained in

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crude bullion made.

Receipts at the Royal Mint from Alberta amounted to 68 fine ounces.

The output from British Columbia consisted of 6,739 fine ounces derived from alluvial deposits, 16,157 fine ounces from lode gold mines, and produced in the form of crude bullion; gold in blister copper, 31,057 fine ounces; and gold in base bullion and in ores exported, 142,664 fine ounces.

In the Yukon Territory 34,116 fine ounces were recovered from alluvial deposits and the remainder, 248 ounces, was contained in ores exported.

Gold held second place in point of value among Canada's mineral products in 1928 being surpassed only by coal; the value of gold represented 14.2 per cent of the total mineral production of the Dominion in 1928. As a world producer of gold Canada ranked third; Africa was first with a production in 1928 of 11,300,979 fine ounces and United States, second, with an output of 2,194,295 fine ounces.

#### The Alluvial Gold Mining Industry

Alluvial gold mining is carried on in the Yukon District and in the province of British Columbia. In the Yukon only 3 companies were actively engaged though many individual placer miners were working on their claims during the year. Two companies used gold dredges and one carried on operations by hydraulic mining.

The principal placer camps of British Columbia are in the Atlin and Cariboo districts, though some gold is recovered from the Tulameen and Similkameen rivers in the southern part of the province. The Kafue Copper Development Company's dredge was closed down shortly after commencing operations in Cunningham Pass Creek as the gold values were found to be practically all on or in lime bed rock and were consequently not recoverable by dredging.

Large operators in the Atlin, Quesnel and Similkameen mining divisions confined their attention to development work and it was expected that there would be an increase in placer gold production in 1929.

In 1928 there were 82 companies or individual operators in the Yukon Territory and British Columbia engaged in winning alluvial gold.. Salaried employees and wage-earners numbered 342 people who received \$538,270 for their services. Crude gold recovered amounted to 51,069 ounces valued at \$849,916. Of this amount 42,645 crude ounces were obtained from the rivers and creeks of the Yukon and 8,424 crude ounces from the streams of British Columbia. In addition 49 ounces of platinum valued at \$2,819 were taken from the gravels of the Tulameen river in British Columbia. The quantity of material handled amounted to 6,285,849 cubic yards of which 5,097,182 cubic yards were moved by operators in the Yukon and 1,188,667 cubic



yards in British Columbia.

### The Auriferous Quartz Mining Industry

In 1928 returns were received from 100 Canadian auriferous quartz mines and of these 34 produced bullion or shipped ores while 66 carried on development work only. In Nova Scotia 3 mines produced gold; in Quebec some gold was recovered from some high grade ore raised during development work. In Ontario the principal producers were the Hollinger, Dome, McIntyre and Vipond in the Porcupine area, and the Lake Shore, Teck-Hughes, Wright-Hargreaves, Sylvanite and Kirkland lake in the Kirkland lake camp. Intensive development work was done during the year at the Howey mine in Red lake.

During the latter part of 1928 a new field was discovered in Crow River section, Patricia district. This area was prospected by diamond drilling and showed very promising assays in gold.

Only one mine, the Central Manitoba, produced gold in the province of Manitoba during 1928. Development work was carried on at several properties in the same district.

In British Columbia the principal gold mines were the Pioneer, Nickel Plate and Premier; at the Premier, the value of the gold is about one-half the total for the mine, the remainder being silver. There is also some lead in the Premier ores. Ores from the Nickel Plate mine are cyanided and concentrated. Crude gold bullion is produced and the concentrates, containing arsenic and gold, are shipped to the Tacoma smelter. Gold is recovered from the ores of the Pioneer mine by cyanidation. Several gold properties in the development stage shipped gold ore to the Trail smelter.

Ore taken from the gold mines of Canada in 1928 totalled 4,601,628 tons of which 4,483,053 tons were milled. Tailings retreated amounted to 43,536 tons; gold bullion recovered by amalgamation at 6 mines amounted to 145,095 crude ounces and by cyanidation 1,905,860 crude ounces. Shipments of bullion having a total value of \$33,367,353 amounted to 2,049,648 crude ounces containing 1,607,337 fine ounces of gold and 245,241 fine ounces of silver. Ores, concentrates and high-grade slags shipped to smelters totalled 132,949 tons having a net value (less freight and treatment charges) of \$3,287,977. These shipments contained 134,983 fine ounces of gold, 2,502,722 fine ounces of silver, 72,776 pounds of copper and 1,318,000 pounds of arsenic.

