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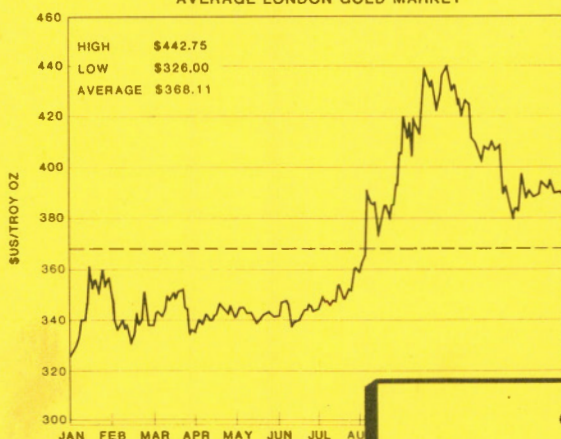
THE CANADIAN MINERAL INDUSTRY

MONTHLY REPORT

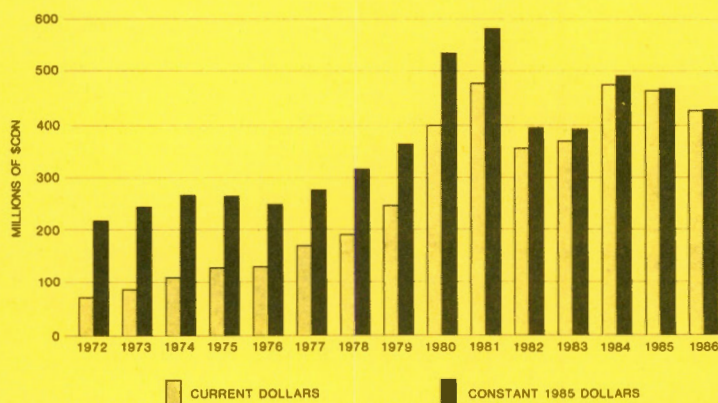
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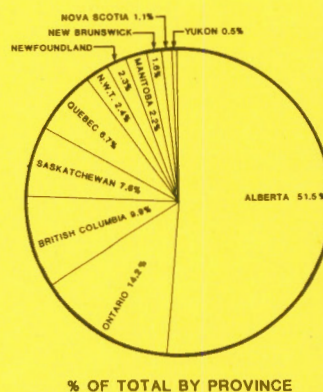
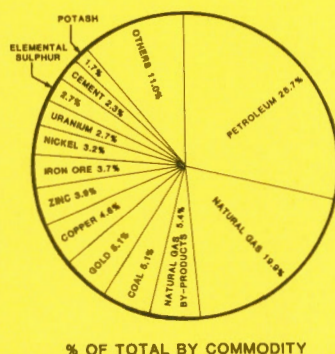
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OFF-PROPERTY MINERAL EXPLORATION EXPENDITURES
IN CANADA, 1972-1986



CANADA, MINERAL PRODUCTION, 1986



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THE CANADIAN MINERAL INDUSTRY

MONTHLY REPORT



Energy, Mines and
Resources Canada

Hon. Gerald S. Merrithew,
Minister of State
(Forestry and Mines)

Énergie, Mines et
Ressources Canada

L'Hon. Gerald S. Merrithew,
Ministre d'État
(Forêts et Mines)

PREFACE

This publication is prepared in the Mineral Policy Sector of the Department of Energy, Mines and Resources. It is compiled from many sources using the best information available to us. This report is intended to be a general review of the more important current developments that affect, or may affect the Canadian mineral industry. It should not be considered an authority for exact quotation or an expression of the official views of the Government of Canada.

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THE CANADIAN MINERAL INDUSTRY FOR AUGUST

The following constitutes a brief summary of the Canadian mineral industry based upon information that became available in August.

HIGHLIGHTS

- 1) In the United States, aluminum producers continue to bring idled potline capacity back on stream in response to strong demand and higher prices. During August, the price of aluminum on the London Metal Exchange averaged 81.9 cents (U.S.) per pound compared to 75.0 cents in July.
- 2) Strong demand for nickel led by the stainless steel sector, combined with summer shutdowns by some producers, resulted in tighter supplies and firmer prices.
- 3) The United States will extend import relief for stainless steel for another three years. Tariffs on stainless steel sheet, strip and plate will continue to decline, while quotas on other steel products will be progressively enlarged.
- 4) President Reagan has ordered the negotiation of an orderly marketing agreement for tungsten between the United States and the People's Republic of China. The President has stated that unsuccessful negotiations between the two countries could result in the imposition of import quotas by the United States.
- 5) A new coal pit has opened at the Quintette coal mine in northeastern British Columbia. Output at the new pit will total one million tpy of clean coal.
- 6) In June 1987, Les Tourbières Premier Ltée and the Centre québécois de valorisation de la biomasse signed an agreement to set up a research and development program for new high-tech peat products.
- 7) Poor fertilizer markets have severely affected domestic fertilizer producers. As a result, Western Co-operative Fertilizers Limited will mothball the Calgary plant on September 1st. This plant had a capacity to produce 430 000 tpy of sulphuric acid.
- 8) Uniquartz Inc. estimates that between 30 and 35 people will eventually be employed in mining the ore at a rate of production of 300 000 tpy. The silica is of high purity and can be used in electro-metallurgy and in glass-making.

ECONOMIC TRENDS

Table 1 provides information on the volume of production of Canada's leading minerals. Over the first six months of 1987 relative to 1986, significant volume increases were noted for lead (48.6 per cent), nickel (11.9 per cent), uranium (27.0 per cent), zinc (29.4 per cent) and potash (17.3 per cent).

