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The Canadian Mineral Industry LIERARY / BIBLIOTHÈQUE

Monthly Report

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GEOLOGICAL SURVEY.

October 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 reneignements précise ou comme l'expression des vues du Gouvernement canadien.

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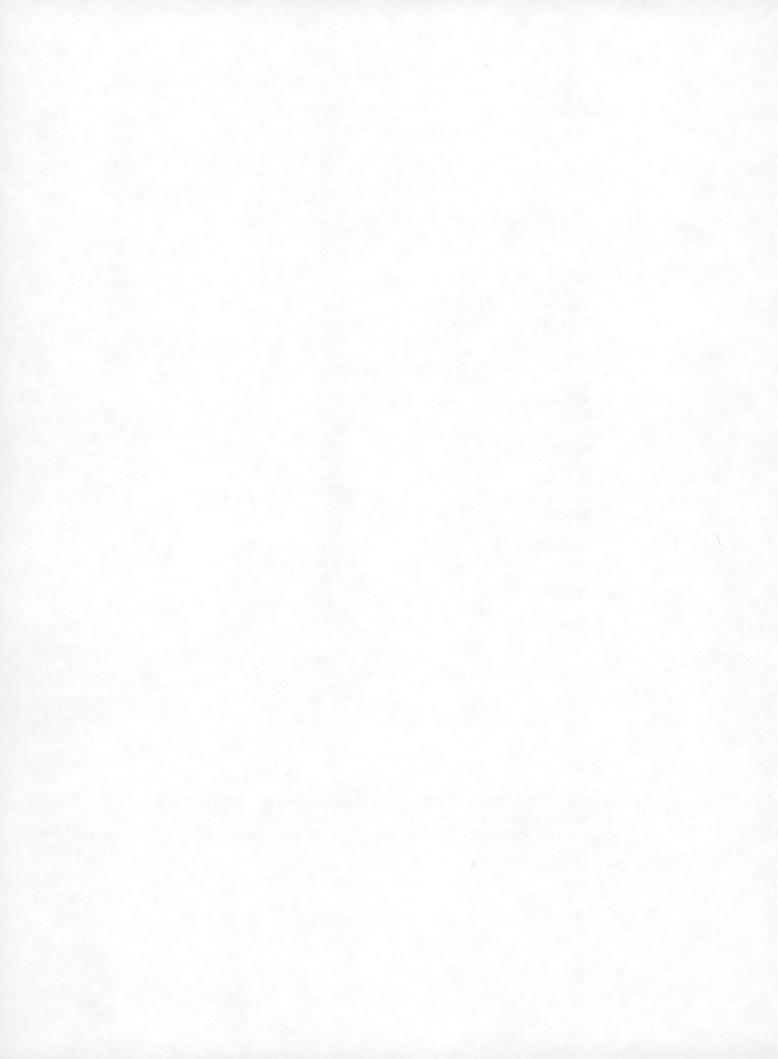
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CONTENTS

1	HIGHLIGHTS
2	ECONOMIC TRENDS
7	REGIONAL PROFILES
7 10	Yukon Territory Northwest Territories
13	METALLIC MINERALS AND PRODUCTS
13	Aluminum
14	Gold
14 15	Le minerai de fer
15 16 17	Acier
16	Lead
17	Mercury
17	Nickel
17	Silver
18	Tin
19	Titanium Slag
19	INDUSTRIAL MINERALS AND PRODUCTS
19	Asbestos
19	MINERAL FUELS AND PRODUCTS
19	Coal
20	Crude Oil and Natural Gas
22	SPECIAL ITEMS
22	UNCTAD Copper Meeting, Geneva, September 24-28, 1979
23	International Lead and Zinc Study Group
25	Mineral Shipments Through the Port of Vancouver
2)	wither at Shipments through the Port of Vancouver
21	NEW DUBLICATIONS



