

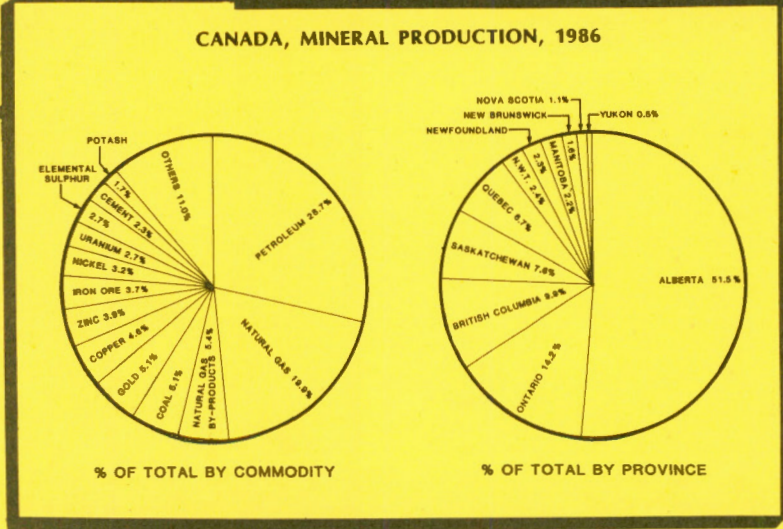
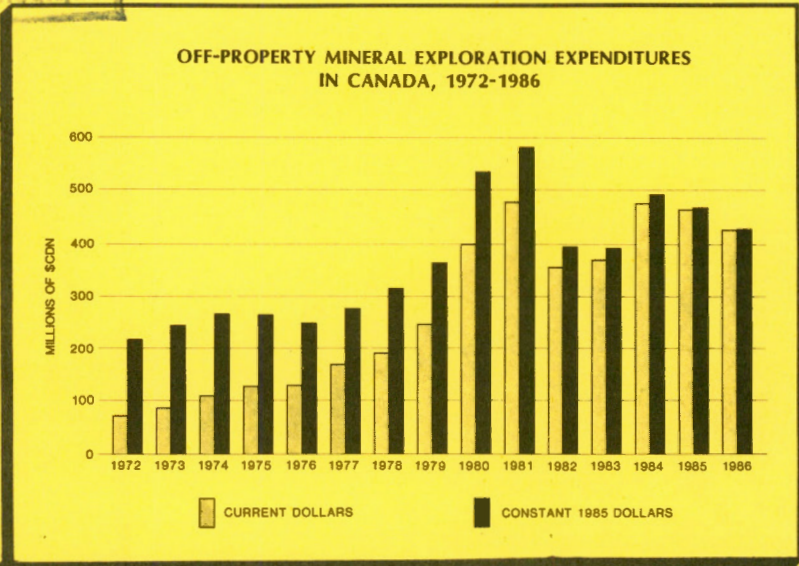
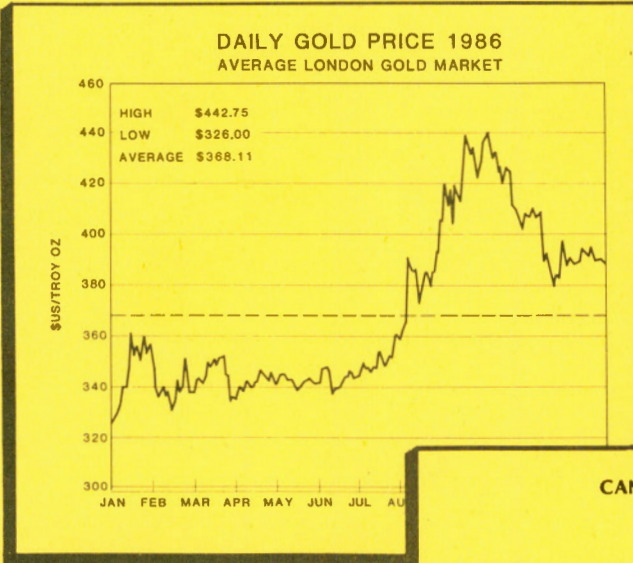
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# THE CANADIAN MINERAL INDUSTRY

## MONTHLY REPORT

APRIL 1987

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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)

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## 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.

Mineral Policy Sector  
Department of Energy, Mines and Resources  
580 Booth Street  
Ottawa, Canada K1A 0E4





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## THE CANADIAN MINERAL INDUSTRY FOR APRIL

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

### HIGHLIGHTS

- 1) In 1986, the Canadian minerals and metals sector, as defined in Table 3 of this report accounted for 5.2 per cent of Canada's Gross Domestic Product and 18.7 per cent of Canada's domestic exports.
- 2) The mill and underground mine of Noranda Inc.'s Division Mines Gaspé was shut down on April 1 as the result of a fire.
- 3) The price of gold reached its highest level in four years when the London morning gold fix was set at \$US 476.60 (\$Cdn 639.03) on April 27.
- 4) Inco Limited and Golden Knight Resources Inc. announced their decision to proceed with the development of a gold mine and mill at Golden Pond in the Casa Berardi region of northern Quebec.
- 5) The Australian Gold Nugget bullion coin was officially launched at the end of the month and will compete directly with the Canadian Gold Maple Leaf as the only other pure gold coin on the market unlike the Krugerrand and the U.S. Eagle coins which are 91.6 per cent gold.
- 6) The Canadian steel industry operated at 80.8 per cent of capacity in March, up significantly from the 68.9 per cent level of February.



## ECONOMIC TRENDS

Table 1 compares volume of production of Canada's leading minerals for the first two months of 1986 and 1987. Volume increased significantly in February, 1987 compared with the previous month for lead (51.4 per cent) silver (12.9 per cent) and zinc (12.1 per cent).

Table 2 shows the prices of selected metals for January and February, 1987.

Table 3, Economic Dimensions of the Minerals and Metals Sector, 1986, measures the impact of the mining, smelting and refining, semi-fabricating and fabricating industries in terms of selected economic indicators including output, employment, investment and trade. Stage I, crude mining, includes metal mines, nonmetal mines, coal mines and quarries and sand pits. The output of this stage is a high-grade ore or a concentrate or a pellet. In some instances, a relatively pure mineral is obtained. Stage II, smelting and refining includes the output from iron and steel mills and nonferrous smelters and refineries. The product of this stage is a relatively pure metal or alloy. Stage III involves the conversion of minerals or metals into shapes or forms that can be readily used in manufacturing operations. Examples of the output at this stage include rods, bars, plates, sheet, castings, forgings, pipes and tubes. Stage IV carries these products one step further into minerals and metals based manufacturing and the output comes from such industries as fabricated structural metal products, metal stamping, pressing and coating, wire and wire products industries and hardware, tool and cutlery manufacturers. Table 3 measures the economic impact of each stage of the industry as well as combinations of Stage I + II, Stage I + II + III and total sector, Stage I + II + III + IV. The value of shipments (gross output) of the overall minerals and metals sector reached almost \$50 billion in 1986 compared with \$46.6 billion in 1985. In terms of Gross Domestic Product (Gross Output minus Intermediate Inputs measured in 1981 dollars) the sector contributed \$18.6 billion to the economy or 5.2 per cent of total GDP. Employment totalled 380,160 or 3.3 per cent of total employment in the economy. Investment (expenditures on construction and machinery and equipment) reached \$7.6 billion or 6.6 per cent of total investment.

Mineral and metal sector exports totalled \$21.7 billion in 1986, 18.7 per cent of total domestic exports while imports totalled \$11.7 billion. Thus the sector contributed \$10.0 billion to the merchandise balance of trade.

