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The Canadian Mineral Industry Monthly Report

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July 1979



Energy, Mines and
Resources Canada

Minerals

Énergie, Mines et
Ressources Canada

Minéraux

PREFACE

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

Ce rapport a été rédigé par le Secteur de la Politique Minérale du Ministère de l'Energie, des Mines et des Ressources. Bien que nous ayons eu recours à de nombreuses sources pour vous fournir les meilleurs renseignements possibles, cet exposé n'a pour objet que de passer en revue les développements actuels les plus importants de l'industrie minière canadienne, de même que les progrès accomplis ailleurs qui peuvent intéresser l'industrie canadienne. On ne doit pas considérer cet exposé comme une source de renseignements précis ou comme l'expression des vues du Gouvernement canadien.

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THE CANADIAN MINERAL INDUSTRY FOR JULY

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

HIGHLIGHTS

1. Canada's unadjusted index of Real Domestic Product was 140.8 in May 1979, an increase of 1.5 per cent from April 1979.
2. The May index for mines, quarries and oil wells was 110.6, no change from the previous month.
3. The Japan Light Metal Association plans to release all of the 22 010 tonnes of aluminum stockpile by month end to alleviate the present shortage mainly due to Aluminum Company of Canada, Limited's strike.
4. Cominco Ltd. held discussions with Mitsubishi Metal Corporation on possible participation in the development of the Valley Copper prospect in British Columbia.
5. The monthly average gold price for July 1979 of the afternoon fixings on the London Gold Market was \$294.92 (U.S.), \$343.29 (Cdn.) an ounce, compared with \$279.07 (U.S.), \$327.14 (Cdn.) for June.
6. The Quebec Superior Court rejected a request by Asbestos Corporation Limited for an open-ended injunction against provincial expropriation which became a possibility with the passing of **Bill 121** on June 22, 1979.
7. Canpotex Limited announced that sales of Canadian potash to offshore markets reached record levels in the fertilizer year ending June 30, 1979.
8. Eldorado Nuclear Limited has received federal government approval to build a new \$100 million uranium hexafluoride plant in Hope Township, west of Port Hope, Ontario.

Economic Trends

Table 1 shows Canada's unadjusted indexes of Real Domestic Product in terms of 1971=100. The overall RDP index in May was 140.8, an increase of 1.5 per cent from April 1979.

The May RDP index for mines, quarries and oil wells was 110.6, showing no change from the previous month. Mineral fuels and nonmetal mines showed decreases of 4.8 per cent and 5.3 per cent respectively over the period. The index for primary metal industries moved from 130.3 to 133.7, an increase of 2.6 per cent. Nonmetallic mineral products industries increased 5.3 per cent with cement manufacturers and ready-mix concrete manufacturers recording increases of 20.7 per cent and 49.5 per cent respectively.

Table 2 compares volume of production in major Canadian minerals. Substantial changes over the month of May were recorded in copper (up 16.8 per cent), iron ore (up 34.2 per cent), silver (up 19.6 per cent), zinc (up 47.3 per cent), gypsum (up 24.7 per cent), potash (down 15.2 per cent) and cement (up 61.9 per cent).

Table 3 shows graphically the average weekly wages of hourly rated employees for certain sectors of the mineral industry in both current and constant 1971 dollars.

TABLE 1

Canada, Indexes of Real Domestic Product, by Industries Unadjusted (1971=100)