Table 2 provides information on Canada's Gross Domestic Product at factor cost by industry.

The value of GDP is shown in annual seasonally adjusted constant 1981 dollars.

The annual rate for each month is calculated by multiplying the figure for that month by twelve. However, if a particular month has been influenced by special factors such as a strike, the annualized data may show significant variation from one month to another.

Seasonally adjusted data takes into account unusual seasonal factors, so that statistical series more accurately affect seasonal trends.

The GDP data shown in Table 2 is subject to ongoing revision. This process will also result in month to month variation.

Value of GDP for mines, quarries and oil wells increased in June 1987 relative to June 1986 by 4.8 per cent. Other metal mines in particular performed well, showing a 23.3 per cent increase in June 1987 relative to June 1986.

Table 3 shows the prices of selected minerals for May and June.

Table 4 provides useful data related to a number of important national economic indicators from 1972 to 1986.

Tables 5, 6 and 7 deal with industrial fatalities per thousand workers by industry group and by occupational injury and type of illness. The data reveals that the fatality rate in mining (according to preliminary data), declined in 1986. Occupational injuries and illnesses related to mining also showed a decline in 1986.

Tables 8 and 9 provide data pertaining to the number of strikes and lockouts by industry and also for mining and mineral manufacturing specifically.

Tables 10 and 11 show Research and Development expenditures for mining related industries from 1981 to 1987 inclusive.

TABLE 1. CANADA, PRODUCTION OF LEADING MINERALS ('000 TONNES EXCEPT WHERE NOTED)

		1986			1987			Percentage Changes		
		May	June	Total 6 months	May	June	Total 6 months	June 1987 June 1986	June 1987 May 1987	1st 6 months 1987 1986
Metals										
Copper		53.6	57.8	369.8	61.1	60.6	371.2	+4.8	-0.8	+0.3
Gold	kg	8 560.6	9 678.9 ^r	50 388.1	8 088.4 ^r	9 971.2	52 260.6	+3.0	+23.3	+3.7
Iron ore		3 936.2	2 983.5 ^r	16 487.4	3 120.3	3 863.8	16 327.4	+29.5	+23.8	-1.0
Lead		18.6	19.4	113.4	26.1	22.1	168.5	+13.9	-15.3	+48.6
Molybdenum	t	1 065.6	977.3 ^r	6 336.9	1 092.4 ^r	1 116.4	6 307.7	+14.2	+2.2	-0.5
Nickel		18.3	9.6	94.8	18.1	16.0	106.1	+166.7	-11.6	+11.9
Silver	t	85.4	87.3 ^r	536.7	105.1 ^r	97.3	559.4	+11.4	-7.4	+4.2
Uranium ¹	t	932.8	979.4	5 248.2	950.0	1 127.0	6 662.9	+15.1	+18.6	+27.0
Zinc		93.4	71.0	433.7	101.8 ^r	64.3	561.2	-9.4	-36.8	+29.4
Nonmetals										
Asbestos		45.4	60.4	324.3	53.6	58.4	312.7	-3.3	+9.0	-3.6
Clay products	\$000	15,413.7	17,276.3 ^r	77,436.0	21,685.6	20,591.0	98,311.0	+19.2	-5.0	+27.0
Gypsum		883.9	907.9 ^r	4 279.0	938.3 ^r	972.6	3 990.2	+7.1	+3.6	-6.8
Potash K ₂ O		656.6	316.9	3 549.2	686.4	585.9	4 162.0	+84.9	-14.6	+17.3
Cement		1 111.4	1 052.7 ^r	4 465.7	1 302.6 ^r	1 389.3	5 251.3	+32.0	+6.6	+17.6
Lime		197.4	191.5	1 116.0	197.6	227.5	1 168.9	+18.8	+15.1	+4.7
Salt		836.6	778.5 ^r	5 413.7	841.2	791.6	4 617.3	+1.7	-5.9	-14.7
Fuels										
Coal		4 449.3	4 789.8 ^r	29 594.1	4 811.7	..	..	..	..	..
Natural gas	million m ³	6 709.0	6 084.0 ^r	46 515.0	7 281.0	..	..	..	..	..
Crude oil and equivalent	000 m ³	7 572.0	7 798.0 ^r	44 179.0	7 788.0	..	..	..	..	..

¹ Tonnes uranium (1 tonne U = 1.2999 short tons U₃O₈)... Not available; ^r Revised.

TABLE 2. CANADA, REAL GROSS DOMESTIC PRODUCT AT FACTOR COST BY INDUSTRY, IN 1981 PRICES, MONTHLY (SEASONALLY ADJUSTED AT ANNUAL RATES)