Tables 4 to 15 give detailed statistics on mineral sector trade over various years. The definition of the mineral sector in these tables differs somewhat from the definition applied in Table 3. Table 3 includes coal and uranium as part of the mineral sector whereas Tables 4 to 15 include these commodities as part of mineral fuels combined with petroleum and natural gas. Tables 4 to 15 do not include fabricated metal products as part of the mineral sector. Therefore the figures should not be compared.

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

		1986			1987			Percentage Changes		
		January	February	Total 2 months	January	February	Total 2 months	February 1987 February 1986	February 1987 January 1987	1st 2 months 1987 1986
Metals										
Copper	kg	60.0	61.3 <sup>r</sup>	121.3	59.4 <sup>r</sup>	59.1	118.6	-3.6	-0.5	-2.2
Gold		7 658.1	7 696.7 <sup>r</sup>	15 354.8	8 055.2 <sup>r</sup>	8 000.4	16 055.7	+3.9	-0.7	+4.6
Iron ore		2 076.8	1 928.1	4 004.8	2 511.3	1 829.7	4 341.0	-5.1	-27.2	+8.4
Lead	t	16.3	20.9	37.2	20.6	31.2	51.8	+49.3	+51.4	+39.2
Molybdenum		829.4	1 101.6 <sup>r</sup>	1 931.1	900.3	912.1	1 812.4	-17.2	+1.3	-6.2
Nickel		15.8	15.7	31.6	17.4	16.1	33.5	+2.5	-7.5	+6.0
Silver	t	90.4	77.0 <sup>r</sup>	167.4	74.4 <sup>r</sup>	84.0	158.4	+9.1	+12.9	-5.4
Uranium <sup>1</sup>	t	826.0	508.8 <sup>r</sup>	1 334.8	1 387.4	1 050.7	2 438.2	+106.5	-24.3	+82.7
Zinc		60.6	65.0	125.6	73.4 <sup>r</sup>	82.3	155.7	+26.6	+12.1	+24.0
Nonmetals										
Asbestos	\$000	49.9	48.4	98.3	48.2	47.6	95.8	-1.7	-1.2	-2.6
Clay products		7,269.0	8,031.8 <sup>r</sup>	15,300.8	10,920.4 <sup>r</sup>	10,376.5	21,296.9	+29.2	-5.0	+39.2
Gypsum		706.1	630.3	1 336.4	558.1 <sup>r</sup>	419.5	977.6	-33.4	-24.8	-26.8
Potash K <sub>2</sub> O		474.9	539.1	1 014.0	606.3	597.8	1 204.1	+10.9	-1.4	+18.7
Cement		410.8	478.6 <sup>r</sup>	889.5	422.8	470.9	893.8	-1.6	+11.4	+0.5
Lime		180.5	171.1	351.6	194.7 <sup>r</sup>	168.8	363.5	-1.4	-13.3	+3.4
Salt		1 201.1	1 070.5 <sup>r</sup>	2 271.6	865.8	921.4	1 787.3	-13.9	+6.4	-21.3
Fuels										
Coal	million m <sup>3</sup>	5 596.3	4 658.9 <sup>r</sup>	10 255.2	4 944.3	..	..	..	..	..
Natural gas		9 933.0	8 739.0 <sup>r</sup>	18 672.0	9 585.0	..	..	..	..	..
Crude oil and equivalent	000 m <sup>3</sup>	7 905.0	6 704.0 <sup>r</sup>	14 609.0	7 824.0	..	..	..	..	..

<sup>1</sup> Tonnes uranium (1 tonne U = 1.2999 short tons U<sub>3</sub>O<sub>8</sub>).

r Revised; .. Not available.

TABLE 2. METAL PRICES - 1987

	January	February
<b>Copper</b>		
Electrolytic, U.S. producer f.o.b. refinery, cents (U.S.)	63.586	64.125
Electrolytic, Comex, 1st pos. plus 5¢. cents (Cdn.)	89.447	89.013
Electrolytic, Standard, LME cash, cents (U.S.)	59.273	60.460
<b>Lead</b>		
New York, cents (U.S.)	27.750	26.000
Montreal, cents (Cdn.)	38.250	34.500
LME cash, cents (U.S.)	21.024	20.864
<b>Silver</b>		
New York, cents (U.S.) per troy oz.	552.881	548.763
Toronto, cents (Cdn.) per troy oz.	778.060	757.126
LME cash, cents (U.S.) per troy oz.	552.007	548.226
<b>Zinc</b>		
St. Louis, H.G., cents (U.S.)	41.397	38.379
Montreal, Electrolytic, cents (Cdn.)	56.125	51.000
LME cash, cents (U.S.)	34.427	33.556
<b>Tin</b>		
New York, Straits, cents (U.S.)	316.100	316.000
Metals Week, composite, cents (U.S.)	418.489	417.151
<b>Gold</b>		
London, p.m., \$US per troy oz.	408.260	401.115
Average, (Sharps Pixley) \$US per troy oz.	408.392	401.080
High, (Sharps Pixley) \$US per troy oz.	422.250	406.750
Low, (Sharps Pixley) \$US per troy oz.	398.950	390.000
<b>Mercury</b>		
\$US per flask	217.250	208.105
<b>Nickel</b>		
Major Producer Cathode, cents (Cdn.)	435.296	426.843
Major Producer Cathode, cents (U.S.)	320.000	320.000
LME cash, \$US	1.599	1.586
<b>Antimony</b>		
Domestic refined in alloy, cents (U.S.)	200.000	200.000
<b>Platinum</b>		
New York, refined, \$US per troy oz.	600.000	600.000
<b>Cadmium</b>		
New York, producers, \$US	1.350	1.350
<b>Aluminum</b>		
LME cash, cents (Cdn.)	72.278	77.653
LME cash, cents (U.S.)	53.134	58.216
<b>Cobalt</b>		
Shot/cathode/250 kg., \$US	7.000	7.000
U.S. spot cathode, \$US	6.263	6.163
<b>Tungsten</b>		
LMB ore, low, \$US/MTU	34.750	39.000
GSA domestic, \$US/STU	32.000	31.513
<b>Molybdenum</b>		
N.W. dealer oxide, \$US	3.096	3.064
<b>Uranium</b>		
Nuexco, \$US U <sub>3</sub> O <sub>8</sub>	16.750	16.750

Average U.S. Exchange Rate for January = 1.36030000, February = 1.3338850  
 Note: Prices are per pound unless otherwise stated.

TABLE 3. ECONOMIC DIMENSIONS OF THE MINERALS AND METALS SECTOR, 1986P

Economic Indicator	STAGE				STAGE I + II	STAGE I + II + III	STAGE I + II + III + IV
	I Crude Mining	II Smelting & Refining	III Semi- Fabricating	IV Fabricating			
<b>Output</b>							
Value of shipments (billions of \$1986)	12.2	12.1	10.9	14.4	24.3	35.2	49.7
Gross Domestic Product (billions of \$1981)	6.2	3.9	3.3	5.1	10.1	13.5	18.6
% Share of total GDP	1.74	1.09	0.93	1.43	2.83	3.76	5.19
<b>Employment</b>							
Employment	78,960	77,000	74,975	149,225	155,960	230,935	380,160
% Share of total employment	0.68	0.66	0.64	1.28	1.34	1.98	3.27
<b>Investment</b>							
Investment (capital & repair) (\$ billions)	3.4	2.4	1.1	0.8	5.8	6.8	7.6
% Share of total investment	2.9	2.1	0.9	0.7	5.0	5.9	6.6
New investment (capital only) (\$ billions)	1.9	1.2	0.5	0.6	3.1	4.3	4.9
% Share of total new investment	2.2	1.4	0.6	0.7	3.6	5.0	5.7
<b>External Trade</b>							
Exports (\$ billions)	7.6	8.5	4.0	1.6	16.1	20.1	21.7
% Share of total domestic exports	6.5	7.3	3.5	1.4	13.8	17.3	18.7
Imports (\$ billions)	2.7	2.9	4.1	2.0	5.6	9.7	11.7
% Share of total imports	2.4	2.6	3.6	1.7	4.9	8.6	10.3
Balance of trade (\$ billions)	+4.9	+5.6	-0.1	-0.4	+10.5	+10.4	+10.0

P Preliminary.