Industry or Industry Group	1978			1979			Percentage Changes			
	Apr	May	Average 1st 5 Months	Apr	May	Average 1st 5 Months	Apr 1979	May 1979	May 1979	1st 5 Months 1979
							Apr 1978	May 1978	Apr 1979	1978
Real Domestic Product	136.0	135.8	130.7	138.7	140.8	135.6	2.0	3.7	1.5	3.7
Primary Industries										
Agriculture	166.6	140.2	86.2	156.9	148.0	91.5	-5.8	5.6	-5.7	6.2
Forestry	98.7	93.6	105.7	105.0	107.1	119.0	6.4	14.4	2.0	12.6
Fishing and Trapping	71.6	142.4	68.1	75.2	157.4	76.4	5.0	10.5	109.3	12.3
Mines, Quarries and Oil Wells	102.1	101.2	105.9	110.6	110.6	109.4	8.3	9.3	0.0	3.3
Metal Mines	87.2	85.0	92.5	80.5	85.9	81.6	-7.7	1.1	6.7	-11.8
Placer and Gold Quartz Mines	69.9	61.9	65.4	64.5	56.5	58.8	-7.7	-8.7	-12.4	-10.0
Iron Mines	21.4	21.0	58.4	111.8	121.8	105.8	422.4	480.0	8.9	81.1
Other Metal Mines	104.3	101.9	102.3	73.5	78.5	76.6	-29.5	-23.0	6.8	-25.1
Mineral Fuels	103.9	102.6	109.7	129.3	123.1	127.0	24.4	20.0	-4.8	15.7
Coal Mines	238.6	218.8	218.9	250.0	266.3	241.1	4.8	21.7	6.5	10.1
Crude Petroleum and Natural Gas	92.9	93.1	100.8	119.4	111.4	117.6	28.5	19.7	-6.7	16.7
Nonmetal Mines	123.8	119.5	120.4	133.9	126.8	129.2	8.2	6.1	-5.3	7.3
Asbestos Mines	81.1	85.6	82.9	96.1	91.8	90.2	18.5	7.2	-4.5	8.8
Secondary Industries										
Manufacturing	136.4	133.4	130.3	141.5	141.6	140.1	3.7	6.1	0.1	7.6
Nondurable Manufacturing	132.3	129.5	127.9	140.9	138.4	137.9	6.5	6.9	-1.8	7.8
Petroleum and Coal Products Industries	118.9	118.9	128.4	131.8	131.5	141.1	10.8	10.6	-0.2	9.8
Durable Manufacturing	140.4	137.2	132.6	142.1	144.8	142.3	1.2	5.5	1.9	7.3
Primary Metal Industries	129.7	128.6	126.6	130.3	133.7	131.2	0.5	4.0	2.6	3.6
Iron and Steel Mills	139.1	140.3	135.7	144.4	151.4	148.7	3.8	7.9	4.8	9.6
Steel Pipe and Tube Mills	155.7	123.8	137.1	121.3	133.2	136.3	-22.1	7.6	9.8	-0.6
Iron Foundries	137.6	126.7	130.8	153.8	145.0	146.4	11.8	14.4	-5.7	11.9
Smelting and Refining	109.8	109.8	109.0	101.0	99.9	97.8	-8.0	-9.0	-1.1	-10.3
Nonmetallic Mineral Products Industries	125.4	133.5	113.4	127.4	134.2	117.8	1.6	0.5	5.3	3.9
Cement Manufacturers	113.0	145.4	93.6	124.1	149.8	102.8	9.8	3.0	20.7	9.7
Ready-mix Concrete Manufacturers	91.2	125.1	75.9	81.6	122.0	71.4	-10.5	-2.5	49.5	-5.9
Construction Industry	112.5	120.5	106.3	100.3	108.3	98.1	-10.8	-10.1	8.0	-7.8
Transportation, Storage, Communication	142.7	144.3	139.7	151.9	154.4	148.0	6.4	7.0	1.6	5.9
Electric Power, Gas and Water Utilities	157.1	137.0	173.5	168.3	153.0	183.8	7.1	11.7	-9.1	6.0
Trade	141.3	147.9	132.6	141.5	151.9	136.1	0.1	2.7	7.3	2.6
Finance, Insurance, Real Estate	148.4	149.1	148.2	152.6	154.3	153.0	2.8	3.5	1.1	3.3
Community, Business and Personal Service	134.2	134.4	133.8	138.2	139.1	137.9	3.0	3.5	0.7	3.1
Public Administration and Defence	126.8	130.1	126.7	125.4	128.8	126.1	-1.1	-1.0	2.7	-0.5

TABLE 2

Canada, Production of Leading Minerals
('000 tonnes except where noted)