THE CANADIAN MINERAL INDUSTRY FOR OCTOBER

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

HIGHLIGHTS

- 1. Canada's unadjusted index of Real Domestic Product was 135.1 in August 1979, an increase of 1.4 per cent from July 1979.
- 2. The August index for Mines, Quarries and Oil Wells was 116.4, up 1.7 per cent from the previous month.
- China has approached Aluminum Company of America (Alcoa), the Aluminum Company of Canada, Limited (Alcan), and Pechiney Ugine Kuhlmann Development, Inc. to provide technical and economic assistance for the country's aluminum industry.
- 4. The gold price rose to an all-time high of \$437.00 (U.S.) (\$507.23 Cdn.) at the morning fixing on October 2 which was the high for the month.
- On October 16, 1979 the U.S. Treasury announced that it will change its future gold auction procedures by selling the metal on various days and in various amounts.
- 6. Noranda Mines Limited announced on October 2 that it had assumed ownership of Heath Steele Mines Limited by acquiring the shares formerly owned by AMAX Inc.
- 7. A group of six U.S. lead consuming companies protested the new 4 per cent ad valorem tariff for lead which will go into effect January 1, 1980.
- 8. The workers for QIT-Fer et Titane Inc. ended their four month strike and returned to work on October 17.
- 9. The Nova Scotia provincial government recently proposed a \$1.3 billion multi-year energy development program that would reduce dependence on imported oil.
- 10. The Seventh Preparatory Meeting on Copper was held at Geneva in the week of September 24-28, 1979.
- 11. The twenty-fourth session of the International Lead and Zinc Study Group convened in Geneva, October 8-12, 1979, under the chairmanship of Mr. S.H. Rochester of Canada.

ECONOMIC TRENDS

Table 1 shows Canada's unadjusted indexes of Real Domestic Product (RDP). The overall index in August was 135.1 an increase of 1.4 per cent from the previous month.

The August RDP index for mines, quarries and oil wells was 116.4, up from 114.5 in July. The index for iron mines showed a 9.9 per cent decrease over the month while other metal mines increased 14.5 per cent.

Primary metal industries increased 5.7 per cent from 103.7 in July to 109.6 in August while iron foundries and smelting and refining showed increases of 10.6 per cent and 25.7 per cent respectively.

Table 2 compares volume of production in major Canadian minerals. Output increased significantly in August compared with July for copper (28.4 per cent), lead (218.6 per cent), asbestos (48.4 per cent) and gypsum (19.4 per cent). It decreased significantly for molybdenum (14.7 per cent), uranium (33.2 per cent) and zinc (32.0 per cent).

Table 3 compares volume of crude and fabricated minerals transported through the St. Lawrence Seaway in 1977 and 1978. Crude and fabricated minerals as a percentage of total products transported through the Seaway showed a decline in 1978 for both the Montreal-Lake Ontario section (57.3 per cent to 45.7 per cent) and the Welland Canal section (60.5 per cent to 51.1 per cent). Table 4 shows the percentage changes by section and by commodity.

TABLE 1
Canada, Indexes of Real Domestic Product, by Industries Unadjusted (1971=100)