Industry Sector	1986	1987				Per cent Change
	June	March	April	May	June	June 1987 June 1986
	(\$ millions)					
Total Economy	363,871.4	374,978.6	376,095.8	376,545.5	379,280.3	+4.2
Primary Industries						
Agriculture	12,349.1	11,883.6	11,851.2	11,852.4	11,866.8	-3.9
Forestry	2,403.1	2,878.8	2,767.2	2,602.8	2,767.2	+15.1
Fishing and Trapping	559.5	704.4	603.6	452.4	735.6	+31.5
Mines, Quarries and Oil Wells	20,597.6	20,962.4	20,814.8	20,990.0	21,591.2	+4.8
Mining Industries	7,190.5	7,897.2	7,604.4	7,804.8	8,142.0	+13.2
Gold Mines	1,169.4	1,218.0	1,208.4	1,131.6	1,208.4	+3.3
Iron Mines	535.2	523.2	246.0	416.4	554.4	+3.6
Other Metal Mines	3,491.5	4,166.4	4,155.6	4,161.6	4,304.4	+23.3
Nonmetal Mines	796.7	776.4	772.8	847.2	850.8	+6.8
Asbestos Mines	160.7	121.2	160.8	166.8	150.0	-6.3
Mineral Fuels						
Coal Mines	920.3	972.0	956.4	969.6	956.4	+3.9
Crude Petroleum and Natural Gas	11,818.9	11,884.4	12,041.6	12,018.8	12,023.6	+1.7
Secondary Industries						
Manufacturing	70,577.2	73,579.6	73,366.0	73,669.6	74,237.2	+5.2
Non-durable Manufacturing	32,094.3	33,006.4	32,836.0	32,866.0	32,933.2	+2.6
Durable Manufacturing	38,482.9	40,573.2	40,530.0	40,803.6	41,304.0	+7.3
Primary Metal Industries	5,009.9	5,816.4	5,740.8	5,811.6	5,902.8	+17.8
Primary Steel Industries	2,073.2	2,251.2	2,230.8	2,226.0	2,276.4	+9.8
Steel, Pipe and Tube Industry	293.4	303.6	304.8	309.6	298.8	+1.7
Iron Foundries	385.7	428.4	416.4	416.4	447.6	+16.1
Smelting and Refining	1,647.0	2,198.4	2,181.6	2,221.2	2,240.4	+36.0
Nonmetallic Mineral Products	2,162.9	2,406.0	2,415.6	2,380.8	2,401.2	+11.1
Clay Products Industry	94.4	111.6	108.0	99.6	92.4	-2.1
Cement Industry	288.6	351.6	344.4	342.0	332.4	+15.3
Ready-Mix Concrete Industry	334.3	448.8	444.0	447.6	436.8	+30.5
Construction Industry	25,129.4	26,800.8	27,033.6	27,402.0	27,565.2	+9.7
Transportation and Storage	16,323.8	16,424.4	16,580.4	16,706.4	16,534.8	+1.3
Communications	10,237.6	10,731.6	10,777.2	10,872.0	10,981.2	+7.3
Other Utilities	10,720.3	11,130.0	11,331.6	11,257.2	11,516.4	+7.4
Wholesale Trade	18,650.0	19,866.0	20,191.2	20,108.4	20,512.8	+10.0
Retail Trade	23,580.0	24,901.2	25,340.4	25,228.8	25,728.0	+5.6
Finance, Insurance and Real Estate	52,111.0	54,110.4	54,430.8	54,224.4	53,836.8	+3.3
Community, Business and Personal Service	38,173.9	38,043.8	38,018.6	38,110.7	38,254.7	+0.2

TABLE 3. METAL PRICES - 1987

	May	June
Copper		
Electrolytic, U.S. producer f.o.b. refinery, cents (U.S.)	69.585	72.946
Electrolytic, Comex, 1st pos. plus 5¢, cents (Cdn.)	95.849	100.245
Electrolytic, Standard, LME cash, cents (U.S.)	66.274	69.852
Lead		
New York, cents (U.S.)	35.500	37.000
Montreal, cents (Cdn.)	47.438	49.700
LME cash, cents (U.S.)	31.402	28.509
Silver		
New York, cents (U.S.) per troy oz.	843.900	741.091
Toronto, cents (Cdn.) per troy oz.	1,163.484	1,024.977
LME cash, cents (U.S.) per troy oz.	845.120	741.717
Zinc		
St. Louis, H.G., cents (U.S.)	42.232	45.048
Montreal, Electrolytic, cents (Cdn.)	59.125	63.700
LME cash, cents (U.S.)	38.008	39.799
Tin		
New York, Straits, cents (U.S.)	319.425	313.568
Metals Week, composite, cents (U.S.)	421.789	414.488
Gold		
London, p.m., \$US per troy oz.	460.234	449.591
Average, (Sharps Pixley) \$US per troy oz.	460.942	449.436
High, (Sharps Pixley) \$US per troy oz.	475.250	457.000
Low, (Sharps Pixley) \$US per troy oz.	449.000	438.000
Mercury		
\$US per flask	313.000	307.273
Nickel		
Major Producer Cathode, cents (Cdn.)	429.182	428.336
Major Producer Cathode, cents (U.S.)	320.000	320.000
LME cash, \$US	2.012	2.012
Antimony		
New York, dealers, cents (U.S.)	117.600	117.045
Platinum		
New York, refined, \$US per troy oz.	600.000	600.000
Cadmium		
New York, producers, \$US	1.425	1.875
Aluminum		
LME cash, cents (Cdn.)	85.875	89.394
LME cash, cents (U.S.)	64.029	66.784
Cobalt		
Shot/cathode/250 kg., \$US	7.000	7.000
U.S. spot cathode, \$US	6.338	6.830
Tungsten		
LMB ore, low, \$US/MTU	49.750	48.000
GSA domestic, \$US/STU	31.350	31.350
Molybdenum		
M.W. dealer oxide, \$US	2.919	2.639
Uranium		
Nuexco, \$US U ₃ O ₈	17.000	17.000

Average U.S. Exchange Rate for May = 1.34119500, June = 1.33855000.

Note: Prices are per pound unless otherwise stated.