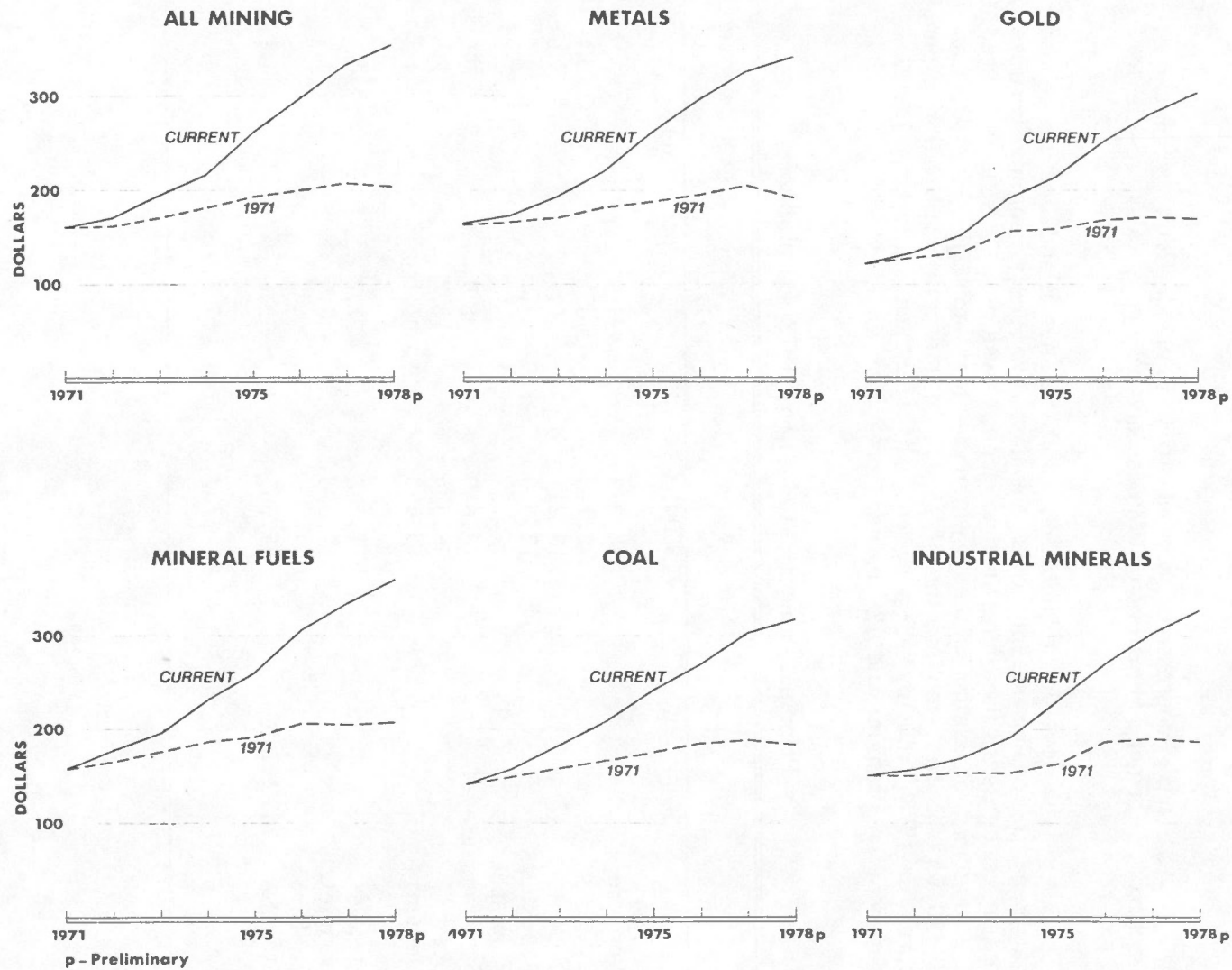
		1978			1979			Percentage Changes		
		April	May	Total 5 months	April	May	Total 5 months	May 79 May 78	May 79 April 79	1st 5 months 1979 1978
Metals										
Copper		61.0	69.0	315.1	38.7	45.2	226.3	-34.5	+16.8	-28.2
Gold	kg	4 606.4	4 286.7	21 554.8	4 180.5	4 025.4	20 524.8	-6.1	-3.7	-4.8
Iron ore		1 844.4	1 645.7	7 898.3	4 900.9	6 578.1	18 106.0	+299.7	+34.2	+129.2
Lead		20.5	23.3	124.9	28.8	27.8	135.9	+19.3	-3.5	+8.8
Molybdenum	t	1 298.3	1 126.7	6 327.5	833.8	941.0	5 180.6	-16.5	+12.9	-18.1
Nickel		17.1	14.6	81.4	8.4	8.1	35.9	-44.5	-3.6	-55.9
Silver	t	118.1	87.1	531.9	85.6 ^r	102.4	493.4	+17.6	+19.6	-7.2
Uranium ¹	t	755.2	1 061.5	3 249.1	507.2	497.4	2 440.8	-53.1	-1.9	-24.9
Zinc		89.8	65.7	388.3	90.0	132.6	484.6	+101.8	+47.3	+24.8
Nonmetals										
Asbestos		95.9	104.5 ^r	507.3 ^r	115.9	120.0	576.9	+14.8	+3.5	+13.7
Gypsum		634.1	662.1	2 507.0	568.7	708.9	2 689.1	+7.1	+24.7	+7.3
Potash K ₂ O		520.7	541.2	2 678.4	680.9	577.2	2 839.1	+6.7	-15.2	+6.0
Salt		428.0	486.1	2 657.5	428.6	450.8	2 771.8	-7.3	+5.2	+4.3
Cement		648.5	1 031.3	2 982.7	699.6	1 132.4	3 190.4	+9.8	+61.9	+7.0
Lime		168.6	178.4	801.5
Fuels										
Coal		2 397.4	2 408.0 ^r	12 515.9	2 656.8	2 909.5	13 683.2	+20.8	+9.5	+9.3
Natural gas	million m ³	7 305.3	7 631.6	39 546.7	8 027.4	7 584.8	41 799.1	-0.6	-5.5	+5.7
Crude oil and equivalent	000 m ³	5 782.0	6 234.5	32 074.7	7 813.7	7 578.4	38 312.0	+21.6	-3.0	+19.5

¹ Tonnes uranium (1 tonne U = 1.299 9 short tons U₃O₈).

^r Revised.

TABLE 3

CANADA, AVERAGE WEEKLY WAGES of HOURLY RATED EMPLOYEES



REGIONAL PROFILES

NEWFOUNDLAND

The Progressive Conservative Party, led by Mr. Brian Peckford, former Minister of Mines and Energy, was re-elected on June 18.

The level of exploration, both on the island and in Labrador, has been increasing steeply over the last two years, mainly because of major changes to the mineral land tenure system. This is reflected in the numbers of claims staked, which went up to 2,085 in 1977 and to 6,380 for the first ten months of 1978. Of the total exploration expenditures in 1978, roughly 53 per cent was spent on nonferrous metals, 30 per cent on uranium and 17 per cent on iron ore.

Principal Mineral Production, 1978 (preliminary)

Commodity	Value (\$000)	Change 1977-78 (per cent)	Proportion of Canada
Iron ore	504,973	-31.9	43.9
Zinc	41,113	1.1	5.1
Copper	18,211	30.3	1.6
Asbestos	12,539	-57.4	2.0
Fluorspar	-	-	-
Sand and gravel	7,650	8.9	2.0
Lead	6,595	16.7	2.6
Cement	5,440	5.1	1.1
Metals	577,568	-28.7	10.4
Nonmetals	17,820	-57.6	1.1
Fuels	-	-	-
Structural materials	15,969	5.1	1.1
Total	611,357	-17.9	3.1

Economic Indicators, 1978

		Amount	Change Over Previous Year (per cent)	Proportion of Canada
Population, July 1	'000	569.6	0.6	2.4
Labour Force Dec., seas. adj.	'000	201	3.6	1.8
Employment Dec. seas. adj.	'000	159	2.5	1.5
Unemployment Dec., seas. adj.	'000	33	6.4	3.7
Employed in Mining Dec.	'000	5.5	1.8	4.0
Average weekly wages, mining & milling, Dec.	\$	436.89	11.5	111.4
GPP (1977 preliminary) \$000,000		2,975.00	8.3	1.4