		1978			1979			Percentage		
		A	verage	00000	A	rer age	July 1979	Aug 1979	Aug 1979	1st Months
Industry or Industry Group	July		1st 8 Months	July		lst 8	July 1978	Aug 1978	July 1979	1979
	17-17								odly 1575	1370
Real Domestic Product			131.3				3.5	3.2	1.4	3.5
Primary Industries										
Agriculture	41.6	40.7	64.3	43.9	39.9	69.9	5.5	~2.0	-9.1	8.6
Forestry	93.4	127.4	107.6	116.1	134.4	120.8	24.3	5.5	15.8	12.3
Fishing and Trapping	293.8	236.5	130.9	267.2	207.1	134.2	-9.1	-12.4	-22.5	2.5
Mines, Quarries and Oil Wells	90.1	99.2	103.9	114.5	116.4	111.5	27.1	17.3	1.7	7.4
Metal Mines	64.2	73.8	86.4	99.9	107.2	87.8	55.6	45.3	7.3	1.6
Placer and Gold Quartz Mines	65.5		65.2	52.0	58.6	57.4	-20.6	-8.7	12.7	-11.9
Iron Mines	44.0			153.9	138.6	119.3	249.8	24.5	-9.9	98.8
Other Metal Mines	69.1			88.9	101.8	81.5	28.7	56.6	14.5	-13.3
Mineral Fuels	102.0			123.0	116.4	124.9	20.6	5.5	~5.4	13.3
Coal Mines	217.7			246.1	218.4	241.3	13.0	-2.8	-11.3	9.7
Crude Petroleum and Natural										
Gas	92.5	100.9	101.2	112.9	108.0	115.4	22.1	7.0	-4.3	14.0
Nonmetal Mines	94.4			105.1		126.9	11.3	6.1	11.7	8.1
Asbestos Mines	78.5		86.1	86.1		92.4	9.7	1.2	11.4	7.3
Secondary Industries	70.5	3460	00.1	0002	,,,,	,				
Manufacturing	119 0	125.4	130.0	122.8	130.1	137.4	3.2	3.7	5.9	5.7
Nondurable Manufacturing		132.2		127.8			4.4	5.3	8.9	6.8
Petroleum and Coal Products	72701	13202	12702	12/80	137.2	23763	***	3.3	0.5	0.0
Industries	146.3	143.6	134.7	147.1	153.0	144.9	0.5	6.5	4.0	8.0
Durable Manufacturing	115.6			117.9		137.0	2.0	2.1	2.7	4.8
Primary Metal Industries	113.1			103.7		123.5	-8.3	6.0	5.7	0.2
Iron and Steel Mills	137.1			133.6		144.7	-2.6	18.4	-1.0	7.2
Steel Pipe and Tube Mills	94.1			129.9	135.3	138.6	38.0	22.0	4.2	7.1
Iron Foundries	88.6			89.4	98.9	130.6	0.9	-8.8	10.6	5.4
	90.8			59.9	75.3	86.6	~34.0	-12.5	25.7	-16.9
Smelting and Refining	90.0	86.1	104.2	33.3	13.3	00.0	-34.0	-12.5	23.7	20.5
Nonmetallic Mineral Products	120 6	146.2	125.4	145.7	152.4	130.8	4.4	4.2	4.6	4.3
Industries	139.6					134.9	7.5	14.9	-1.1	10.9
Cement Manufacturers	176.6	163.4	121.7	189.8	187.7	134.9	7.5	14.5	-1.1	10.5
Ready-mix Concrete Manu-	120 7	140 6	100 0	135 5	140 5	00 7	-2.3	-0.1	5.2	-3.4
facturers	138.7			135.5		98.7	-4.8	-4.4	3.6	-6.4
Construction Industry	13/.2	141.5	118.3	130.6	135.3	110.7	-4.0	-4.4	3.0	-0.4
Transportation, Storage, Com-			7.10.0	350 6	350.0	353.0		F 0	0.7	e 1
munication	150.1	150.9	143.8	159.6	159.8	153.0	6.3	5.9	0.1	6.4
Electric Power, Gas and Water		104 0		140 0		3.60 3	70 7	0.1	2.9	7.3
Utilities	126.8			142.9		169.3	12.7	9.1	0.1	2.8
Trade	137.0			141.7		139.9	3.4	4.3	0.1	3.7
Finance, Insurance, Real Estate	150.0	150.4	149.0	156.7	156.9	154.5	4.5	4.3	0.1	3.1
Community, Business and Personal	100 =	120 0	122 7	727 0	127 4	126 A	2.5	2.5	~0.4	2.8
Service	128.7	128.2	132.7	131.9	131.4	130.4	2.5	2.5	-0.4	2.0
Public Administration and De-	207 0	124 -	700 0	777 7	127 6	120 4	- 2 7	2 2	-1.3	-1.1
fence	137.0	134.5	129.9	133.3	131.6	128.4	~2.7	-2.2	~ 7 . 2	-T - T

TABLE 2 Canada, Production of Leading Minerals ('000 tonnes except where noted)