Capital employed in this industry in Canada in 1928 amounted to \$147,693,710 as against \$118,381,468 in the previous year. Payments of \$14,615,990 in salaries



and wages were made to 9,066 employees. Of these, 608 were on salary, 2,597 were wage-earners working on the surface, 5,153 worked underground, and 708 were employed in the concentrators. The province of Nova Scotia employed an average of 96 people; Quebec, 193; Ontario, 7,934; Manitoba, 154; and British Columbia, 689.

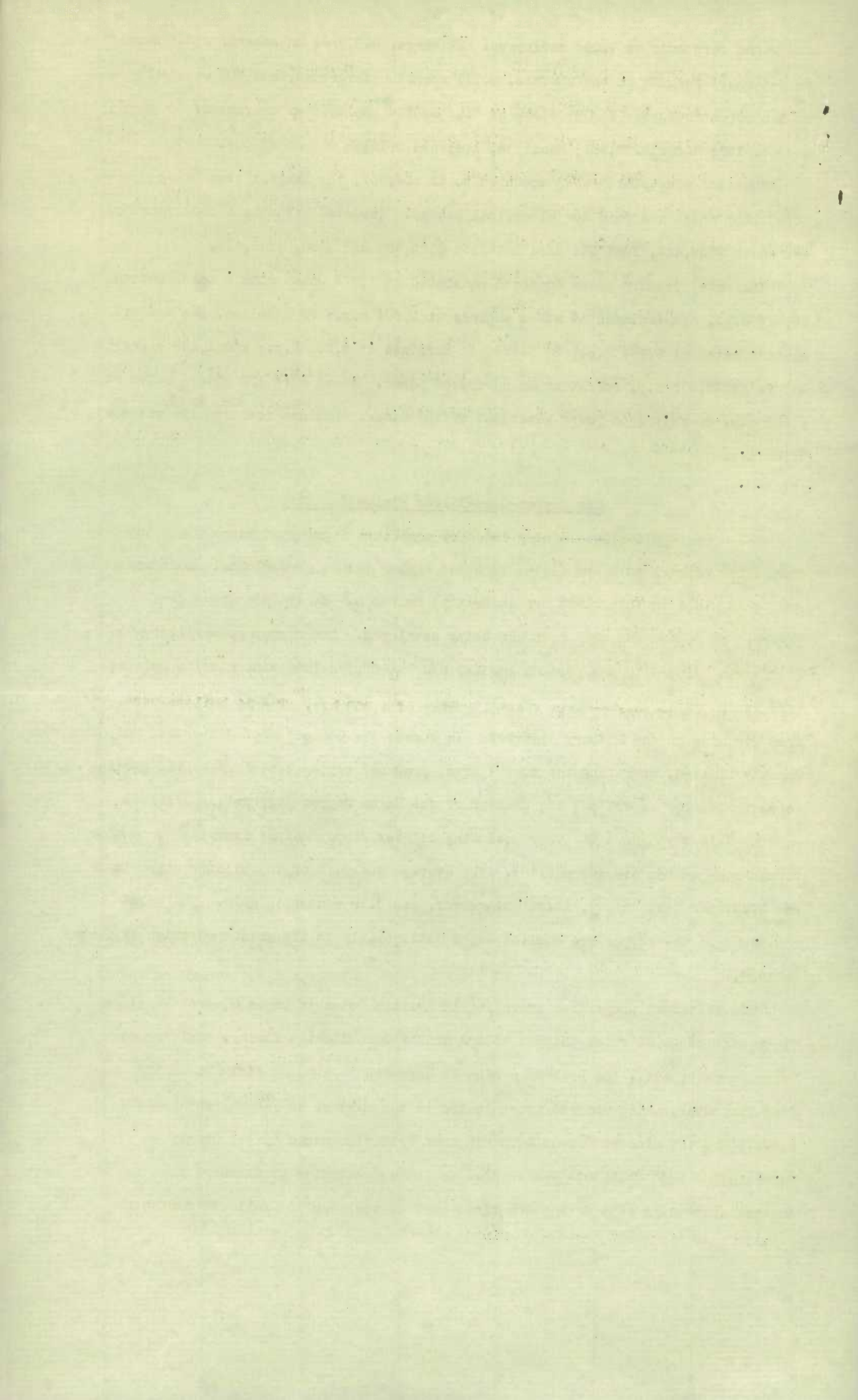
Fuel and electricity used amounted to \$2,554,657, the largest item being \$2,002,062 which was paid for electrical energy. Imported bituminous coal consumed was worth \$259,426, fuel oil used totalled \$122,963 and wood, \$116,472.