TABLE 4. CANADA, GENERAL ECONOMIC INDICATORS, 1972-86

		1972	1973	1974	1975	1976
Gross domestic product, current dollars	\$ million	108,629	127,372	152,111	171,540	197,924
Gross domestic product, constant dollars (1981 = 100)	"	245,441	264,369	276,006	283,187	300,638
Mining's gross domestic product (1981 = 100)	"	21,548.7	25,996.4	23,775.5	19,520.7	19,585.9
Manufacturing's gross domestic product (1981 = 100)	"	48,469.6	53,679.4	55,294.4	51,600.8	55,382.1
Industrial production's gross domestic product (1981 = 100)	"	71,136.0	79,587.6	81,134.8	75,170.8	80,222.7
Value of manufacturing industry shipments	"	56,191	66,674	82,455	88,427	98,076
Value of mineral pro- duction	"	6,408	8,370	11,754	13,347	15,693
Merchandise exports	"	20,222	25,649	32,738	33,616	38,166
Merchandise imports	"	18,272	22,726	30,903	33,962	36,606
Balance of payments, current account	"	-283	312	-1,299	-4,631	-4,096
Corporation profits before taxes	"	10,799	15,417	20,062	19,663	19,985
Business investment, current dollars	"	19,926	24,588	30,370	35,602	40,462
Business investment, constant dollars (1981 = 100)	"	38,694	43,482	46,555	49,418	52,453
Population	000s	21 802	22 043	22 364	22 697	22 993
Labour force	"	8 897	9 276	9 639	9 974	10 203
Employed	"	8 344	8 761	9 125	9 284	9 477
Unemployed	"	553	515	514	690	726
Unemployment rate	per cent	6.2	5.5	5.3	6.9	7.1
Labour income	\$ million	59,358	68,423	81,656	95,277	110,419
Consumer price index	1981=100	44.2	47.6	52.8	58.5	62.9

P Preliminary.

1977	1978	1979	1980	1981	1982	1983	1984	1985	1986P
217,879	241,604	276,069	309,891	355,994	374,750	405,425	443,327	476,361	505,227
311,347	325,751	338,362	343,384	355,994	344,082	354,780	374,462	389,324	401,531
18,893.7	17,878.6	20,214.6	19,660.2	17,453.2	16,462.9	17,019.1	18,968.4	19,901.4	19,000.1
57,391.2	60,006.4	62,254.4	59,460.7	61,648.1	54,844.3	57,954.3	62,200.3	65,190.5	66,255.8
82,919.9	85,798.9	89,940.6	86,879.6	88,674.7	80,910.0	84,981.6	91,963.8	96,502.3	96,894.3
109,747	129,019	152,133	165,985	190,851	183,652	200,155	225,970	244,110	249,478
18,473	20,319	26,135	31,926	32,420	33,831	38,539	43,789	44,734	33,854
44,495	53,361	65,582	76,681	84,432	84,560	90,700	112,219	120,258	120,631
41,523	49,048	61,157	67,903	77,140	66,739	73,054	91,493	102,783	110,498
-4,322	-4,903	-4,864	-1,130	-6,131	2,906	2,942	3,362	-584	-8,805
21,090	25,360	34,884	36,456	32,638	21,110	32,684	45,430	47,528	45,193
43,485	47,496	56,096	64,065	76,672	71,067	70,862	73,034	80,856	87,303
53,587	55,638	61,399	68,103	76,672	67,088	65,972	66,231	70,609	73,146
23 258	23 476	23 671	23 936	24 342	24 634	24 886	25 124	25 360	25 591
10 500	10 895	11 231	11 573	11 904	11 958	12 183	12 399	12 639	12 870
9 651	9 987	10 395	10 708	11 006	10 644	10 734	11 000	11 311	11 634
849	908	836	865	898	1 314	1 448	1 399	1 328	1 236
8.1	8.3	7.4	7.5	7.5	11.0	11.9	11.3	10.5	9.6
122,476	133,383	150,172	169,736	196,002	209,449	219,352	235,903	252,815	267,294
67.9	73.9	80.7	88.9	100.0	110.8	117.2	122.3	127.2	132.4

TABLE 5. CANADA, INDUSTRIAL FATALITIES PER THOUSAND WORKERS¹ BY INDUSTRY GROUPS, 1984-86

	Fatalities (number) ¹			Number of Workers (000)			Rate per 1,000 Workers ²		
	1984	1985	1986P	1984	1985	1986P	1984	1985	1986P
Agriculture	20	20	4	156.0	168.0	172.0	0.13	0.12	0.02
Forestry	60	66	52	57.0	55.0	50.0	1.05	1.20	1.04
Fishing ³	27	26	14	14.0	12.0	14.0	1.93	2.17	1.00
Mining ⁴	105	131	79	148.6	156.6	146.0	0.71	0.84	0.54
Manufacturing	129	127	79	1 669.7	1 703.9	1 739.2	0.08	0.07	0.05
Construction	145	134	109	342.5	384.3	395.7	0.42	0.35	0.28
Transportation ⁵	123	132	101	796.5	804.5	799.1	0.15	0.16	0.13
Trade	53	76	47	1 554.5	1 621.3	1 662.1	0.03	0.05	0.03
Finance ⁶	10	5	4	535.9	556.6	577.9	0.02	0.01	0.01
Service ⁷	62	50	25	2 890.9	3 051.0	3 141.8	0.02	0.02	0.01
Public administration	66	56	46	658.0	662.0	666.2	0.10	0.08	0.07
Unknown	12	18	3	..	..	..	..	..	..
Total	812	841	563	8 823.6	9 175.2	9 364.0	0.09	0.09	0.06

¹ Includes fatalities resulting from occupational chest illnesses such as silicosis, lung cancer, etc. ² The rates may be understated because only 80 per cent of workers in the Statistics Canada employment estimates are covered by workers' compensation. ³ Includes trapping and hunting. ⁴ Includes quarrying and oil wells. ⁵ Includes storage, communication, electric power and water utilities and highway maintenance. ⁶ Includes insurance and real estate. ⁷ Includes community, business and personnel service.
P Preliminary; .. Not available.