TABLE 4. CANADA, VALUE OF MINERAL EXPORTS, 1980-86

	1980	1981	1982	1983	1984	1985	1986P
	(\$ million)						
<b>Ferrous</b>							
Crude material	1,343.0	1,540.7	1,103.7	1,053.4	1,207.0	1,291.9	1,215.0
Smelted and refined material	284.8	475.1	232.6	300.3	247.8	242.1	278.0
Semi-Fabricated material	1,789.7	1,874.8	1,763.7	1,360.7	2,007.0	2,158.2	2,164.9
Total	3,417.5	3,890.5	3,100.1	2,714.4	3,461.8	3,692.2	3,657.9
<b>Nonferrous</b>							
Crude material	2,029.2	1,707.0	1,346.7	1,323.3	1,462.2	1,334.9	1,515.5
Smelted and refined material	6,372.2	5,836.5	4,982.1	5,620.4	6,630.7	6,278.5	7,566.8
Semi-Fabricated material	622.1	586.9	544.1	638.1	873.6	798.4	865.3
Total	9,023.5	8,130.4	6,872.9	7,581.8	8,966.5	8,411.9	9,947.7
<b>Nonmetals</b>							
Crude material	2,369.5	2,682.2	2,202.2	2,217.1	2,882.7	3,084.3	2,833.7
Smelted and refined material	-	-	-	-	-	-	-
Semi-Fabricated material	662.7	711.2	664.2	657.2	891.7	916.1	978.7
Total	3,032.2	3,393.4	2,866.4	2,874.3	3,774.4	4,000.4	3,812.4
<b>Mineral fuels</b>							
Crude material	8,055.5	8,201.3	9,111.0	8,679.4	10,507.4	12,236.6	8,274.7
Smelted and refined material	2,596.0	2,800.2	2,364.1	2,717.0	3,252.0	3,445.8	2,589.1
Semi-Fabricated material	353.6	512.9	607.8	466.1	485.2	485.5	182.9
Total	11,005.1	11,514.4	12,083.0	11,862.6	14,244.6	16,167.8	11,046.7
<b>Total minerals and products</b>							
Crude material	13,797.1	14,131.2	13,763.6	13,273.3	16,059.4	17,947.7	13,838.9
Smelted and refined material	9,253.1	9,111.8	7,578.8	8,637.7	10,130.5	9,966.4	10,433.9
Semi-Fabricated material	3,428.1	3,685.8	3,579.9	3,122.1	4,257.6	4,358.2	4,191.8
Total	26,478.3	26,928.8	24,922.3	25,033.0	30,447.5	32,272.3	28,464.6

P Preliminary; - Nil.

TABLE 5. CANADA, VALUE OF MINERAL IMPORTS, 1980-86

	1980	1981	1982	1983	1984	1985	1986P
	(\$ million)						
<b>Ferrous</b>							
Crude material	356.1	373.2	227.3	285.2	398.9	427.0	360.6
Smelted and refined material	153.0	205.2	86.2	93.9	174.0	162.7	212.0
Semi-Fabricated material	1,308.0	2,127.0	1,193.2	1,114.8	1,502.6	1,885.0	1,672.3
Total	1,817.1	2,705.4	1,506.7	1,493.8	2,075.5	2,474.7	2,244.9
<b>Nonferrous</b>							
Crude material	1,553.3	1,219.3	1,001.7	1,125.8	1,132.3	909.0	1,236.7
Smelted and refined material	2,310.6	1,910.7	1,441.2	1,835.8	1,882.5	2,247.1	2,672.8
Semi-Fabricated material	620.7	701.6	525.6	603.4	900.7	836.6	960.6
Total	4,484.6	3,831.5	2,968.4	3,565.0	3,915.5	4,019.7	4,870.1
<b>Nonmetals</b>							
Crude material	337.7	349.2	290.3	277.8	334.3	344.2	356.1
Smelted and refined material	-	-	-	-	-	-	-
Semi-Fabricated material	874.9	1,008.2	837.8	958.5	1,121.7	1,304.1	1,382.5
Total	1,212.6	1,357.4	1,128.1	1,236.3	1,456.0	1,648.3	1,738.6
<b>Mineral fuels</b>							
Crude material	7,737.4	8,839.7	5,912.6	4,162.0	4,470.8	4,584.3	3,631.1
Smelted and refined material	564.6	713.6	683.5	862.7	1,445.4	1,418.0	1,327.9
Semi-Fabricated material	176.7	228.1	210.2	227.9	326.7	420.0	403.3
Total	8,478.7	9,781.4	6,806.3	5,252.6	6,242.9	6,422.2	5,362.3
<b>Total minerals and products</b>							
Crude material	9,984.6	10,781.4	7,431.8	5,850.8	6,336.2	6,264.5	5,584.5
Smelted and refined material	3,028.2	2,829.5	2,210.8	2,792.4	3,501.9	3,827.8	4,212.7
Semi-Fabricated material	2,980.4	4,064.9	2,766.9	2,904.6	3,851.7	4,472.6	4,418.7
Total	15,993.2	17,675.7	12,409.5	11,547.8	13,689.8	14,564.9	14,215.9

P Preliminary; - Nil.

**TABLE 6. CANADA, VALUE OF MINERAL EXPORTS IN RELATION TO TOTAL DOMESTIC EXPORT TRADE, 1976, 1981 AND 1986**

	1976		1981		1986P	
	(\$ million)	(%)	(\$ million)	(%)	(\$ million)	(%)
Crude material	7,495.7	20.1	14,131.2	17.4	13,838.9	11.9
Smelted and refined material	3,498.5	9.4	9,111.8	11.2	10,433.9	9.0
Semi-Fabricated material	1,357.8	3.6	3,685.8	4.5	4,191.8	3.6
Total	12,352.0	33.2	26,928.8	33.1	28,464.6	24.4
Total exports, all products	37,258.8	100.0	81,336.7	100.0	116,561.7	100.0

P Preliminary.

**TABLE 7. CANADA, VALUE OF MINERAL IMPORTS IN RELATION TO TOTAL IMPORT TRADE, 1976, 1981 AND 1986**

	1976		1981		1986P	
	(\$ million)	(%)	(\$ million)	(%)	(\$ million)	(%)
Crude material	4,303.1	11.8	10,781.4	14.0	5,584.5	5.0
Smelted and refined material	656.2	1.8	2,829.5	3.7	4,212.7	3.8
Semi-Fabricated material	1,516.8	4.1	4,064.9	5.3	4,418.7	4.0
Total	6,476.1	17.7	17,675.8	22.9	14,215.9	12.7
Total imports, all products	36,607.5	100.0	77,139.9	100.0	111,516.3	100.0

P Preliminary.