The total primary power employed consisted of 1,375 units with a total rating of 82,014 h.p., and included 34 steam engines at 1,804 h.p.; 53 gasoline, gas and oil engines rated at 6,434 h.p.; 23 hydraulic turbines at 8,201 h.p.; and 1,265 electric motors at 65,575 h.p. operating on purchased power. There were 155 motors rated at 6,262 h.p. operating on power generated by the mines. Boilers totalled 104 rated at 9,142 h.p.

#### The Copper-Gold-Silver Mining Industry

The copper-gold-silver mining industry comprises a group of mines producing ores containing copper, gold and silver in which copper values predominate. Most of the producing mines in this class are in British Columbia. Manitoba's known ore reserves of copper and zinc ores are being developed. One copper-gold-silver mine in Ontario shipped to the Noranda smelter and one copper-lead-zinc mine in Ontario made experimental shipments of copper concentrate, lead concentrate and zinc concentrate from its mine in the Sudbury district. In Quebec the Consolidated Copper and Sulphur Company Limited, operating the Eustis mine, produced copper concentrates and pyrites concentrates for export and the smelter of the Horne Copper Corporation operated continuously throughout the year producing blister copper mainly from the Horne mine though some custom ore was smelted. The average analysis of the blister copper made was 99.27 per cent copper, 11.20 oz. silver, and 3.18 ounces in gold. The gold contained in the copper ore smelted added considerably to the gold production of Quebec in 1928.

The principal properties operating in British Columbia in 1928 were the Hidden Creek mine at Anyox which shipped to the Granby Consolidated Mining, Smelting and Power Company, Ltd., the Britannia mine on Howe Sound, a short distance up the coast from Vancouver, which shipped concentrates to the smelter at Tacoma, Washington, U.S.A.; and the mine at Copper Mountain near Princeton owned by the Granby Consolidated from which ore was shipped to the concentrator at Allenby; the concentrates being sent during the first part of the year to Trail and during the



latter part of the year to Tacoma.

Extensive development work was done on promising properties in different sections of the province during the year.

Production of copper by provinces in 1928 was as follows: Quebec, 33,697,949 pounds; Ontario, 66,607,510 pounds; British Columbia, 102,283,210 pounds; Yukon (copper contained in silver-lead ores exported from 1925 to 1928 inclusive) 107,377 pounds.

Because of interplant relations, companies which mine and smelt their own ore sometimes have difficulty in making a separation of the capital employed at the mine and smelter, and find it necessary to report under one or the other heading only.

With these limitations the capital employed in the copper-gold-silver mining industry in Canada in 1928 amounted to \$50,004,340. Salaries and wages paid amounted to \$6,764,309 and employees numbered 4,777 persons. Purchased fuel used and electricity cost \$731,836, the principal item being \$490,541 for electricity. Primary power equipment included 387 units rated at 32,360 h.p. comprising 336 motors operating on purchased power, 22 hydraulic turbines or water wheels, 21 gasoline and oil engines and 3 steam engines. Motors operated by power generated at the mines numbered 98 with a total rating of 4,868 h.p. The 34 boilers were rated at 1,853 h.p.