TABLE 6. CANADA, INDUSTRIAL FATALITIES PER THOUSAND WORKERS BY INDUSTRY GROUPS, 1980-86¹

	1980	1981	1982	1983	1984	1985	1986P ²
Agriculture	0.05	0.14	0.13	0.13	0.13	0.12	0.02
Forestry	1.14	0.95	1.22	1.11	1.05	1.20	1.04
Fishing ³	1.60	1.47	1.58	1.00	1.93	2.17	1.00
Mining ⁴	1.08	0.76	0.96	0.68	0.71	0.84	0.54
Manufacturing	0.09	0.09	0.11	0.08	0.08	0.07	0.05
Construction	0.42	0.39	0.35	0.33	0.42	0.35	0.28
Transportation ⁵	0.27	0.25	0.22	0.17	0.15	0.16	0.13
Trade	0.05	0.04	0.04	0.04	0.03	0.05	0.03
Finance ⁶	0.01	0.02	0.01	0.01	0.02	0.01	0.01
Service ⁷	0.03	0.03	0.03	0.03	0.02	0.02	0.01
Public administration	0.07	0.11	0.08	0.08	0.10	0.08	0.07
Total	0.13	0.11	0.11	0.09	0.09	0.09	0.06

¹ Includes fatalities resulting from occupational chest illnesses such as silicosis, lung cancer, etc. ² The rates may be understated because only 80 per cent of workers in the Statistics Canada employment estimates are covered by workers' compensation. ³ Includes trapping and hunting. ⁴ Includes quarrying and oil wells. ⁵ Includes storage, communication, electric power and water utilities and highway maintenance. ⁶ Includes insurance and real estate. ⁷ Includes community, business and personnel service.
P Preliminary.

TABLE 7. CANADA, INDUSTRIAL FATALITIES BY OCCUPATIONAL INJURIES AND ILLNESSES¹, 1984-86

	Occupational Injuries			Occupational Illnesses ²			Total		
	1984	1985	1986P	1984	1985	1986P	1984	1985	1986P
Agriculture	15	16	3	0	0	0	15	16	3
Forestry	56	59	45	0	1	0	56	60	45
Fishing	27	22	14	0	0	0	27	22	14
Mining	47	69	40	48	55	32	95	124	72
Manufacturing	82	81	59	34	28	14	116	109	73
Construction	98	89	80	18	25	19	116	114	99
Transportation	99	110	94	8	4	3	107	114	97
Trade	36	59	36	2	4	2	38	63	38
Finance	5	3	3	0	0	0	5	3	3
Service	49	29	17	0	2	1	49	31	18
Public administration	42	33	38	5	4	2	47	37	40
Unknown	1	2	0	0	1	0	1	3	0
Total	557	572	429	115	124	73	672	696	502

¹ Excludes the Province of Quebec for which data is unavailable. ² Includes fatalities resulting from occupational chest illnesses such as silicosis, lung cancer, etc.
P Preliminary.

TABLE 8. CANADA, NUMBER OF STRIKES AND LOCKOUTS BY INDUSTRIES, 1984-86

	1984			1985			1986P		
	Strikes and Lockouts	Workers Involved	Duration in Person-days	Strikes and Lockouts	Workers Involved	Duration in Person-days	Strikes and Lockouts	Workers Involved	Duration in Person-days
Agriculture	2	123	190	1	16	290	0	0	0
Forestry	9	952	9 580	7	1 303	4 830	9	27 813	2 024 930
Fishing and trapping	0	0	0	0	0	0	0	0	0
Mines	9	2 029	37 120	12	6 350	91 590	14	8 796	351 870
Manufacturing	343	107 973	2 373 170	356	66 888	1 510 180	319	55 024	1 386 930
Construction	36	19 500	212 700	14	992	11 210	48	151 941	1 963 500
Transportation and utilities	48	20 091	550 340	97	38 994	487 070	59	23 859	305 270
Trade	101	5 721	188 220	131	23 978	471 980	111	8 508	238 540
Finance, insurance and real estate	23	559	26 230	18	1 136	112 030	13	885	32 570
Service	112	26 417	415 660	162	17 592	381 230	127	133 835	323 355
Public administration	34	3 390	70 190	31	5 982	55 050	41	73 206	506 860
Various industries	0	0	0	0	0	0	0	0	0
All industries	717	186 755	3 883 400	829	162 231	3 125 460	741	483 867	7 133 825

P Preliminary.

TABLE 9. CANADA, NUMBER OF STRIKES AND LOCKOUTS BY MINING AND MINERAL MANUFACTURING INDUSTRIES, 1984-86

	1984			1985			1986P		
	Strikes and Lockouts	Workers Involved	Duration in Person-days	Strikes and Lockouts	Workers Involved	Duration in Person-days	Strikes and Lockouts	Workers Involved	Duration in Person-days
Mines	9	2 029	37 120	12	6 350	91 590	14	8 796	351 870
Metals	6	1 755	36 240	5	4 018	40 760	7	4 700	52 920
Mineral fuels	0	0	0	2	1 400	13 030	4	2 977	231 870
Nonmetals	2	261	570	3	876	37 260	3	1 119	67 080
Quarries	1	13	310	2	56	540	0	0	0
Mineral manufacturing	35	6 378	163 160	38	4 050	130 730	41	7 136	228 070
Primary metals	17	3 684	41 920	16	2 789	63 400	14	4 422	138 750
Nonmetallic mineral products	16	2 209	119 480	22	1 261	67 330	26	2 598	89 070
Petroleum and coal products	2	485	1 760	0	0	0	1	116	250

P Preliminary.