			1978			1979			Percentage Ch	anges
										1st 8 months
		July	August	Total 8 months	July	August	Fotal 8 months	August 79 August 78	August 79 July 79	1979 1978
etals										
Copper		44.6	47.9r	474.3r	55.3	71.0	391.1	+48.3	+28.4	-17.6
Gold	kg	4 371.8	4 270.5	34 584.1	3 932.8	3 919.5	32 014.2	-8.3	-0.4	-7.5
Iron ore		2 801.2	6 850.1	19 687.9°	7 552.3	6 879.0	38 996.2	+0.5	-9.0	+98.1
Lead		26.7	11.8	191.3	8.1	25.8	201.0	+118.7	+218.6	+5.1
Molybdenum	t	1 049.2	1 142.2	9 591.5	1 080.9	922.3	7 818.5	-19.3	-14.7	-18.5
Nickel		6.8	2.7r	106.1r	11.7	14.2	72.7	+426.0	+21.4	-31.5
Silver	t	82.5	79.2	817.1	89.5	99.8	765.1	+26.1	+11.5	-6.4
Uranium ¹	t	399.7	581.1r	4 589.2r	579.2	387.4	3 969.8	-33.4	-33.2	-13.5
Zinc		67.9	88.7r	637.9r	80.4	106.1	764.9	+19.7	-32.0	+19.9
onmetals										
Asbestos		93.2	164.4r	890.9r	96.8	143.6	956.1	-12.7	+48.4	+7.4
Gypsum		693.4	886.9	4 967.9	726.3	867.0	5 085.3	-2.3	+19.4	+2.4
Potash K20		431.0	551.9	4 276.8	594.5	579.9	4 689.6	+5.1	-2.5	+9.7
Salt		442.0	399.2	3 998.8	477.0	485.2	4 227.1	+21.6	+1.8	+5.7
Cement		1 153.6	1 258.9r	6 629.2r	1 282.3	1 256.1	7 069.7	-0.3	-2.1	+6.7
Lime		159.4	175.8	1 309.9						
uels										
Conl		2 356.3	2 557.4	19 685.0°	2 595.5	2 572.6	21 619.0	+0.6	-0.9	+9.9
Coal Natural gas	million m3	7 380.9	7 515.0r	60 507.2°	6 959.1r	6 669.1	63 329.3	-11.3	-4.2	+4.7
Crude oil and equivalent	000 m3	6 246.5	7 009.2°	53 172.0°	7 895.4°	7 668.3	61 511.5	+9.4	-2.9	+15.7

 $^{^{1}}$ Tonnes uranium (1 tonne U = 1.299 9 short tons U308). r Revised.

		e Ontario Section		anal section
	1977	1978	1977	1978
		(to	nnes)	
Crude minerals				
Coal	215 973	940 399	6 734 292	5 408 206
Iron ore	20 205 603	13 542 178	19 926 871	15 679 922
Aluminum ores and concentrates	103 906	130 900	103 906	130 900
Clay and bentonite	313 203	18 725	333 665	18 698
Gravel and sand	28 839	15 167	289 440	84 801
Stone, ground or crushed	97 733	106 349	1 013 004	1 315 535
Stone, rough	326	4 237	307	5 671
Salt	783 692	746 982	1 489 847	1 386 969
Phosphate rock	5 279	54 869	-	19
Sulphur	14 309	7 214	14 309	7 214
Other crude minerals	1 239 328	1 030 381	553 413	984 398
Total crude minerals	23 008 191	16 597 401	30 459 054	25 022 333
abricated mineral products				
Coke	2 026 038	2 486 639	2 101 577	2 525 771
Gasoline	52 772	108 884	110 003	105 257
Fuel oil	2 015 025	1 887 976	958 025	910 793
Lubricating oils and greases	145 492	145 368	157 266	146 943
Other petroleum products	158 420	227 483	112 287	134 783
Tar, pitch and creosote	35 745	32 314	53 762	49 474
Pig iron	160 155	242 424	148 565	231 298
Iron and steel: bars, rods, slabs	203 078	360 910	151 638	332 878
Iron and steel: nails, wire	39 191	38 901	34 040	36 360
Iron and steel: manufactured	4 730 629	3 239 842	4 529 274	3 075 751
Scrap iron and steel	348 673	639 829	354 157	590 828
Cement	3 051	23 008	222 796	412 708
Total fabricated minerals	9 918 269	9 433 578	8 933 390	8 552 844
Total crude and fabricated minerals	32 926 460	26 030 979	39 392 444	33 575 177
Total all products	57 457 309	56 942 680	65 078 545	65 670 992
Crude and fabricated minerals as a per cent of total	57.3	45.7	60.5	51.1