During the year 4,262,822 tons of ore were raised, 3,773,156 tons were milled and 227,382 tons of copper concentrates and 63,983 tons of pyrites concentrates, were produced. Shipments to Canadian smelters consisted of 480,768 tons of copper ore and 104,181 tons of copper concentrates; to United States smelters, 3,127 tons of ore, 125,457 tons of concentrates and 65,479 tons of iron pyrites. These shipments comprising 779,012 tons had a value of \$15,281,519 and contained 84,811 fine ounces of gold, 809,542 ounces of silver, 136,931,615 pounds of copper; 33,615 tons of sulphur, and small amounts of cobalt, arsenic and zinc.



SUMMARY STATISTICS OF ALLUVIAL GOLD MINING IN CANADA, 1927 and 1928.

Item	Y U K O N		BRITISH COLUMBIA		C A N A D A	
	1927	1928	1927	1928	1927	1928
Number of firms and individual operators <sup>x</sup>	56	39	38	43	94	82
Time in operation - months.....	6-8	6-8	6-8	6-8	6-8	6-8
Capital employed.....\$	8,524,664	8,579,930	1,129,059	1,804,645	9,653,723	10,384,575
Number of employees...	154	142	167	200	321	342
Salaries and wages paid.....\$	310,979	370,058	161,617	168,212	472,596	538,270
Fuel and electricity used.....\$	22,018	49,644	8,816	7,534	30,834	57,178
Electricity generated:						
(a) for own use.						
k.w.h.	2,014,730	3,080,890	...	...	2,014,730	3,080,890
(b) for sale...k.w.h.	3,814,720	6,744,140	...	...	3,814,720	6,744,140
Value of electricity sold.....\$	58,294	67,741	...	...	58,294	67,741
Crude gold recovered - crude ounces..	38,073	42,645	9,191	8,424	47,264	51,069
Value of gold and silver.....\$	640,141	709,727	152,932	140,189	793,073	849,916
Platinum recovered - crude ounces...	...	...	21	49	21	49
Value of platinum recovered.....\$	...	...	960	2,819	960	2,819
Quantity of material handled..cu.yds.....	2,421,489	5,097,182	2,470,552	1,188,667	4,892,041	6,285,849
Length of ditches - miles.....	67	90	37	81	104	171
Total value of alluvial production\$	640,141	709,727	153,892	143,008	794,033	852,735

<sup>x</sup> In addition to the number shown in the table there were many individual operators from whom no returns were obtainable.



## PRINCIPAL STATISTICS OF THE AURIFEROUS QUARTZ MINING INDUSTRY IN CANADA, 1924 to 1928.

Year	No. of active opera- tors	No. of opera- ting plants or mines	Capital employed	No. of employ- ees	Salaries and wages	Cost of fuel and elec- tricity	Net value of bullion, ore, concentrates, or residues shipped from mines
			\$		\$	\$	\$
1924 ...	70	70	83,982,765	6,738	10,500,140	1,559,406	31,298,107
1925 ...	52	52	84,364,062	7,052	11,931,948	1,836,050	35,035,361
1926 ...	60	60	103,945,022	7,663	12,340,623	2,083,811	35,171,561
1927 ...	72	76	118,381,468	8,022	12,935,719	2,222,085	37,452,995
1928 ...	98	100	147,693,710	9,066	14,615,990	2,554,657	36,655,330

## ORES MINED AND MILLED, CRUDE BULLION RECOVERED AND CRUDE BULLION AND CONCENTRATES SHIPPED, 1927 and 1928.

1927	Nova Scotia(x)	Ontario	British Columbia	CANADA
Number of producing mines.....	8	19	10	37
Ore mined.....tons	6,191	4,291,041	307,958	4,605,190
Ore milled.....tons	12,161	4,291,041	211,187	4,514,369
Tailings retreated.....tons	10,000	5	43,150	53,135
Bullion recovered by amalgamation - crude ounces.....	2,395	146,881	8,884	158,160
Ores cyanided.....tons	5,771	4,261,448	43,150	4,310,369
Bullion recovered by cyanidation - crude ounces.....	310	2,021,985	14,381	2,036,676
Bullion shipped.....crude ounces.....	2,705	2,167,293	23,571	2,193,569
Content of bullion shipped - Gold.....fine ounces.....	2,383	1,619,147	16,619	1,638,149
Silver.....fine ounces.....	107	266,946	2,452	269,535
Value.....\$	49,330	33,621,783	326,314	33,997,427
Net value of ores, slags and residues sold..\$	20,700	94,852	3,340,016	3,455,568
Total Value of All Shipments.....\$	70,030	33,716,635	3,666,330	37,452,995

(x) Includes the operations of one mine in Manitoba.