Recent Highlights

1. Premier Peckford appointed Leo Barry as Minister of Mines and Energy and of Industrial Development. Mr. Barry, 35, is a lawyer and was Minister of Mines and Energy under the former administration of Frank Moores in the years 1972 to 1975. In addition to his two portfolios, Mr. Barry will assume the chairmanship of the resource policy committee.
2. The speech from the Throne, read at the first session of the provincial legislature after the Conservatives were returned to power, reportedly contained several statements on natural resources:
 - Private local industry will be used to develop the economy, and the Government will exercise tighter control over non-Newfoundland companies exporting provincial resources.
 - Companies that want the right to use the province's resources must set aside a share of the profits for the provincial treasury.
 - Provincial natural resources will be used as levers for the development of other industrial benefits.
 - Provincial ownership of resources, especially minerals, offshore petroleum, and the fisheries will be "put beyond question".

3. Oil and gas exploration expenditures off Labrador and Newfoundland will exceed \$200 million in the 1979 field season. The main operators will be Esso Resources Canada Limited, Texaco Canada Inc., Petro Canada, Total Petroleum, Inc., British Petroleum Co., Chevron Standard Limited, Total Eastcan Exploration Ltd., Gulf Canada Limited and Aquitaine Company of Canada Ltd.
4. Brinco Limited has announced its intention to spend \$160 million to bring the Kitts and Michelin uranium deposits into production.
5. ASARCO Incorporated laid off 190 miners at its Buchans operations at the end of the month. The remaining workforce is now 300, and final closure, which was supposed to come this year, has been postponed until next summer.

MANITOBA

Manitoba's mineral production for 1978 was down 17 per cent from the 1977 record-setting year. Industrial minerals and fuels production were both up, and the decrease occurred in metals only. Nickel was down a full 43 per cent and zinc was down 8.9 per cent.

Base metals normally account for roughly 75 per cent of Manitoba's mineral production, nickel alone being 50 per cent.

Principal Mineral Production, 1978 (preliminary)

Commodity	Value (\$000)	Change 1977-78 (per cent)	Proportion of Canada
Nickel	162,424	-43.0	24.9
Copper	99,378	7.8	9.2
Zinc	43,915	-8.8	5.5
Petroleum (crude)	43,032	6.4	0.7
Cement	34,447	17.1	7.1
Sand and gravel	30,195	2.8	8.0
Stone	12,250	8.3	3.8
Gold	10,740	39.1	2.8
Cobalt	7,568	78.5	27.8
Silver	5,509	17.9	2.3
Metals	330,818	-25.1	5.9
Nonmetals	6,683	9.9	0.4
Fuels	43,632	7.9	0.3
Structural materials	82,858	9.7	6.1
Total	463,991	-17.6	2.3

Economic Indicators, 1978

		Amount	Change Over Previous Year (per cent)	Proportion of Canada
Population, July 1	'000	1,032.7	0.3	4.39
Labour Force Dec., seas. adj.	'000	483	3.8	4.38
Employment Dec. seas. adj.	'000	447	4.4	4.4
Unemployment Dec., seas. adj.	'000	29	(6.5)	3.3
Employed in Mining Dec.	'000	5.4	(10.0)	3.97
Average weekly wages, mining & milling, Dec.	\$	341.02	4.6	87.0
GPP (1977 preliminary) \$000,000		8,630.00	8.2	4.1

Recent Highlights

1. In its 1979-80 budget Manitoba replaced its two-tiered system of mining royalties with a new system taxing mining companies at a flat rate of 18 per cent of taxable income. The new system will reduce the fiscal burden of the industry (for details, see the monthly report for June 1979).
2. The 1979-80 budget of the Manitoba Department of Mines, Natural Resources and Environment, Mineral Resources Division, will be \$3,094,100, down from \$3,776,600 in 1978-79. The federal contribution to 1979-80 expenditures will be \$290,000 through three shared-cost geoscientific programs.
3. The level of mineral exploration, which had been declining for a few years in Manitoba, is now increasing for the second consecutive year. The acreage staked increased from 600,000 in 1978 to 480,000 in the first half of 1979.
4. On June 28, Hudson Bay Mining and Smelting Co., Limited started operation at its Stall Lake concentrator. The facility will treat one million tons of ore to produce 160,000 tons of concentrates annually, which will be hauled by rail to Flin Flon.

METALLIC MINERALS AND PRODUCTS

Aluminum

On July 5, 1979 three hundred and seventy-nine affiliated port workers at Port Alfred, Quebec voted to accept Aluminum Company of Canada, Limited's (Alcan) settlement offer. The strike is continuing. Negotiations, which were suspended on July 22, reached an "agreement in principle" on hours of work scheduled. The question of wages remains unresolved. No date has been set for future talks.

Offshore, the Japan Light Metal Association plans to release all of the 22 010 tonnes of aluminum stockpile by month end to alleviate the present shortage mainly due to Aluminum Company of Canada, Limited's strike.

At the conclusion of Prime Minister Clark's visit to Camaroon, it was announced that part of a \$2.7 million development agreement would take place with Alcan, who will undertake a study of the possible exploitation of Camaroon's bauxite reserves.

Copper

Copper prices on the London Metal Exchange (LME) levelled off in July in the 80 to 82 cent (U.S.) range. The Canadian producer price was in the range of 99.625 to 100.625 cents a pound, a slight decline in the upper end from the previous level of 106.625 cents. Copper stocks in the LME and Comex warehouses continued to decline and at month end stood at 175 550 tonnes and 62 255 tonnes respectively, a decline of 7 per cent from the combined June level.