TABLE 8. CANADA, VALUE OF MINERAL EXPORTS BY MAIN GROUPS AND DESTINATION, 1986P

	United States	United Kingdom	EFTA <sup>1</sup>	EEC <sup>2</sup> (\$ million)	Japan	Other Countries	Total
Ferrous materials and products	2,726.4	185.7	10.3	459.3	62.1	214.1	3,657.9
Nonferrous materials and products	6,827.5	652.4	329.7	589.7	902.9	645.4	9,947.7
Nonmetallic mineral materials and products	1,760.0	33.0	15.4	422.6	127.0	1,454.4	3,812.3
Mineral fuels, materials and products	8,801.2	67.8	29.0	338.7	1,338.4	471.6	11,046.7
Total	20,115.1	938.9	384.4	1,810.3	2,430.4	2,785.5	28,464.6
Percentage of total mineral exports	70.7	3.3	1.4	6.4	8.5	9.8	100.0

<sup>1</sup> European Free Trade Association includes Austria, Norway, Portugal, Sweden, Switzerland, Finland and Iceland. <sup>2</sup> European Economic Community includes Belgium-Luxembourg, France, Italy, Netherlands, West Germany, Greece, Denmark and Ireland.  
P Preliminary.

TABLE 9. CANADA, VALUE OF MINERAL IMPORTS BY MAIN GROUPS AND ORIGIN, 1986P

	United States	United Kingdom	EFTA <sup>1</sup>	EEC <sup>2</sup> (\$ million)	Japan	Other Countries	Total
Ferrous materials and products	1,124.8	128.1	78.5	432.5	193.4	287.7	2,245.0
Nonferrous materials and products	3,748.1	60.1	41.9	193.2	85.0	741.8	4,870.1
Nonmetallic mineral materials and products	1,193.8	36.7	25.0	291.6	56.6	134.9	1,738.5
Mineral fuels, materials and products	2,094.1	1,361.0	67.3	193.6	5.1	1,641.1	5,362.3
Total	8,160.9	1,585.9	212.6	1,110.9	340.0	2,805.5	14,215.9
Percentage of total mineral imports	57.4	11.2	1.5	7.8	2.4	19.7	100.0

<sup>1</sup> European Free Trade Association includes Austria, Norway, Portugal, Sweden, Switzerland, Finland and Iceland. <sup>2</sup> European Economic Community includes Belgium-Luxembourg, France, Italy, Netherlands, West Germany, Greece, Denmark and Ireland.  
P Preliminary.



TABLE 10. CANADA, VALUE OF MINERAL EXPORTS, BY COMMODITY AND DESTINATION, 1986P

	United States	United Kingdom	EFTA <sup>1</sup>	EEC <sup>2</sup> (\$000)	Japan	Other Countries	Total
Petroleum	5,038,290	20,462	1,907	14,074	19,719	73,138	5,167,589
Iron and steel	2,684,272	185,658	10,337	459,342	53,998	212,808	3,606,417
Natural gas	3,165,977	-	-	-	-	2,757	3,168,733
Gold	2,632,890	1,767	17,565	26,728	166,707	16,913	2,862,568
Aluminum	1,956,458	8,108	39,396	42,144	175,458	295,737	2,517,303
Coal	31,828	21,387	19,340	97,762	1,312,057	386,585	1,868,958
Nickel	400,060	218,061	185,140	123,436	28,241	78,484	1,033,422
Copper	569,981	108,726	52,066	109,170	367,846	115,922	1,323,711
Sulphur	95,180	20	-	128,933	17	910,122	1,134,273
Uranium	565,127	25,949	7,752	226,846	6,624	9,131	841,430
Potash	425,620	3,350	993	40,665	56,220	301,399	828,247
Zinc	366,192	43,045	7,393	141,858	35,568	83,194	677,248
Asbestos	50,016	17,191	11,048	104,604	50,233	179,433	412,525
Silver	329,640	752	150	5,384	45,072	5,094	386,092
All other minerals	1,803,553	284,412	31,354	289,369	112,650	114,835	2,636,124
Total	20,115,084	938,888	384,441	1,810,315	2,430,410	2,785,552	28,464,640

<sup>1</sup> European Free Trade Association includes Austria, Norway, Portugal, Sweden, Switzerland, Finland and Iceland. <sup>2</sup> European Economic Community includes Belgium-Luxembourg, France, Italy, Netherlands, West Germany, Greece, Denmark and Ireland.

P Preliminary; - Nil.

TABLE 11. CANADA, VALUE OF MINERAL IMPORTS, BY COMMODITY AND ORIGIN, 1986P

	United States	United Kingdom	EFTA <sup>1</sup>	EEC <sup>2</sup> (\$000)	Japan	Other Countries	Total
Petroleum	1,230,135	1,360,979	67,263	190,554	5,069	1,635,752	4,489,756
Iron and steel	1,087,091	125,994	70,980	425,528	193,404	264,208	2,167,216
Gold	1,712,662	167	6,494	1,944	-	42,888	1,764,156
Aluminum	758,797	10,940	7,051	85,580	70,465	352,074	1,285,179
Coal	834,955	28	-	2,716	28	4,868	842,595
Platinum Group Metals	659,020	18,336	74	3,610	-	45,698	726,740
Copper	259,469	3,018	5,953	23,840	9,318	87,600	389,192
Clays	231,646	7,446	3,409	85,819	21,260	8,864	358,402
Phosphatic materials	251,216	214	54	3,547	-	5,382	260,414
Nickel	61,446	15,896	16,088	9,067	455	44,947	147,902
Abrasives	104,020	2,567	8,724	24,107	2,843	3,933	146,193
Graphite	73,757	501	1,388	9,092	8,790	499	94,027
Stone, building	25,731	95	762	32,613	15	5,437	64,653
Mineral pigments	32,410	1,915	145	13,514	-	4,028	52,011
All other minerals	838,534	37,853	24,234	199,055	28,388	299,377	1,427,443
Total	8,160,889	1,585,949	212,619	1,110,856	340,035	2,805,515	14,215,879

<sup>1</sup> European Free Trade Association includes Austria, Norway, Portugal, Sweden, Switzerland, Finland and Iceland. <sup>2</sup> European Economic Community includes Belgium-Luxembourg, France, Italy, Netherlands, West Germany, Greece, Denmark and Ireland.

P Preliminary; - Nil.