1928	Nova Scotia, Quebec Manitoba	Ontario	British Columbia	CANADA
Number of producing mines.....	5	20	9	34
Ore mined.....tons..	55,079	4,212,789	333,760	4,601,328
Ore milled.....tons..	55,124	4,218,680	209,249	4,483,053
Tailings retreated.....tons..	...	...	43,536	43,536
Concentrates produced.....tons..	...	...	18,930	18,930
Bullion recovered by amalgamation - crude ounces.....	1,586	143,509	...	145,095
Bullion recovered by cyanidation - crude ounces.....	55,734	1,835,325	26,601	1,905,860
Bullion shipped.....crude ounces.....	55,830	1,967,217	26,601	2,049,648
Content of bullion shipped - Gold.....fine ounces.....	21,566	1,569,614	16,157	1,607,337
Silver.....fine ounces.....	1,881	241,824	1,536	245,241
Value.....\$	443,463	32,586,436	334,643	33,334,542
Exchange premium.....\$	...	2,811	...	2,811
Net value of ores, slags and residues sold..\$	...	44,139	3,243,858	3,287,977
Total Value of All Shipments.....\$	443,463	32,633,386	3,578,481	36,635,330



## PRINCIPAL STATISTICS OF THE COPPER-GOLD-SILVER MINING INDUSTRY IN CANADA, 1924-1928.

Year	No. of active opera- tors	No. of opera- ting plants or mines	Capital employed	No. of employ- ees	Salaries and wages	Cost of fuel and elec- tricity	Net value of ores, con- centrates, shipped by mines
			\$		\$	\$	\$
1924 ...	15	15	19,099,845	2,118	3,292,228	366,153	5,226,859
1925 ...	40	41	23,200,580	2,374	3,555,844	413,767	7,758,990
1926 ...	76	84	27,936,685	3,403	4,546,493	541,914	9,973,049
1927 ...	118	125	24,232,169	4,083	5,260,095	596,137	9,822,881
1928 ...	164	174	50,004,340	4,777	6,764,309	731,836	15,281,519

Note: The large increase in number of mines in 1927 without the corresponding increase in capital employed is due to the increase in development operations carried on in the province of Quebec.

## SHIPMENTS FROM COPPER-GOLD-SILVER MINES OF CANADA, 1927 and 1928.

Destination	Quantity tons	Net Value \$	Total metal content as determined by Settlement Assay				
			Gold	Silver	Copper	Sulphur	Zinc
			fine oz.	fine oz.	pounds	tons	Pounds
<u>1927</u>							
12 mines shipped to Canadian smelters -							
Ores.....	337,170	1,681,808	10,504	189,326	14,002,517	...	...
Copper concentrates.	83,422	3,219,267	5,220	225,449	34,235,296	...	...
Pyrite concentrates.	16,900	57,470	...	...	...	8,262	...
7 mines shipped to foreign smelters -							
Ores.....	59	1,482	31	1,103	9,017	...	...
Copper concentrates.	126,006	4,728,012	11,189	240,120	47,534,345	...	...
Pyrite concentrates.	33,500	134,842	...	...	...	16,651	...
TOTAL.....	597,057	9,822,881	26,944	655,998	95,781,175	24,913	...
<u>1928</u>							
12 mines shipped to Canadian smelters -							
Ores.....	480,768	4,341,241	61,412	272,195	44,211,488	...	674,000
Concentrates.....	104,181	4,397,183	5,717	271,123	40,784,503	...	...
8 mines shipped to foreign smelters -							
Ores (x).....	3,127	47,564	248	1,243	294,654	834	10,540
Concentrates.....	190,936 (z)	6,495,531	17,434	264,981	51,640,970	32,782	...
TOTAL.....	779,012	15,281,519	84,811	809,542	136,931,615	53,616	684,540

(x) contains also 1,730 pounds of cobalt and 16,997 pounds of arsenic.

(z) Includes 65,479 tons of pyrites concentrates.

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