Cominco Ltd. held discussions with Mitsubishi Metal Corporation on possible participation in the development of the Valley Copper prospect in British Columbia. In exchange for helping with the financing costs of the project, totalling \$350 million, Mitsubishi would be guaranteed a share of the output to be delivered to Japan. The deposit contains an estimated 820 million tonnes grading 0.44 per cent copper.

Fluor Mining & Metals Ltd. has been awarded the contract to build the smelter and refinery from Mexicana de Cobre's La Caridad mine which was opened in May. Both the smelter and refinery are planned to be operational by 1982 with a capacity of 150 000 tonnes a year of refined copper. Technical problems continue to affect production and it now seems likely that concentrates will not reach market before year-end.

Marinduque Mining and Industrial Corporation has been given approval by the Philippine Board of Investments to expand the ore processing capacity of the Sipalay mine from 18 000 to 30 000 tonnes per day. The Philippine and Chinese governments have finalized a seven-year trade contract whereby China will receive between 400 000 and 700 000 tonnes of copper concentrates in exchange for supplying the Philippines with 1.2 million tonnes of oil annually. Agricultural products are also involved in the deal.

Western Selcast (Pty.) Ltd., a subsidiary of Selection Trust Limited of England, and Mount Isa Mines Ltd. have announced that they are proceeding to bring into production the Tuetonic Bore copper-zinc deposit in Western Australia. The deposit contains 2.5 million tonnes and grades 3.5 per cent copper, 9.5 per cent zinc and 150 grams of silver a tonne. Mining will initially be from open pit at the rate of 300 000 tonnes of ore a year. The expected cost of the project which will be in production by mid-1981 is (Aust.) \$38 million.

Also in Australia, Peko-Wallsend Ltd. is receiving overtures from Sumitomo Metal Mining Co. Ltd. about purchasing 8 000 tonnes a year of blister copper from the Tennant Creek smelter which is scheduled to reopen in 1980. The plant was closed in 1975 because of technical production problems compounded by weak copper prices. Sumitomo is offering technical assistance in getting the 25 000 tonne per year smelter back on stream. The expected cost is \$42 (Aust.) million.

The Chilean Foreign Investment Committee has given the go-ahead to The Anaconda Company to invest up to \$1.5 (U.S.) billion to develop the Los Pelambres copper deposit which contains 428 million tonnes grading 0.78 per cent copper. This would be the largest foreign investment in Chile ever. Anaconda has called for bids on a \$12 million exploration program and feasibility study and on the basis of this work will decide whether to proceed. The proposed development would include a 75 000 tonne per year smelter and possibly a refinery as well. The molybdenum content of the deposit is 0.033 per cent.

France's Bureau de Recherches Geologiques et Minieres (BRGM) purchased Amoco Minerals Company's 28 per cent interest in the Zairean Tenke Fungurume copper-cobalt project which has been maintained on a caretaker basis since early 1976 after \$280 million in development money had been spent. The project is being assessed at a lower production rate of 100 000 tonnes a year or less. The project will not be feasible before 1982 when the Inga-Shaba power development is scheduled for completion.

The United Nations has released a study of world copper markets which indicates that \$46.5 billion of investment in new copper production is needed in the period to 1990 to meet expected demand. Copper consumption is estimated to grow at 4.3 per cent a year between 1977 and 1990. Of the total required investment, it is estimated that \$2.7 billion will be for pollution abatement. Consumption in 1990 is estimated at 11 800 000 tonnes.

Even though there have been signs of price weakness in the copper market in recent months, all is not gloomy; inventories continue to decline, substantial increases in earnings have been reported for the first six months by virtually all copper producers and most recently, U.S. producers have reported that their entire production through year-end is contracted for. The recession in the U.S. is not likely to be felt in operating levels until early 1980 although a price effect could come sooner with the presently projected bottom being about 70 cents (U.S.) a pound for the autumn.

Gold

The opening quote on the London Gold Market for July was \$282.20 (U.S.) a troy ounce, and the low for the month was \$281.35 (U.S.) on July 3. The price continued to rise, with all time high prices reached on several days during the month. The most recent all time high price for gold was the morning fixing on July 26, when the metal reached \$307.00 (U.S.) an ounce. The closing price on the London Gold Market was \$296.45 (U.S.) on July 31. The monthly average gold price for July 1979 of the afternoon fixings on the London Gold Market was \$294.92 (U.S.) (\$343.29 Cdn.) an ounce, compared to \$279.07 (U.S.) (\$327.14 Cdn.) for June.

The International Monetary Fund (IMF) held its thirty-fifth gold auction on July 3, 1979 under the bid price method and sold 444 000 fine ounces of gold at an average price of \$281.52 (U.S.) a troy ounce. Prices offered by the 13 successful bidders ranged from \$281.06 (U.S.) to \$281.87 (U.S.) an ounce. Bids were received for a total of 1 518 800 ounces. Successful bidders were European and North American banks and American precious metal dealers. The average price of the thirty-fourth gold auction held on June 6 was \$280.39 (U.S.) an ounce. The afternoon fixing price on the London Gold Market on July 3 was \$281.35 (U.S.) an ounce.