TABLE 12. CANADA, PHYSICAL VOLUME OF IMPORT TRADE FOR SELECTED COMMODITIES, 1980-86

	Unit of Weight	1980	1981	1982	1983	1984	1985	1986 <sup>P</sup>
<b>Crude materials</b>								
<b>Metals</b>								
Iron ore	t	5 875 347	5 794 713	3 359 304	4 013 119	4 946 916	5 800 222	5 367 244
Bauxite ore	t	3 504 371	2 734 665	2 574 719	2 329 911	2 451 541	2 074 206	2 112 905
Alumina	t	983 972	1 020 550	939 268	1 063 176	1 349 213	1 544 007	1 724 599
Manganese ore	t	95 161	119 746	71 655	42 261	77 546	102 202	94 916
<b>Nonmetals</b>								
Phosphate rock	t	3 816 514	3 245 446	2 477 199	2 625 390	3 142 654	2 621 668	2 387 755
Limestone, crushed	t	2 418 331	2 526 876	1 485 428	1 799 859	1 944 045	2 071 651	2 354 276
Salt & brine	t	1 151 204	1 254 992	1 526 880	777 311	1 053 210	1 255 510	1 328 300
Silica sand	t	1 200 236	1 142 880	788 768	982 664	1 076 083	983 340	1 055 215
Sand & gravel	t	1 209 583	1 446 872	1 179 284	878 613	1 266 983	1 111 801	1 047 189
Clay, ground & unground	t	403 281	413 038	345 384	368 996	403 481	461 755	527 371
Bentonite	t	471 683	311 249	238 027	187 229	377 054	346 018	326 298
Fluorspar	t	223 940	173 598	126 594	141 928	166 710	111 726	164 114
<b>Fuels</b>								
Coal	t	16 066 492	14 993 112	15 715 860	14 822 356	19 060 700	15 024 782	13 368 536
Petroleum, crude	m <sup>3</sup>	32 733 819	30 751 766	19 670 772	14 603 437	14 849 581	15 845 864	20 153 969
<b>Fabricated materials</b>								
<b>Metals</b>								
<b>Steel</b>								
sheets & strips	t	582 263	1 733 683	540 408	536 819	699 381	1 069 154	914 793
bars & rods	t	189 982	340 775	219 629	277 287	405 194	363 979	408 038
pipes & tubes	t	322 123	364 979	249 661	217 054	315 817	455 375	254 155
structural shapes	t	209 811	364 384	120 369	162 133	234 614	232 619	209 421
castings & forgings	t	129 360	118 491	70 130	92 522	135 892	113 200	101 736
Aluminum sheets, rods, nes	t	114 197	122 164	99 550	120 384	185 199	175 461	179 229
Ferroalloys	t	118 516	117 911	64 662	71 560	106 568	124 770	93 999
<b>Nonmetals</b>								
Cement	t	223 249	721 206	231 829	238 268	236 230	372 800	490 133
Phosphate fertilizers	t	248 329	307 217	249 827	360 302	333 765	580 135	429 547
Fire bricks	t	236 202	187 020	132 601	154 765	177 126	167 202	154 295
<b>Fuels</b>								
Fuel oil	000 L	1 617 606	1 256 790	1 571 003	1 446 255	2 399 279	2 073 480	1 716 027
Coke, petroleum	t	908 322	935 929	650 813	768 981	886 734	874 331	910 602
Coke, nes	t	403 377	500 146	400 506	585 859	660 258	783 718	881 086

P Preliminary; nes Not elsewhere specified.

TABLE 13. CANADA, PHYSICAL VOLUME OF EXPORT TRADE FOR SELECTED COMMODITIES, 1980-86

	Unit of Weight	1980	1981	1982	1983	1984 <sup>P</sup>	1985	1986 <sup>P</sup>
<b>Crude material</b>								
<b>Metals</b>								
Iron, ores	t	39 020 924	41 452 042	27 281 399	25 527 964	30 737 466	32 259 296	31 008 408
Zinc, ores & concentrates	t	435 833	516 214	457 753	626 174	550 213	396 103	433 209
Copper, ores & concentrates	t	286 076	276 810	257 930	313 798	332 373	320 619	340 027
Lead, ores & concentrates	t	147 006	146 304	106 744	85 458	114 720	93 657	112 918
<b>Nonmetals</b>								
Potash	t	10 554 063	10 067 830	7 221 375	9 411 895	11 493 732	9 980 965	9 893 879
Sulphur, crude	t	6 850 142	7 309 215	6 111 447	5 670 281	7 326 852	7 818 425	6 257 074
Gypsum	t	4 960 239	5 094 872	4 775 780	5 187 032	6 224 573	5 879 664	5 885 349
Salt and brine	t	1 655 770	1 507 708	1 721 892	1 914 626	2 545 011	2 263 076	2 502 526
Limestone, crushed	t	2 214 489	1 758 298	1 517 498	1 390 795	1 216 674	1 195 939	1 350 351
Asbestos, crude & fibers	t	1 217 733	1 062 287	880 703	753 901	796 764	722 003	752 068
Crude refractory materials	t	803 893	629 770	40 838	241 131	579 487	534 579	728 659
Nepheline syenite	t	448 465	476 280	414 781	398 295	387 066	351 026	338 263
Sand and gravel	t	383 531	318 634	168 691	95 634	109 809	241 790	249 835
<b>Fuels</b>								
Coal	t	14 310 781	16 285 101	15 528 538	16 974 344	24 354 894	27 591 749	25 899 820
Natural gas	000 m <sup>3</sup>	22 963 134	21 689 360	22 072 136	19 296 956	21 427 034	26 154 592	20 872 994
<b>Semi-fabricated materials</b>								
<b>Metals</b>								
Aluminum, pig ingots	t	784 732	725 442	896 370	925 398	833 631	1 050 789	1 163 685
Iron, pig ingots	t	562 351	466 358	485 621	348 280	392 135	574 111	519 562
Zinc, pig ingots	t	472 143	453 464	470 396	500 454	529 653	555 621	427 175
Copper, refinery shapes	t	336 198	263 045	232 625	298 527	345 985	280 033	304 883
Lead, pig ingots	t	126 540	119 814	146 127	147 270	124 149	113 993	111 831
<b>Nonmetals</b>								
Cement	t	1 550 561	1 578 658	1 752 113	1 512 563	2 130 111	2 485 699	2 612 606
Peat	t	390 458	326 826	356 027	396 879	460 600	446 521	534 987
Lime, quick & hydrated	t	403 166	432 845	281 248	215 945	186 746	194 097	189 509
<b>Fuels</b>								
Fuel oil	000 L	4 273 512	3 846 906	2 721 922	3 825 520	4 424 697	4 667 298	4 731 263
Butane gas, liquified	000 L	2 563 406	3 137 545	3 572 546	3 011 824	3 278 444	3 098 985	2 947 776
Propane gas, liquified	000 L	3 879 915	3 867 950	4 513 705	3 534 575	3 887 986	3 172 345	2 697 959
Gasoline	000 L	706 539	600 969	536 268	1 240 028	1 583 578	2 382 777	2 045 995
Coke, nes	t	319 555	192 515	129 793	45 607	116 225	169 069	108 788

P Preliminary; <sup>P</sup> Revised; nes Not elsewhere specified.

TABLE 14. CANADA, MAJOR MINERAL EXPORT DESTINATIONS BY CLASS OF PRODUCT, VALUE AND PERCENTAGE, 1986

	Crude		Smelted and Refined		Semi-Fabricated		Total	
	Value	Percentage	Value	Percentage	Value	Percentage	Value	Percentage
	(\$ millions)	(%)	(\$ millions)	(%)	(\$ millions)	(%)	(\$ millions)	(%)
United States	8,157.1	58.9	8,243.0	79.0	3,715.0	88.6	20,115.1	70.7
Japan	2,082.8	15.1	307.9	4.1	39.8	0.9	2,430.4	8.5
United Kingdom	417.7	3.0	418.9	4.0	102.3	2.4	938.9	3.3
Korea, South	406.4	2.9	70.1	0.7	5.5	0.1	481.9	1.7
France	257.1	1.9	159.7	1.5	5.7	0.1	422.5	1.5
Belgium-Luxembourg	258.1	1.9	112.3	1.1	11.6	0.3	382.0	1.3
Germany, West	253.8	1.8	85.8	0.8	19.4	0.5	358.9	1.3
Netherlands	201.4	1.5	133.8	1.3	9.0	0.2	344.2	1.2
Brazil	251.3	1.8	3.2	x	3.3	0.1	257.8	0.9
Taiwan	112.7	0.8	69.1	0.7	43.4	1.0	225.2	0.8
Norway	25.8	0.2	197.3	1.8	1.0	x	224.1	0.8
Italy	138.5	1.0	44.5	0.5	14.3	0.3	197.3	0.7
U.S.S.R.	175.2	1.3	-	-	0.5	x	175.7	0.6
Morocco	141.5	1.0	-	-	x	x	141.5	0.5
Australia	113.9	0.8	9.9	0.1	13.5	0.3	137.2	0.5
China	37.8	0.3	91.3	0.9	5.8	0.1	135.0	0.5
India	110.0	0.8	3.3	x	6.8	0.2	120.2	0.4
Mexico	48.3	0.3	3.2	x	52.1	1.2	103.7	0.4
Sweden	24.2	0.2	55.5	0.5	3.6	0.1	83.3	0.3
Indonesia	55.0	0.4	9.5	0.1	12.1	0.3	76.6	0.3
Hong Kong	18.8	0.1	47.0	0.5	9.0	0.2	74.7	0.3
South Africa	64.7	0.5	0.9	x	2.9	0.1	68.5	0.2
Tunisia	62.2	0.4	2.8	x	0.4	x	65.3	0.2
Israel	27.0	0.2	21.6	0.2	3.0	0.1	51.5	0.2
Other Countries	336.6	2.4	346.5	3.3	112.2	2.7	8,531.4	3.0
Total	12,838.9	100.0	10,433.9	100.0	4,191.8	100.0	28,464.6	100.0

- Nil; x Too small to be expressed.