TABLE 4

Canada, Crude and Fabricated Minerals Transported Through the St. Lawrence Seaway
(Percentage changes 1978/1977)

	Montreal-Lake Ontario Section	Welland Canal Section
Crude minerals		
Coal	+355.4	- 19.7
Iron ore	- 33.0	- 21.3
Aluminum ores and concentrates	+ 26.0	+ 26.0
Clay and bentonite	- 94.0	- 94.4
Gravel and sand	- 47.4	- 70.7
Stone, ground or crushed)	+ 12.8	+ 30 • 4
Stone, rough)	+ 12.0	+ 30.4
Salt	- 4.7	- 6.9
Phosphate rock	+939.4	not applicable
Sulphur	- 49.6	- 49.6
Other crude minerals	- 16.9	+ 77.9
Total crude minerals	- 27.9	- 17.9
Fabricated mineral products		
Coke	+ 22.7	+ 20.2
Gasoline	+106.3	- 4.3
Fuel oil	- 6.3	- 4.9
Lubricating oils and greases	- 0.1	- 6.6
Other petroleum products	+ 43.6	+ 20.0
Tar, pitch and creosote	- 9.6	- 8.0
Pig iron	+ 51.4	+ 55.7
Iron and steel: bars, rods, slabs	+ 77.7	+119.5
Iron and steel: nails, wire	- 0.7	+ 6.8
Iron and steel: manufactured	- 31.5	- 32.1
Scrap iron and steel	+ 83.5	+ 66.8
Cement	+654.1	+ 85.2
Total fabricated minerals	- 4.9	- 4.3
Total crude and fabricated minerals	- 20.9	- 14.8
Total all products	- 0.9	+ 0.9

REGIONAL PROFILES

YUKON TERRITORY

No new mines have been developed in the Yukon since Cyprus Anvil Mining Corporation opened the Faro mine in 1970, and one closure, Cassiar Asbestos Corporation Limited's mine at Clinton Creek, occurred in June 1978. Several good development prospects exist, but new power power generation facilities are needed as well as, in many cases, more transportation infrastructure. Some of these deposits could develop into mines in the early 1980s provided solutions are obtained for these two major impediments. On-site generation of power, using either diesel or coal, is seriously being considered by some mining companies.

Principal Mineral Production, 1978 (preliminary)

Commodity	Value	Change 1977-78	Proportion of Canada
	(\$000's)	(per c	cent)
Copper	18,066	101.8	1.7
Gold	7,354	58.0	2.0
Lead	65,466	37.5	26.2
Silver	29,405	45.9	12.3
Zinc	75,481	-6.3	9.5
Asbestos	32,404	-31.8	5.4
TOTALS			
Metallics	195,772	20.9	3.6
Nonmetallics	32,404	-31.8	2.1
ALL MINERALS	228,176	8.8	1.2

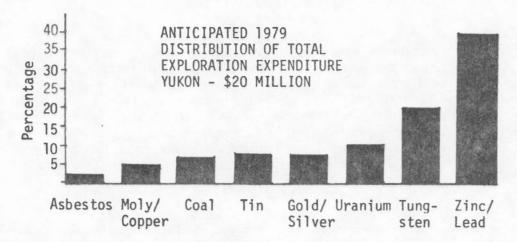
N.B. There is also a modest production of natural gas and coal.

Economic Indicators, 1979

		Change Over	Proportion
	Amount	Previous Year	of Canada
		(per cent)	(per cent)
Population, June	24,007	3.0*	0.10
Labour Force**, June	10,450	-11.5*	0.09
Employment**, June	9,847	-7.1*	0.09
Unemployment**, June	603	-50.0*	0.08
Employed in mining, June Average weekly wages in mining and milling,	1,138	-26.3	n.a.
1978 est.	\$367.57	1.3	138

^{*} Calculated over an 11 month period. ** Preliminary figures.

Exploration Activities



Source: Archer Cathro & Associates Report 30/6/79 - appearing in Yukon Economic Review (2nd Quarter - 1979).