On July 17, 1979 the Treasury Department of the United States held its fifteenth gold auction and sold 750,000 troy ounces of gold at an average price of \$296.44 (U.S.) an ounce. Twenty-one firms submitted bids for a total of approximately 2,117,000 ounces of gold. By far the major purchaser was the Dresdener Bank, Frankfurt, purchasing 672,000 ounces. Other purchasers were Republic National Bank, New York (19,800 ounces), Derby and Co. Ltd., London (19,800 ounces), J. Aron and Co. Inc., New York (15,900 ounces), Union Bank of Switzerland, Zurich (9,000 ounces), Bank Leu Ltd., New York (4,800 ounces), Swiss Bank Corp., Zurich (3,900 ounces), Samuel Montagu Ltd., London (3,000 ounces), Credit Suisse, Zurich (900 ounces), and SBC Financial Ltd., Montreal (900 ounces). The average gold price at the fourteenth auction held on June 19 was \$279.02 (U.S.) an ounce. The afternoon fixing price on the London Gold Market on July 17 was \$296.30 (U.S.) an ounce.

The Royal Canadian Mint has announced that its one-ounce gold coin, the "Gold Maple Leaf", will be available early in September 1979. The coin, which will have a face value of \$50 and be produced from Canadian gold will be sold to distributors at the price of gold on the London Market plus a small premium to cover the cost of manufacturing, marketing and distribution. There will be eight official distributors. The Bank of Nova Scotia and the Canadian Imperial Bank of Commerce will be the distributors for Canada. J. Aron and Co. Ltd., Mocatta Metals Ltd. and the Republic National Bank will cover the U.S. market, with European distribution to be handled by the Deutsche Bank, the Dresdener Bank, and the Swiss Bank Corporation.

Les Mines d'Or Thompson-Bousquet Ltée has commenced production from its new gold mine near Cadillac, Quebec. The ore is being trucked to the Malartic Gold Fields (Quebec) Limited mill, some 25 miles to the east. At full production the mine will have about 60 employees.

Tin

The International Tin Council reached agreement on new ranges for the buffer stock manager. The new ranges are in Malaysian dollars per picul, with previous levels in parentheses:

Must buy (floor)	1500	(1350)
May buy	1500-1650	(1350-1450)
Neutral range	1650-1800	(1450-1600)
May sell	1800-1950	(1600-1700)
Must sell (ceiling)	1950	(1700)

The council also revised the votes of producing countries, effective October 1, 1979 (current rates are in parentheses):

Australia	69	(70)
Bolivia	189	(193)
Indonesia	159	(156)
Nigeria	27	(30)
Thailand	167	(155)
Zaire	26	(23)

During the last week of July, LME standard tin prices fell at the news of the new operating ranges. Cash prices traded level on Monday but by Thursday a £50 contango was quoted.

INDUSTRIAL MINERALS AND PRODUCTS

Asbestos

The Quebec Superior Court rejected a request by Asbestos Corporation Limited for an open-ended injunction against provincial expropriation which became a possibility with the passing of **Bill 121** on June 22, 1979. An appeal was filed by the company and is set for September when the Court of Appeal resumes. Also, a request was lost for a second temporary injunction similar to the one allowed from June 27 to July 6, 1979. The present rulings leave the company open to a forcible takeover at any time with compensation to be determined at a later date. According to press reports however, Quebec officials state that a snap expropriation is highly unlikely in the near future. Quebec apparently wants to privately negotiate a sharp price settlement despite the impasse which has prevailed to date.

The Institut de recherche et de developpement de l'amiante (IRDA) was created following June 29, 1979 signatures by the Quebec Minister of Natural Resources and the president of the Association des mines d'amiante du Quebec (AMAQ). AMAQ will incorporate and organize IRDA in its first year by means of a \$500,000 starting fund underwritten by AMAQ. During the following five years Quebec will contribute up to \$5 million with a yearly average of \$1 million and AMAQ members will contribute up to one-half of one per cent of the total value of their annual net sales of fibre. The objectives of the centre are:

- the measurement of the amount of fibre emission in the environment by existing and new asbestos-based products, and research on methods aimed at its elimination;
- the development of new asbestos-based products leading to the establishing of new industries using asbestos fibre.

Potash

A forecast of Canadian production of potash in the 1980s was completed by the Industrial Minerals Section. At 90 per cent of capacity, production projections are as follows:

<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
	(thousand of tonnes K ₂ O equivalent)				
7 000	7 200	7 500	7 750	8 250	9 200

Canpotex Limited announced that sales of Canadian potash to offshore markets reached record levels in the fertilizer year ending June 30, 1979. Sales were just over 3 million tonnes of muriate of potash (KCl), an increase of 28 per cent over last year. Brazil and China were the major importers. Inventories were down 22 per cent. Prospects for sales in the first quarter of the new fertilizer year that commenced on July 1 are excellent.

Prices for potash (f.o.b.) Saskatchewan mines are firm, averaging 75 to 80 (U.S.) cents per unit for standard grade compared to 60 to 65 (U.S.) cents a year ago.

MINERAL FUELS AND PRODUCTS

Crude Oil and Natural Gas

New sources of unconventional as well as conventional gas are being developed in the Deep Basin of northwest Alberta and northeast British Columbia. This gas is found in tight formation sandstone reservoirs of Cretaceous age within a geological section which includes normally permeable sandstone and conglomerate reservoirs. Tight formation sandstone reservoirs are defined as having in situ permeabilities in the microdarcy range. Such reservoirs do not flow gas at economic rates using standard stimulation techniques. Typical properties for tight reservoirs are low permeability (0.001 to 1 millidarcy), low porosity (less than 10 per cent) and low pre-stimulation productivity (less than 150 thousand cubic feet per day).