TABLE 15. CANADA, MAJOR MINERAL IMPORT ORIGINS BY CLASS, VALUE AND PERCENTAGE, 1986

	Crude		Smelted and Refined		Semi-Fabricated		Total	
	Value	Percentage	Value	Percentage	Value	Percentage	Value	Percentage
	(\$ millions)	(%)	(\$ millions)	(%)	(\$ millions)	(%)	(\$ millions)	(%)
United States	2,445.7	43.8	3,033.7	72.0	2,681.4	60.6	8,160.9	57.4
United Kingdom	1,347.2	24.1	68.2	1.6	170.5	3.9	1,586.0	11.2
Venezuela	311.0	5.6	159.2	3.7	33.0	0.7	503.2	3.5
Nigeria	367.0	6.6	-	-	-	-	367.0	2.6
Japan	0.5	x	63.5	1.5	276.0	6.2	340.0	2.4
Germany, West	5.6	0.1	75.2	1.8	193.1	4.4	273.9	1.9
France	8.5	0.2	40.4	1.0	152.7	3.5	201.5	1.4
Mexico	175.9	3.1	5.0	0.1	17.7	0.4	198.5	1.4
Brazil	68.1	1.2	57.4	1.4	72.8	1.6	198.3	1.4
Iran	192.6	3.4	-	-	-	-	192.6	1.4
Belgium-Luxembourg	1.4	x	21.4	0.5	163.5	3.7	186.3	1.3
Saudi Arabia	184.1	3.3	-	-	-	-	184.1	1.3
Australia	68.2	1.2	101.5	2.4	9.7	0.2	179.4	1.3
Italy	4.3	0.1	46.5	1.1	120.1	2.7	170.8	1.2
Spain	93.2	0.2	35.2	0.8	98.0	2.2	142.5	1.0
Jamaica	0.1	x	124.4	3.0	x	x	124.6	0.9
South Africa	54.7	1.0	35.5	0.8	22.0	0.5	112.2	0.8
Netherlands	0.7	x	46.9	1.1	47.3	1.1	95.0	0.7
Norway	55.4	1.0	19.0	0.5	9.2	0.2	83.6	0.6
Korea, South	-	-	0.1	x	75.7	1.7	75.9	0.5
Sweden	0.2	x	1.2	x	63.9	1.4	65.3	0.5
Israel	x	x	13.6	0.3	45.9	1.0	59.5	0.4
Chile	43.8	0.8	1.5	x	3.3	0.1	48.6	0.3
Trinidad and Tobago	2.0	x	22.5	0.5	14.2	0.3	38.6	0.3
Other Countries	238.3	4.3	240.6	5.7	148.7	3.4	627.7	4.4
Total	5,584.5	100.0	4,212.7	100.0	4,418.7	100.0	14,215.9	100.0

- Nil; x Too small to be expressed.

# EMPLOYMENT TRENDS

Tables A, B and C provide updated information on employment in the mineral industry, by occupation and by province.

TABLE A

Canada, Employment by Mineral Industry<sup>1</sup>

	December 1983	December 1984	December 1985	October 1986	November 1986	December 1986
	('000 persons)					
Metal mines	49.8	48.5	46.2	45.2	45.1	44.4
Nonmetal mines	11.5	11.1	10.4	11.2	10.9	10.5
Coal mines	11.1	10.5	11.3	10.5	10.6	10.6
Total mines	72.4	70.1	67.9	66.9	66.6	65.5
Primary metal industries <sup>2</sup>	105.6	104.8	101.5	96.8	97.1	97.4

Source: Statistics Canada 72-002: Employment, Earnings and Hours.

<sup>1</sup> Includes salaried and hourly paid employees in all provinces and territories. <sup>2</sup> Includes iron and steel mills; steel pipe and tube mills; iron foundries; smelting and refining; aluminum rolling, casting and extruding.

TABLE B

Canada, Unemployment Rate by Occupation<sup>1</sup>

	December 1983	December 1984	December 1985	October 1986	November 1986	December 1986
Unemployed as per cent of labour force						
Mining and quarry- ing occupations	13.2	11.3	8.6	13.0	11.3	8.9
All occupations	11.1	10.7	9.8	8.7	9.2	9.3

Source: Statistics Canada 71-001: The Labour Force.

<sup>1</sup> Unemployment in the Yukon and Northwest Territories is not included.

TABLE C

Canada, Employment by Province, December 1986

	Metal Mines	Nonmetal Mines ('000 employees)	Mines, Quarries Oil Wells
Newfoundland	..	..	2.6
Nova Scotia	..	..	5.0
New Brunswick <sup>1</sup>	..	..	2.9
Quebec	8.4	2.9	14.1
Ontario <sup>2</sup>	19.4	1.6	29.0
Manitoba <sup>3</sup>	3.4	..	4.0
Saskatchewan	..	3.4	7.2
Alberta	..	..	58.4
British Columbia	6.2	..	13.1
Yukon	..	..	..
Northwest Territories	..	..	..
Total Canada	44.4	10.5	138.9

Source: Statistics Canada 72-002: Employment, Earnings and Hours.

<sup>1</sup> New Brunswick Department of Natural Resources reports 2,217 employees working in metal mines, 720 in nonmetal mines and 3,157 in total metals, nonmetals and coal mines. <sup>2</sup> The Ontario Mines Accident-Prevention Association reports 25,383 employees in metal mines and 1,123 in nonmetal mines in Ontario. <sup>3</sup> Manitoba Department of Energy and Mines reports 4,157 employees in metal mines, smelters and refineries.

.. Not available.

## METALLIC MINERALS AND PRODUCTS

### Aluminum

Aluminum prices on the London Metal Exchange (LME) during April remained above 60 cents (U.S.) reflecting continuing tightness in the market. The average price for April was 63.5 cents (U.S.) compared to 62.0 cents in March.

The International Primary Aluminum Institute (IPAI) reported that total inventories of aluminum (including scrap, primary and secondary ingot, metal in process and finished mill products) decreased slightly in February to 3.525 million t from a revised figure of 3.638 million t in January. The IPAI also reported that non-communist daily average production decreased from 33 900 t in February to 33 600 t in March 1987.

In April, Alcan Aluminium Limited announced that it will decide this summer whether to proceed with the construction of its proposed Laterrière smelter in Quebec. Although originally planned to have a capacity of 248 000 tpy, the smelter has now been scaled back to 200 000 tpy. Output from this plant would be used to replace production from aging facilities in the Lac St. Jean region.