TABLE 10. CANADA, TOTAL INTRAMURAL RESEARCH AND DEVELOPMENT EXPENDITURES FOR MINING-RELATED INDUSTRIES IN CURRENT AND CONSTANT (1978) DOLLARS, 1981-87

	1981	1982	1983	1984	1985	1986P	1987 ^f
	(\$ million)						
Current dollars							
Mining industry	131	132	92	115	127	110	116
Mines	51	48	43	47	52	56	60
Oil and gas wells	80	85	49	68	75	54	56
Mineral manufacturing	391	362	297	358	345	335	334
Ferrous primary metals	24	23	21	26	27	28	30
Nonferrous primary metals	86	86	82	95	94	102	107
Nonmetallic mineral products	9	9	10	19	19	16	16
Petroleum products	272	244	184	218	205	189	181
Constant dollars							
Mining industry	97	90	60	72	71	62	64
Mines	38	32	28	30	31	31	33
Oil and gas wells	59	58	32	42	45	30	31
Mineral manufacturing	291	247	194	224	209	188	183
Ferrous primary metals	18	16	14	16	16	16	16
Nonferrous primary metals	64	59	54	59	57	57	59
Nonmetallic mineral products	7	6	7	12	12	9	9
Petroleum products	202	166	119	137	124	106	99

P Preliminary; ^f Forecast.

TABLE 11. CANADA, CURRENT AND CAPITAL INTRAMURAL RESEARCH AND DEVELOPMENT EXPENDITURES FOR MINING-RELATED INDUSTRIES, 1981-87

	1981	1982	1983	1984	1985	1986P	1987 ^f
	(\$ million)						
Capital expenditures							
Mining industry	38	36	21	21	28	10	17
Mines	3	4	6	6	4	3	5
Oil and gas wells	34	33	15	15	24	7	11
Mineral manufacturing	59	81	48	97	82	56	48
Ferrous primary metals	2	1	1	1	3	3	3
Nonferrous primary metals	17	10	5	9	5	7	6
Nonmetallic mineral products	1	1	1	6	6	2	2
Petroleum products	39	69	41	81	68	44	37
Current expenditures							
Mining industry	93	96	71	94	99	100	99
Mines	48	44	38	42	48	52	55
Oil and gas wells	46	52	33	52	51	48	44
Mineral manufacturing	333	281	250	261	262	279	284
Ferrous primary metals	22	22	21	25	23	25	26
Nonferrous primary metals	70	76	77	86	89	95	101
Nonmetallic mineral products	8	8	9	13	14	14	14
Petroleum products	233	175	143	137	136	145	143
Total expenditures							
Mining industry	131	132	92	115	127	110	116
Mines	51	48	43	47	52	56	60
Oil and gas wells	80	85	49	68	75	54	56
Mineral manufacturing	391	362	297	358	345	335	334
Ferrous primary metals	24	23	21	26	27	28	30
Nonferrous primary metals	86	86	82	95	94	102	107
Nonmetallic mineral products	9	9	10	19	19	16	16
Petroleum products	272	244	184	218	205	189	181

P Preliminary; ^f Forecast.

METALLIC MINERALS AND PRODUCTS

Aluminum

During August, the price of aluminum on the London Metal Exchange averaged 81.9 cents (U.S.) per pound compared to 75.0 cents in July. The strength of the aluminum market was attributed to continued strong demand, falling inventory levels and the possibility of strike at certain Alcan Aluminium Limited smelters in Quebec.

The International Primary Aluminum Institute (IPAI) has reported that total inventories of aluminum (including scrap, primary and secondary ingot, metal in process and finished mill products) decreased in June 1987 to 3.258 million t from 3.342 million t in May. The IPAI also reported that western world average daily production in July 1987 was 34 300 t compared to 32 000 t in July 1986.

Despite the fact that a labour contract with 6 000 workers in the province of Quebec expired on August 31, Alcan remains confident that a settlement can be reached. The company's four unionized smelters in Quebec have a combined capacity of 630 000 tpy.

In August, the Alcan subsidiary, Alcan Smelters and Chemicals Limited announced that it had selected Bechtel Quebec Ltd. and FENCO Lavalin Inc. for project management and engineering work at its new Laterrière smelter in Quebec. Construction of the plant is expected to begin in the spring of 1988.

In the United States, aluminum producers continue to bring idled potline capacity back on stream in response to strong demand and higher prices. Kaiser Aluminum & Chemical Corporation announced in August that it will reactivate 12 500 t of capacity at its Mead, Washington smelter while Reynolds Metals Company plans to increase production at its Troutdale, Oregon plant by about 22 500 tpy. Columbia Aluminum Corp., which recently acquired the Goldendale, Washington smelter from Commonwealth Aluminum Corp., plans to have the smelter operating at approximately 110 000 tpy by the end of 1987, while Vanalco Inc. expects that its Vancouver, Washington plant will be running at approximately 65 000 tpy by the end of October.