Commercial flow rates can be obtained from many tight reservoirs as a result of massive hydraulic fracturing (MHF). This is achieved by creating a deep vertical fracture in the sandstone reservoir by injecting fluid and sand (proppant) through the wellbore into the formation to propagate the fracture and to keep it open by sand proppant after the frac fluid is flowed back to the wellbore. Production from tight sands is a function of the fracture length since the gas flow is linear into the fracture rather than radial into the wellbore. The fracture conductivity is critical and proppants must not crush thus restricting flow. Considerable research, reservoir modelling and field tests are being conducted by the companies operating in the Deep Basin to find the optimum MHF techniques. These include determining the mechanical rock properties, orientation and height of fractures, and the composition and volumes of frac fluid and proppant. The volumes of such employed in a MHF can be very large -- over one million pounds -- and their flow rates and concentration in the frac fluid are critical.

Drilling in the Deep Basin along a 500 kilometre trend, centred on the Elmworth area southwest of Grand Prairie, Alberta has been active this year with over 80 rigs. Conventional and tight gas

discoveries are being made. There are difficulties in estimating the producible reserves of the trend because although up to 400 trillion cubic feet of gas in-place can be postulated, the economics and technology of producibility of tight gas are not yet known for these reservoirs. Proved and probable gas reserves between four and 10 trillion cubic feet of conventional gas in the area have been quoted. Continued research and productive performance are required to establish the ultimate potential of "tight gas", which will significantly impact on Canada's gas supplies for domestic use and exports.

Companies active in Deep Basin gas exploration include Amoco Canada Petroleum Company Ltd., Canadian Hunter Exploration Ltd., Chieftain Energy Resources Ltd., Dome Petroleum Limited, Esso Resources Canada Limited and Sulpetro Limited.

Uranium

Eldorado Nuclear Limited has received federal government approval to build a new \$100 million uranium hexafluoride plant on a 1.9 km² site in Hope Township, west of Port Hope, Ontario. The 9 000 tonne U/year plant, which is expected to begin operation in 1982, will employ some 200 people. The Hope Township site was chosen from among three sites (including one near Sudbury and one at Blind River) that were considered following an earlier decision by a federal environmental review panel that Eldorado's first choice, a site near Port Granby, Ontario, was unsuitable. The total selection process has taken four years. Eldorado is considering building a second new 9 000 tonne U/year refinery near Warman, Saskatchewan.

The Saskatchewan Mining Development Corporation (SMDC) has reportedly agreed in principle to the purchase of a 20 per cent interest in Amok Ltd.'s Cluff Lake project for \$66.9 million. The first phase of the Cluff Lake project is now proceeding, with first production expected in 1980 or 1981.

Australia's Western Mining Corporation Limited has agreed to sell a 49 per cent interest in its uranium-copper-gold prospect at Olympic Dam in the Roxby Downs area of South Australia to British Petroleum Company Limited (BP). BP will provide \$50 (Aus.) million for a feasibility study of the proposed 10 million tonne/year (of ore) operation. The total project could cost between \$1.0 (Aus.) and \$1.5 (Aus.) billion, including a copper smelter and refinery operation.

SPECIAL ITEM

ECOSOC COMMITTEE ON NATURAL RESOURCES

The 54-member ECOSOC Committee on Natural Resources held its 6th Session in Istanbul, June 5-15, 1979. Delegations from only 25 member states of the Committee and observers from three other member states attended; most absentees were developing country member states of Africa and the Middle East. The low turn-out meant that there was no quorum and consequently the Committee could not take any decisions. On the other hand, the absence of the more vocal delegations provided a congenial environment for a technical-economic discussion on natural resource development problems and the Committee did not get bogged down on a debate over the political issues surrounding permanent sovereignty over natural resources.

In the discussion on mineral resources, the Committee noted with approval the work of the United Nations Panel on International Mining Finance (December 1977) and the Group of Experts on Multilateral Development Assistance for the Exploration of Natural Resources (April and July 1978). Most delegations gave general support to UN programmes devoted to assisting developing countries in the field of minerals and for placing greater emphasis on nonmetallic minerals and the processing of minerals in developing countries. With reference to chromium, the Committee recognized the need for strengthening exploration activities in developing countries. In this connection, the Committee requested the Secretary-General to prepare a report for its next session on new techniques for identifying, assessing, and exploring for natural resources.

Discussion on energy resources, although stated to be the most important item on the agenda, drove home the fact that UN member states were not yet prepared to collectively address the energy problems facing the world nor to endorse a Secretariat proposal for a UN Energy Consultative Group. In the opening address, Turkey stressed the need to come to grips with the hardships faced by it and other oil-importing developing countries. The oil exporting countries countered by saying that oil was only one aspect of the development process and therefore could not be examined in isolation; further, that while some developing countries were endowed with energy resources, other developing countries could draw upon other natural resources.

Discussion on the UN Revolving Fund for Natural Resources Exploration reflected the usual difference of opinion with the donor developed countries endorsing the 'replenishment' principle while some developing countries claimed that bulk of the Fund's financial resources should come from voluntary contributions from the richer nations. Several developed country delegations, including Canada, did however suggest that replenishment formula could be modified and in particular that there could be some built-in differential for the most seriously affected countries. The Committee adopted a Japanese resolution calling for the establishment of an intergovernmental working group to prepare for a review of the activities of the Fund due to be held in 1981.