- 1) Exploration expenditures remain high in 1979, with lead-zinc exploration remaining at the top of the list. A new lead-zinc-barite deposit was discovered 80 kilometres northwest of the Faro mine. One intersection of 39 feet yielded 18.27 per cent zinc, 2.15 per cent lead and 1.89 ounces per ton of silver.
- The main region of coal exploration is in the Bonnet Plume area, 150 kilometres northeast of Elsa. Since the discovery in 1977, Pan Ocean Oil Ltd. has outlined sufficient tonnage to support a 200megawatt station for 20 years.
- 3) Amoco Canada Petroleum Company Limited is coming up with a very interesting molybdenum-copper deposit on its optional property of Tintina Silver Mines Limited, located about 80 kilometres east-northeast of Whitehorse. The deposit, still open to the east, has been traced for nearly a mile, and thick drilling intersections have been obtained. One hole, the No. 7, intersected molybdenum mineralization from surface to the hole depth of 3,274 feet, with the best section being 355 feet averaging 0.31 per cent molybdenum disulphide.
- 4) Over 46,000 claims are currently being held in good standing.

Mine Developments

- Preliminary studies are currently underway by Cyprus Anvil to examine the development of the additional deposits acquired earlier this year. It is estimated that the first phase of development of these new properties will cost about \$50-60 million. Extensive modifications to the mill grinding circuit, more transportation facilities and additional power will all be necessary.
- The dramatic increase in the price of silver, along with lower openpit costs, is permitting a much lower cut-off grade, and significant additional reserves are expected to be developed from within the known vein system at United Keno Hill Mines Limited. The improving performance of the plant is also adding to an enhanced recovery.

Transportation

- 1) The Dempster Highway, Canada's first all-weather road to cross the Arctic Circle, was officially opened in August. The new road runs 671 kilometres from the Klondike Highway near Dawson to the Mackenzie Highway near Inuvik. An important aspect of this road is that greater access is now provided for the Mackenzie Delta, Eagle Plain and Peel River areas, all of which have good potential for natural gas.
- The White Pass and Yukon Railway is facing serious financial difficulties, and the granting of federal government aid, which had been previously rejected, is again being considered. One possibility for reviving economic operation of the railway is to extend the route to a Pelly River terminal near Faro.

Other Highlights

- 1) The Northern Canada Power Commission is conducting studies on the power requirements of the Yukon and of the most viable way of meeting these requirements. Geological and soil assessment work and foundation drilling tests are being conducted at Eagle's Nest Bluff and near Rink Rapids on the Tatchan River, in order to examine a mid-Yukon hydro site. A thermal coal plant is also under consideration.
- 2) An illegal strike at Cyprus Anvil's Faro mine from September 17 to October 4 forced the company to declare force majeure on the sale of its concentrates. The union's complaints apparently centred around the use of sub-contractors to do repair work on certain mine equipment, and overcrowding in the cookhouse.

NORTHWEST TERRITORIES

The area of the Northwest Territories is 1,303,903 square miles, one-third of Canada's total area, but in 1978 it produced only 1.6 per cent of Canada's total production, worth \$350,292. Zinc was the metal with the highest value, followed by lead, gold and tungsten. There was only a very small production of natural gas and petroleum.

Another large zinc-lead producer could soon be added to the list of producers, if present negotiations between Arvik Mines Ltd. and the federal government results in a production agreement. The last obstacle in the negotiations hinges on whether Arvik should be obliged to use Canadian ships to transport the second half of its concentrate, even if the cost is above the international rate. The deposit located on Little Cornwallis Island has reserves of 25,000,000 tons containing 18.5 per cent combined zinc and lead, and the potential for more is considered excellent.

Plans are also underway to bring a high-grade gold deposit near Cullaton Lake into production. The deposit owned by O'Brien Energy & Resources Limited and Consolidated Durham Mines & Resources Limited is small, with probable and inferred reserves of 300,000 tons, but the depth potential is considered very good, and the cut grade of 0.74 ounces/ton of gold is excellent.

Principal Mineral Production, 1978 (preliminary)

Commodity	Value	Change 1977-78	Proportion of Canada
	(\$000's)	(per c	
Cadmium	1,169	-16.0	n.a.
Copper	520	16.6	0.1
Gold	44,545	42.2	11.9
Lead	56,884	39.3	22.7
Silver	24,192	29.3	10.1
Tungsten	41,351	6.6	100.0
Zinc	148,786	18.9	18.8
Natural gas	27,235	-22.0	0.6
Crude petroleum	5,610	30.7	0.1
TOTALS			
Metallics	317,447	27.0	5.6
Fuels	32,845	-16.0	0.3
ALL MINERALS	350,292	20.4	1.6

n.a. Not available.