Also in April, Alcan reported a consolidated net income of \$US 62 million for the quarter ending March 31, 1987. This compares to a net income of \$32 million for the first quarter of 1986. The company attributed the improvement to increases in the average realizations on sales of its products and also from cost-cutting programs.

During April, it was reported that Aluminio do Maranhao (Alumar) of Brazil had cut aluminum output by about 15 per cent because of electricity rationing in the Brazilian northwest caused by a drought. Despite this set-back the project's backers, the Aluminum Company of America (Alcoa) and Shell Brasil SA, will continue with a phase III of the Alumar project which would increase capacity to 380 000 t by 1990.

In Greece, it is expected that work on a new 600 000 tpy alumina refinery will begin at the end of May. The project, which is a joint venture between Greece and the Soviet Union, is expected to cost \$US 450 million. The U.S.S.R. has agreed to take the entire output of the facility, which should be operational by 1992.

# Copper

Metal Prices U.S. cents/lb.

	London Metal Exchange (LME) Grade A April 1-30	Commodities Exchange, Inc. (Comex) 1st Position April 1-29
High	68.34	63.35
Low	64.94	61.45
Average	67.25	62.37

The decrease in prices on the LME ranged from 1.6 to 3.5 cents (U.S.)/lb. in the month. Between March 27 and April 24, the combined LME and Comex stocks increased 4 per cent, from 213 963 t to 221 895 t. The combined stocks were 260 879 t on January 2, 1987.

On April 1, a fire broke out at Noranda Inc.'s Division Mines Gaspé. Fifty-six of the fifty-seven miners underground at the time of the fire survived. The mill and the underground mine were shut down and the workers laid off due to the fire damage. The smelter resumed operation two days after the fire and is processing imported concentrates. The cause has not yet been determined.

Corporation Falconbridge Copper (CFC) announced its intention to change its name to Minnova Inc. CFC was sold by Falconbridge Limited in 1986 to Kerr Addison Mines Limited, owned 49 per cent by Noranda Inc. Minnova announced that the Ansil deposit near Noranda, Quebec will be developed and that production should begin in early-1989. The main shaft has been sunk to a depth of 1 400 metres and sinking of a ventilation shaft continues. Underground diamond drilling is under way to further define the orebody, presently estimated at 2 million t of 7 per cent copper ore on the basis of surface drilling.

Two developments occurred which could affect future transportation of Zambian and Zairean copper. The European Community stated that while it had no plans to finance part of the costs to reopen the Benguela railway through Angola, it might give aid for improvements of port facilities at Lobito (the terminus of the rail line). Zambian officials had previously indicated that the EC and Société Générale de Belgique would share the costs of reopening the line, closed since 1975. Rebels were reported to have offered safe passage to non-military goods on the rail line. On April 30, it was reported that the presidents of Angola, Zambia and Zaire were finalizing the plans to reopen the Benguela rail line to the port of Lobito. In Mozambique, rebels claimed to have destroyed rail line and rolling stock on the Northern Nacala railway line.

Phelps Dodge Corporation predicted that free world copper consumption would rise from 7.3 million t in 1986 to 8.2 million t in 1995, with no change from the present ratio between scrap and primary usage.

Commodities Research Unit Ltd. forecast increased copper consumption in the wire and cable sector in the People's Republic of China. Copper rod mill capacity was forecast to reach 400 000 tpy by year-end. Present copper wire and cable consumption was put at 200 000 tpy.

In Portugal, it was announced that tenders would shortly be sought for the construction of \$US 300 million copper smelter, refinery and acid plant at Sines. If the 100 000 tpy plant were to be built, Sociedad Minera de Neves-Corvo (Somincor) would be obliged to supply concentrate from the Neves Corvo mine, expected to commence operations in late-1988. The capacity of the mine will be 100 000 tpy of contained metal.

Ok Tedi Mining Ltd. is continuing its feasibility study of constructing a copper smelter. The study is due to be completed in mid-1987.

The Broken Hill Proprietary Company Limited (B.H.P.) is exploring the possibility of mining and processing copper oxide reserves rather than the sulfide ores. Electrowon cathode would be produced at a lower capital cost than the \$US 1.2 billion reported for the sulfide mine and mill which would yield copper concentrates.

## Gold

Gold prices reached the highest levels in four years when the London morning gold fix was set at \$US 476.60 (\$Cdn 639.03) on April 27. The main reason for the rise in price was the weakness experienced by the U.S. dollar and by inflationary fears. The average price for the month based on the morning and afternoon fixes of the London Gold Market, was \$US 439.00 (\$Cdn 529.06).

Inco Limited and Golden Knight Resources Inc. announced their decision to proceed with the development of a gold mine and mill at Golden Pond in the Casa Berardi region of northern Quebec. The property is owned 60 per cent by Inco and 40 per cent by Golden Knight. The cost of the initial phase is estimated at \$74 million, of which the federal and Quebec governments have agreed to provide up to \$14.5 million for the construction of a power line and access road. Construction of the initial phase, which will include an 880 tpd mine at Golden Pond East and a 1 320 tpd mill, is expected to begin this June with annual gold production of 1 870 kg commencing in August 1988. As other ore zones are developed, production is planned to increase to 2 640 kg by 1991. Drill indicated ore reserves for the area total 10 million t grading 6.8 g/t.



Seabright Resources Inc. plans to begin production at both its Beaver Dam and Forest Hill properties by July. Initial production will be at 440 tpd with gradual increases to 880 tpd by 1990, as more working areas are opened up. Reserves at the Beaver Dam property are currently 2.95 million t grading 8.4 g/t. At the Forest Hill property reserves are estimated at 300 000 t grading 17.1 g/t. The ore will be treated at the nearby Gays River mill which Seabright purchased from Esso Resources Canada Limited for \$3.4 million in 1985 and converted to a gold mill from a lead-zinc mill for \$400,000. The mill could be expanded to 1 300 tpd at an additional cost of \$350,000.

The international bullion coin market received an added boost when the Australian Gold Nugget bullion coin was officially launched at the end of the month. The initial target of selling 130 000 ounces by mid-year was far exceeded when 155 000 ounces were sold in the first day of trading. The Gold Nugget will compete directly with the Canadian Gold Maple Leaf as the only other pure gold coin, unlike the Krugerrand and the U.S. Eagle coins which are 91.6 per cent gold.

### Iron and Steel

The Canadian steel industry operated at 80.8 per cent of capacity, producing 1 350 000 t of steel, in March, up dramatically from the 68.9 per cent level of February. This change is attributed to a general increase in Canadian manufacturing activity.

The federal government has announced its intention to require export and import permits for trade in both carbon and specialty steel. These permits are to be used for the collection of information on steel trade.

Stelco Inc. and the United Steelworkers of America have reached a tentative 3-year labour contract, subject to ratification by union members.

The Algoma Steel Corporation, Limited has broken off early negotiations with its unionized employees because the union refused to consider wage rollbacks. The current contract between Algoma and the union expires on July 31 and specifies May 1 as the start of formal negotiations. In bargaining to date, the parties had reached agreement on all non-monetary issues.

The Organization for Economic Co-operation and Development stated that it expects worldwide over capacity to produce steel will persist. Over capacity is forecast to be 180 million t in 1990. This situation is made worse by the construction of new capacity in developing nations and in Eastern Bloc countries. During this period, capacity in the industrialized west is forecast to fall by 65 million t.

### **Molybdenum**

The United States government granted Chile GSP (General System of Preferences) status on molybdenum oxide imports for another year, ensuring that a tariff on the Chilean material would not be reimposed. The Chilean molybdenum was eligible through a de minimus waiver because its total value did not exceed the trigger level. Chile was initially granted the GSP status in 1986.