Discussion on coordination of programmes in the UN system in the field of natural resources development focussed on the documents prepared for the UN Committee on Programme and Coordination. It was generally recognized that the documents provided an excellent inventory of project/programme activities underway within the UN system in the fields of energy and minerals (410 in the case of energy and 243 for minerals). Several delegations conceded that it was virtually impossible to coordinate such a vast array of programmes.

The Committee endorsed the report of the Group of Experts on Standardization of Definitions and Terminology for Mineral Resources (attached), although there was some concern that the proposed alpha-numerical classification would have to be supplemented by descriptive terms for 'political' presentation. The Committee adopted a Canadian resolution to continue the work of the Group of Experts to find a common set of definitions and terminology for statistics on production and consumption.

SPECIAL ITEM

UNCTAD COPPER MEETING June 25 - July 6, 1979

The UNCTAD second meeting of Intergovernmental Group of Experts on Copper (IGGEC) met in Geneva, June 25 to July 6, 1979. The Canadian delegation was made up of representatives of ITC, EMR, Finance, External Affairs, and industry representatives from Inco Limited and Noranda Mines Limited.

At the conclusion of the Sixth Preparatory Meeting on copper, the IGGEC was given the task of technically examining the elements for a possible international arrangement and if agreement was forthcoming to recommend to the Seventh Preparatory Meeting the most appropriate mechanisms and their mode of operation for stabilization. The Expert Group completed the first task in a desultory and apolitical manner but failed to reach a consensus as to the most appropriate mechanisms for stabilization. As a consequence, the report to the Seventh Preparatory Meeting, scheduled for October 15 to 19, reflects the divergences of opinions as to the direction that any further intergovernmental negotiations should take.

The not unexpected inconclusive result of the meeting, led to political statements by a number of countries in the closing session. France expressed the view that there was a trend favouring stabilization through a "modest" 500 000 tonne buffer stock, supplemented with voluntary supply management features, and that the Seventh Preparatory Meeting should concentrate on negotiations towards such a scheme. Varying degrees of support for the French position were forthcoming from Peru, Philippines, Indonesia, Yugoslavia, Mexico, Norway, Netherlands and China.

Some producers led by Canada and Australia are less certain of the efficacy of buffer stocks in stabilizing the copper market while others, including Chile, Zambia, and Sweden are generally in favour of a stabilization mechanism but uncertain as to the most appropriate kind. In the consumer caucus, the U.K. changed its position from support of a buffer stock to one of uncertainty regarding the appropriateness of such schemes. Germany is in favour of an export earnings stabilization scheme while the United States will negotiate on the basis of a pure buffer stock scheme but will not accept any form of supply management.

A number of new papers were tabled and discussed. The United States submitted further econometric work on the efficacy of a pure buffer stock arrangement. An interesting feature of the latest U.S. work is the calculation of internal rates of return on the buffer stock activity and the use of future prices in centred moving averages. Nonetheless, the results remain inconclusive with much more work needed before appropriate price band widths, stock sizes, reference prices or portfolio rules can be chosen.

CIPEC tabled a paper showing simulation results for the period 1979-1989 based on the Commodity Research Unit (CRU) copper model. The simulations included buffer stock schemes with and without supply management provisions. There was little difference in performance (i.e. reduction in price variation) between pure buffer stocks and stocks with supply management under the conditions of the model. Because of the nature of the business cycle built into the CRU model, the projections do not appear to offer a sound basis for choosing appropriate mechanisms for stabilization.

At the request of Chile, the U.K. delegation allowed its industry expert, J. Clay of Rio Tinto Zinc Corporation Limited (RTZ), to table the RTZ paper "Compensatory Loans for Copper Production Cut-backs Accompanied by Stockpiling Arrangements". Most delegations were not prepared to discuss this paper in detail but it is likely to be the focus of further study at future meetings. The principal feature of the RTZ scheme is the use of loans as an incentive for producers to lessen offerings of metal during weak markets.

The Canadian delegation submitted a joint paper with the U.K., Germany, and Japan calling for improved information and systematic consultations on the copper market. The exchange of information would contribute to the efficiency and stability of the copper market.

Other papers were submitted by: the U.K. on the difficulty of determining the long term price trend; Sweden on the general economic and budgetary effects of a stabilization agreement for copper; and the International Monetary Fund on its buffer stock financing facility.

The Seventh Preparatory Meeting may become very political. The Trade and Development Board (TDB) will be meeting at the same time and the potential for the two meetings to have a symbiotic relationship is high with the TDB being of a very political nature. If France and its allies pursue their proposal for immediate negotiation of a copper agreement, the meeting will have to decide whether to call a negotiating conference even though the data base is inadequate, or whether to recommend further work by the Experts Group. There will certainly be strong political support for the former alternative.

NEW PUBLICATIONS

The following publications were prepared in the Mineral Policy Sector and the Energy Policy Sector, Department of Energy, Mines and Resources and released for distribution in July.

Preprints, **Canadian Minerals Yearbook**, 1977, Coal and Coke; Columbium (Niobium) and Tantalum; price 50¢ a copy.

Periodiques, Serie 1977, Le cuivre; l'amiante; prix 50¢ l'exemplaire.

Operators List 2, Metallurgical Works in Canada, Primary Iron and Steel; price Canada \$2.50; Other Countries \$3.00.

Liste des exploitants no. 5, Les raffineries de petrole au Canada; prix Canada \$1.50, Hors Canada \$1.80.

The following publications are available from the Publishing Center, Department of Supply and Services, Ottawa.