Economic 1	Indicators,	1978
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	Amount	Change Over Previous Year	Proportion of Canada
		(per cent)	(per cent)
Population, June 1978	45,950	7.8	0.20
Labour Force, 1978 est.	17,400	6.1	0.16
Employment, 1978 est.	12,000	0	0.12
Unemployment, 1978 est. Employed in mining*,	5,400	22.7	0.68
Oct. 1978 Average weekly wages in	1,767	6.3	9.6
mining and milling, 1978 est.	\$323.96	-1.1	122

^{*} Slightly distorted ratios, since NWT number is for all minesite employees, while Canadian number is for wage-earners only, in firms of 20 or more employees.

Northern Mineral Advisory Committee

Of major interest to both the Yukon and Northwest Territories was the submission to the Minister of Indian and Northern Affairs on August 31 of the final report of the 15-member joint industry-government committee, which was examining ways to improve the mining situation in the north. Recommendations by the committee included changes to the tax scheme, improved administrative practice, the reorganization of the Department of Indian and Northern Affairs (DINA), a phased plan for transfer of natural resources to the territories, and the establishment of a permanent committee similar in form to this first one. The Minister has responded favourably to the report's recommendations, and officials of DINA and the Department of Finance are currently working on a full response, details of which will be revealed in November at a northern development conference in Edmonton.

Native Claims

A judgement is expected soon on the landmark Baker Lake Trial, which has pitted the Inuit of Baker Lake against the federal government and six mining companies. A permanent injunction is being sought by the Inuit against the prospecting for and development of mines over a 70,000 square kilometre region near Baker Lake. The main argument has focused on the Inuit claim to 'aboriginal title' over the area. The mining industry is awaiting the outcome of this trial with great interest, but regardless of which side the judgement favours, an appeal is expected, and the final result will probably not be known for some time.

In another region, the western Arctic, the Committee for Original People's Entitlement (COPE) and the federal government has yet to finalize the agreement in principle signed a year ago. October 1979 had earlier been the expected date, but there now is some uncertainty as to exactly when the final agreement will be signed.

Other Highlights

- 1) At Cominco Ltd.'s Con gold mine on Yellowknife Bay, a \$1 million shop and warehouse complex is under construction adjacent to the Robertson headframe. A combination office and dry building was opened earlier this year at a cost of about \$1 million.
- 2) Dome Petroleum Limited is attempting to acquire direct participation in the \$2.5-billion Arctic Pilot project, which is presently being sponsored by Petro-Canada, The Alberta Gas Trunk Line Company Limited, and the Melville Shipping Company. Hearings on the project, which involve liquefying natural gas at Melville Island and shipping it year-round by two ice-breaking carriers to an eastern Canadian port, have been scheduled by the National Energy Board to begin before the end of 1979.
- Canada Tungsten Mining Corporation Limited which is Canada's only tungsten producer, has recently completed a doubling of its milling capacity to 1,200 tons per day. Existing ore reserves are sufficient for 12 years but exploration is continuing, and the potential for discovering more ore is considered good.

METALLIC MINERALS AND PRODUCTS

Aluminum

Seventy-two per cent of Aluminum Company of Canada, Limited's pots are producing metal but it will be well into November before normal operation is again achieved.

Alcan Smelters and Chemicals Limited (a subsidiary of Alcan Aluminium Limited of Montreal) plans to upgrade its Vaudreuil alumina plant in Jonquiere, Quebec. The new energy efficient kilns (\$42 million upgrading) are scheduled for operation in late 1982.

Jamaica's Minister of Mines has stated that agreement was reached between his government and major North American companies on a new bauxite-alumina production-based levy. The production incentive formula remains related to aluminum ingot price and will be retroactive to July 1, 1979. The reference quantities correspond to approximately 85 per cent of the companies' present capacities below which the current rate of 7.5 per cent will apply. It has been agreed that present initial capacity (operative point) of the levy will be at 58 (U.S.) cents. There will also be varying levy rates applicable to both the base (capped) price and to the difference between the base price and average realized price of four companies Alcan, Alcoa, Reynolds Metals Company and Kaiser Aluminum & Chemical Corporation.