In early August, it was reported that the U.S. primary aluminum industry was operating at over 86 per cent of its total capacity of 3 837 000 tpy.

On July 14, 1987, Southwire Co. of the United States filed an antidumping petition with the U.S. International Trade Commission with regard to aluminum wire rod products originating in Venezuela. Venezuelan shipments to the United States account for over 85 per cent of total rod imports into the U.S. market.

Nickel

At Thompson, Manitoba, labour negotiations resumed between Inco Limited and the United Steelworkers of America after the four week summer shutdown. The current three year contract for the 1 400 mining production workers expires on September 15. Most non-monetary issues were resolved before the shutdown, with the contentious monetary ones remaining.

In Japan, Nippon Mining Co. Ltd. announced that it will close its Oita ferronickel plant by the end of September. The plant has a capacity of 800 tpm of contained nickel. The operation has been unprofitable due to relatively low nickel prices and the rising value of the yen compared to the U.S. dollar. The plant has also been experiencing some technical difficulties.

Strong demand for nickel, led by the stainless steel sector, combined with reduced production due to summer shutdowns by some producers, including Inco and Falconbridge Limited, resulted in tighter supplies and firmer prices. The average price for August on the LME was \$US 2.40 compared to \$2.16 in July.

Iron and Steel

The Canadian steel industry operated at 65.2 per cent of capacity in July, down from the 75.2 per cent rate of June. This decline is due mainly to plant shutdown for summer holidays.

The "Steel Export Monitoring Programme" report for July indicates that exports to all countries totalled 319,225 tons of which 288,424 tons went to the United States. In June, the quantities shipped to the United States were 304,980 tons.

The United States announced the decision to extend import relief for specialty steel for an additional three years, past the initial expiry date of July 19, 1987. Tariffs on stainless steel sheet, strip and plate will be retained, but will continue to decline, while quotas on stainless steel bars and rods, and on alloy tool steel bars, wire rods, plates, sheets and strip will be enlarged progressively.

Canada announced on August 25 that dumping of certain types of steel bars, reinforcing bars and light structurals from Mexico and the United States had occurred. Provisional duties are being applied. The Canadian Import Tribunal will rule on injury from this dumping within 120 days of August 25. If injury is found, the provisional duties will become anti-dumping duties.

The Algoma Steel Corporation, Limited announced the sale of 20 000 t of steel tubular products to the Soviet Union.

Stelco Inc.'s steel plant at Edmonton, Alberta was severely damaged by a tornado. The cost of repairs to the damage may exceed \$10 million, with six to nine months required to restore normal operations.

Tungsten

On August 5, 1987 President Reagan ordered the U.S. Trade Representative, Clayton Yeutter, to negotiate an orderly marketing agreement with the People's Republic of China. He further has ordered that quotas be imposed on tungsten imports from the People's Republic of China if negotiations are unsuccessful after 50 days and that the quotas be imposed 60 days following his decision.

The President's decision follows the recommendations by the United States International Trade Commission (USITC) to the Administration to impose quotas on imports of ammonium paratungstate (APT) and tungstic acid.

The investigation by the USITC was undertaken following claims by the Refractory Metals Association that imports of APT and tungstic acid from the People's Republic of China were injurious to the domestic industry due to an escalation of low priced imports over the last three years.

INDUSTRIAL MINERALS AND PRODUCTS

Peat

Quebec

In June 1987, Les Tourbières Premier Ltée and the Centre québécois de valorisation de la biomasse (CQVB) signed an agreement to set up a \$3.6 million, three-year research and development program for new high-tech peat products. The program, called Substrat biologique de tourbe (SUBITO), will involve research on products made from peat and used for horticultural and environmental purposes, as well as the development, manufacturing and marketing of these products.

Two of the six projects announced under this new program will be set up immediately. One, valued at \$600,000, involves the development of a new substrate to increase yields of greenhouse crops through the development of improved soils; the other project will study composting techniques. Future projects will deal with the use of peat as a pollution control agent (biofilter) and as a component in a forest substrate.

Johnson & Johnson and Papier St-Raymond have announced the creation of a joint project, to be carried out by Produits Desbiens Inc., aimed at producing new absorbent materials from peat. Produits Desbiens Inc. will renovate its old St-Raymond paper plant at Desbiens, Lac-St-Jean. A new peatland, which will come into production at Sainte-Marguerite, will provide regular supplies of sphagnum peat.

Johnson & Johnson has developed a technique to produce absorbent materials from purified peat. The use of peat increases the capacity of certain materials to absorb and retain liquids. These materials are utilized in the manufacture of various health-care products.

This project will require an investment of \$20 million and involve the Quebec Industrial Development Corporation and the federal Department of Regional Industrial Expansion. Renovation of the plant should begin soon, creating 20 new jobs. The plant will employ 40 people once operations begin in 1989.

Silica

U.S. Silica has signed a letter of intent to purchase Warrior Sand Co. from Porter Warner Industries. Warrior has a production capacity of 225 000 tpy at its silica sand operation in Alabama.

U.S. Silica, the newly-formed company that emerged from the combination of Pennsylvania Glass Sand Corp. (PGS) and Ottawa Silica Co. after the takeover of both companies by United States Borax & Chemical Corporation, claims first position in the ranks of silica sand producers in the United States ahead of Unimin Corp. in terms of production.

U.S. Silica and Unimin are the two largest silica sand producers in the United States with the next largest producer coming only a distant third.

Foratek International has been given the green light by the Quebec Securities Commission to issue shares which will be eligible under the Quebec Stock Savings Plan (QSSP).