The 1987 molybdenum production from AMAX Inc.'s Colorado mines is expected to fall to 30 million lbs. compared with the 45.5 million lbs. in 1986. The reduction is a result of the company's decision to cut back on production at the Henderson mine, beginning in June, and the shutdown of underground operations at the Climax mine in March. Also, AMAX plans to further streamline its workforce at Henderson, eliminating 70 jobs out of a total of 690.

At the Utah Copper mine of Kennecott Corporation, the \$US 400 million modernization program is reported to be on schedule, with the renovation expected to be completed by late-1988. The project will include the installation of in-pit crushers, an ore conveying system and the construction of new concentration facilities near the mine. When completed, operating efficiency will be improved and employment reduced. Total employment is to be reduced to 1,800 as compared with the previous 6,000, with only a minimal decline (7 per cent) in output.

Kennecott is expected to increase its output by 1 million lbs. to 4 million lbs. of molybdenum in 1987. Future output is expected to rise to 6 million lbs. in 1988 and reach a capacity level of 8 million lbs. in 1989 as the modernization is fully phased in.

### **Nickel**

Outokumpu Oy has announced plans to close its Harjavalta nickel refinery for six weeks in July and August, due to weak nickel market conditions. Refined nickel production is expected to be about 3 000 t less than in 1986, when it was 17 800 t. Outokumpu stated that it will continue to take normal deliveries of feed during the shutdown and the smelter at Harjavalta will continue to treat copper ore.

Metals Exploration Ltd. is scheduled in May to close its Nepean mine in Western Australia, after its ore reserves are depleted. In the six months ending December 31, 1986, the mine produced 1 100 t of contained nickel in concentrate. The concentrate is processed by Western Mining Corporation Limited at its Kambalda operations. Exploration for additional ore proved unsuccessful.

Starting April 1, Sumitomo Metal Mining Co. Ltd. increased its monthly production of nickel metal from 1 650 to 1 750 t, due to increased demand from domestic stainless steel producers. The company had been producing at 1 800 tpm in 1986 but had reduced its production during the first quarter of 1987 due to weak demand.

Freeport Queensland Nickel Inc. sold its 50 per cent interest in Queensland Nickel Pty Ltd. which operates the Greenvale nickel project in Queensland, Australia to Dallhold Investments Pty Ltd., controlled by Mr. Alan Bond. The other joint venture partner in the project is Metals Exploration Queensland Pty Ltd.

### Rare Earths

Rhône-Poulenc SA of France recently announced that they will spend about \$150 million (Australian) to build plants to produce gallium and 6 000 tpy of rare earth oxides at Pinjara, Western Australia. Feedstock for the operation will be monazite ore from mineral sands mined by Associated Minerals Consolidated, Ltd. at Capel and Eneabba. The plants are due on-stream in 1989 and represent a breakthrough in Australian efforts to become a processor of concentrates. With a view to possible further added value in Australia through a vertically integrated rare earth industry the Federal Department of Science has set up a Rare Earth Working Party and other departments are investigating possible industrial developments using rare earths.

A breakthrough in investigations of the atomic structure of a new class of superconductor, the metal oxide ceramics, could have an important impact on the demand for certain rare earth metals and yttrium. Advances in the technology have been achieved at various international research centres including NRC, and work is proceeding at an accelerated rate, the chief aim being to develop materials which are superconductive well above the extremely cold levels necessary for existing superconductive metals.

### Silver

The silver market experienced a strong recovery when metal prices reached their highest levels in three and a half years. The price of silver hit a monetary high of \$US 11.40, before returning to about \$8.00, compared with \$6.23 at the beginning of the month. The average silver price as published by Handy and Harman in New York for the month was \$US 7.41 (\$Cdn 9.76).

The recent freeze on new silver exports imposed by the Peruvian government is in part responsible for the increased silver prices. In a move aimed at consolidating the higher price of silver the state minerals marketing arm Minero Peru Comercial SA (MINPECO) was ordered to halt all new sales contracts for exports of silver from Peru. The country is the world's second largest silver producer after Mexico. Peru and Mexico did hold bilateral discussions concerning coordinated actions in the silver market but no agreement has been announced.

Inspiration Resources Corporation announced the immediate reopening of its Black Pine mine in Montana. The mine was closed about a year ago due to low silver prices. Annual output of refined silver will be 1.1 million ounces.

### Titanium

QIT-Fer et Titane Inc. announced that it will go ahead with improvements at its Sorel, Quebec, smelting plant and its ilmenite mine at Lac Allard. The expansion will cost \$Cdn 130 million and will enable an increase of 175 000 tpy output of 80 per cent TiO<sub>2</sub> slag and 150 000 tpy of high purity iron bringing QIT's slag capacity to more than 1 million tpy in the third quarter of 1988. The capital program will include the refurbishment and modernization of two electric furnaces to match the power ratings of the other seven furnaces and upgrading of the plant's water, gas and electrical systems at Sorel.

### Tungsten

Nearly all of the world's tungsten producers, which closed their mines in 1986 due to low prices, have remained closed. Canada Tungsten Mining Corporation Limited (Cantung), Canada's last producing mine has been closed since May 1986.

Prices for tungsten, which reached an all time low of \$US 30 per tonne unit (10 kg) in December 1986, have recovered modestly. The Metal Bulletin (MB) and the International Tungsten Indicator quoted prices for tungsten contained in ores and concentrates for the first half of April at \$US 50-55 and \$US 50.94 per tonne unit respectively.

This increase in price follows the People's Republic of China's decision to market tungsten contained in ores and concentrates at about \$US 60 per tonne unit. The PRC has also indicated that it will export less tungsten in 1987 compared to 1986. All the PRC sales of tungsten concentrate and ammonium paratungstate are presently controlled by China Metals and Minerals Export Corp. (Minmetals) and China National Nonferrous Metals Import and Export Corporation (CNIEC), and are subject to export license requirements.

The continued closure of mines could lead to further price increases as a result of the possible depletion of stocks and the reduced sales by the PRC. The combined effect of both these situations could result in the reopening of the closed mines in the second half of 1987.

At a recent meeting of the Chinese tungsten industry and marketing organizations and the western world miners held in Bangkok in 1987, the group discussed possible actions that could result in price improvements for tungsten ores and concentrates. The meeting was held under the auspices of the Primary Tungsten Association and was attended by all major world producers of tungsten ores and concentrates.

### Zinc

Zinc metal production capacity in western Europe considerably exceeds local consumption and attempts have been made in the past to cooperatively close some facilities to achieve a better market balance. An agreement approved by the European Community several years ago, whereby any company committing a plant for closure would receive compensation from remaining producers, failed when no closure offers materialized. Late in April, it was announced that five major European zinc producers had again begun a study of means to achieve capacity reduction. The study is expected to be completed by the end of the summer. The five companies are Boliden AB (Sweden), Société minière et métallurgique de Penarroya S.A. (France), Société des Mines et Fonderies de Zinc de la Vieille-Montagne SA (Belgium), Preussag AG (West Germany) and Outokumpu Oy (Finland) and together they operate eight zinc smelters with 47 per cent of western Europe's rated zinc smelter capacity of about 2.1 million t. The remaining capacity comprises eleven plants operated by nine companies or consortia. Western European zinc production was 1 986 000 t in 1986 compared with consumption of 1 711 000 t, and is projected to rise to nearly 2.1 million t in 1987 whereas consumption is expected to remain at 1.7 million t. The surplus is exported worldwide.