Foratek, whose subsidiary, Uniquartz Inc., owns a silica deposit near Matane, will thus be able to issue shares in order to finance the development of this deposit.

Uniquartz estimates that between 30 and 35 people will eventually be employed in mining the silica ore, at a rate of production of 300 000 tpy. The silica is of high purity and can be used in electrometallurgy and in glass-making.

Sulphur

Western Co-operative Fertilizers Limited (WCFL) announced its plan to mothball its Calgary fertilizer plant on September 1. The Calgary plant has a capacity to produce 60 000 tpy of ammonia, 65 000 tpy of nitric acid and 430 000 tpy of sulphuric acid. These chemicals were used captively to produce fertilizers and were not marketed. Poor fertilizer markets have severely hit the domestic fertilizer producers and some (Cominco Ltd., Cyanamid Canada Inc., and WCFL) have had to shut down since the beginning of 1987.

MINERAL FUELS AND PRODUCTS

Coal

Quintette Coal Limited Opens Up New Pit

A new coal pit was opened up in August at the Quintette coal mine in northeastern British Columbia. Output at the new Shikano pit will total one million tpy of clean coal or about 20 per cent of Quintette's current output. The pit, which was developed at a cost of \$12 million, is located near the existing Wolverine and Mesa pits. It is only a short distance from the washing plant and will help improve overall mine efficiency due to its innovative mining techniques which will minimize the amount of rock contamination in the coal mined therein.

SPECIAL ITEM

Outlook for Base-Metal Mining in Canada in the 1990s

In the mid-1970s, a need was felt for assurance that Canada's mines could keep supplying minerals at the rising demand levels then envisaged. Accordingly, resource evaluation specialists in the Mineral Policy Sector implemented a monitoring method in 1978, in cooperation with the provinces and DIAND to take the annual pulse of Canada's metallic mineral industry by tracking ore reserves and future mine production capabilities. Exploration and development activities, also crucial to future production capabilities, were incorporated later.

Their latest analysis suggests that industry's persistent heavy emphasis on gold is endangering the continuity of our base-metals sector after the mid-1990s.

A projection of Canadian base-metal production, on the basis of currently established ore reserves plus inferred extensions, with the addition of an optimistic mix of known promising deposits, shows that, on a national level, production of copper, zinc and lead can be maintained at the current levels to the mid-1990s but, unless some major new discoveries are made soon, it will start to decline soon after that. A moderate rise in prices, even if it holds, will not change the situation significantly.

Some pertinent background:

Gold

- Precious-metal exploration (mainly gold) has grown almost twentyfold from \$14 million in 1977 to \$260 million in 1985 (both in 1985 dollars), a rise from 7 per cent to 65 per cent of total mineral exploration expenditures. This growth, which started before the introduction of flow-through shares in 1983, has accelerated considerably since 1983.
- Gold deposits constitute the bulk of the deposits recently discovered, of those brought into production, and of those committed for production.

Base Metals

- The major base metals produced (copper, nickel, zinc, lead) are together still (1986) worth about 2.5 times the gold produced in Canada (gold \$1.7 billion, copper \$1.6 billion, nickel \$1.1 billion, zinc \$1.3 billion, lead \$0.2 billion).
- From 1981 to 1986, reserves of zinc and lead declined 20 per cent and those of nickel and copper 15 per cent. Many mines have delayed the expense of delineating further ore to replace the ore mined. Some former reserves were dropped as unprofitable to mine at foreseeable prices.
- Yet, productivity improvements at the surviving mines have led to levels of base-metal production in 1986 exceeding those of 1981.
- Base-metal exploration expenditures, in 1985 dollars, declined from \$90 million in 1977 to \$70 million in 1985 (ignoring a short-lived speculative peak in 1980-81). As a

percentage of total mineral exploration expenditures, the drop was much steeper: from 44 per cent to 18 per cent.

Base-metal exploration has not been lucky lately. Of the promising base-metal deposits discovered in the last ten years, none is of major size, but periods of great discoveries have historically always alternated with relatively bleak periods.

Observations

An essential point is the average six-year lag between discovery and initial production. Additionally, years of exploration are required to come up with a discovery.

As regards the influence of metal prices, exploration is (or should be) undertaken on the basis of foresight or faith: prices 5-15 years hence, when production from new discoveries will take place, are the ones that are relevant, not prices at the time of exploration. Therefore, what ought to inspire exploration today is expectations for profitable production in and beyond the 1990s. By then, the price of gold may have gone down and that of base metals gone up. If such is the case, we may miss the boat in the 1990s.

On the whole, exploration tends to be fuelled by current prices, underestimating the possibilities of change. As a result, many (perhaps most) discoveries that result from commodity-specific exploration booms come too late to profit from the high prices that inspired them because prices have dropped in the meantime. This has happened in the recent past with uranium, coal and base metals.

Given the lag between discovery and initial production, we have only a few years to come up with the major discoveries that must be brought on stream by the mid-1990s if we are to keep up current Canadian production levels of copper, zinc and lead beyond that.

The enthusiasm for gold is heartening, but, if we are to derive maximum benefit from a future boom in the base metals, we must be ready when it arrives.

In 1986, minerals (excluding oil and gas) contributed some \$10 billion to Canada's trade balance. Copper, nickel and gold each contributed about \$1 billion, and zinc and lead combined approached \$1 billion as well. Given that more than 80 per cent of the copper, zinc and lead produced in Canada is exported, drastic declines in their production in the 1990s would imply a significant loss of export earnings.

NEW PUBLICATIONS

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