It is reported that Japan will face a shortfall of about 120 000 tonnes of primary aluminum in fiscal 1979 (ending March 1980). Additional import supplies will be sought. Producer inventories in Japan stood at 109 500 tonnes at the end of July.

China has approached Aluminum Company of America (Alcoa), the Aluminum Company of Canada (Alcan), and Pechiney Ugine Kuhlmann Development, Inc. to provide technical and economic assistance for the country's aluminum industry. China plans to build a 550 000 tonnes per year aluminum-refinery complex at Kawangsi by 1985.

Eight major aluminum companies are being considered by the government of Indonesia to build a 544 000 tonne alumina plant on Bintan Island on the east coast of Sumatra or Kuala Tanjung in North Sumatra. The refinery output would be used by the 204 000 tonne Asahan smelter scheduled for completion by 1984.

Gold'

The opening fixing price on the London Gold Market for October for \$399.50 (U.S.) (\$463.82 Cdn.) a troy ounce on October 1. The gold price rose to an all-time high of \$437.00 (U.S.) (\$507.23 Cdn.) at the morning fixing on October 2, which was the high for the month, although some gold traded that day as high as \$448.00 (U.S.) an ounce. The low for the month was \$367.50 (U.S.) on the morning of October 5. The closing fixing price on the London Gold Market was \$382.00 (U.S.) (\$452.52 Cdn.) an ounce on October 31. The monthly average gold price for October 1979, of the afternoon fixing prices on the London Gold Market was \$391.66 (U.S.) (\$460.14 Cdn.) an ounce compared to \$355.12 (U.S.) (\$413.85 Cdn.) an ounce on September 30.

The International Monetary Fund held its thirty-eighth gold auction on October 10, 1979, under the bid price method, and sold 444,000 fine ounces of gold at an average price of \$412.78 (U.S.) a troy ounce. Prices offered by successful bidders ranged from \$412.51 (U.S.) to \$420.80 (U.S.) an ounce. Bids totalling 665,600 ounces were submitted by sixteen bidders. The nine successful bidders were Alexander Trust Co., Zurich; Bank Leu Ltd., Zurich; Compagnie Luxembourgeoise de la Dresdener Bank AG - Dresdener Bank International, Luxembourg; DG Bank - Deutsche Genossenschaftsbank, Frankfurt; Dresdener Bank AG, Frankfurt; Dresdener (Southeast Asia) Ltd., Singapore; Swiss Bank Corporation, Zurich; Swiss Credit Bank, Zurich; and Union Bank of Switzerland, Zurich.

On October 17, 1979, the Treasury Department of the United States held its eighteenth gold auction and sold 750,000 troy ounces of gold at an average price of \$391.98 (U.S.) an ounce. Prices offered by the eight successful bidders ranged from \$390.16 (U.S.) to \$398.07 (U.S.) an ounce. Eleven firms bid for a total of 1.2 million ounces. At last month's auction of 750,000 ounces of gold, bids were received for 2.6 million ounces.

Successful bidders in the October auction were Bank Leu, New York (4,800 ounces); Sharps Pixley, New York (39,000 ounces); Dresdener Bank, Frankfurt (503,100 ounces); Philipp Brothers, New York (33,000 ounces); Derby and Co., London (3,600 ounces); Creduit Suisse, Zurich (3,600 ounces); Swiss Bank Corp., Zurich (92,400 ounces); and United Bank of Switzerland, Zurich (70,500 ounces).

On October 16, 1979, the U.S. Treasury announced that it will change its future gold auction procedures by selling the metal on various days and in various amounts. It said it will announce the details of such sales a few days in advance. Under the new procedures, auctions can be held within a few days of an announcement, and the amounts to be auctioned will vary. The Treasury would not specify the amounts of gold to be offered in the future or how often the sales would be held. The Treasury has been selling 750,000 ounces a month since May.

The total gold stock of the U.S. Treasury amounts to 265 million troy ounces after completion of the October 17 gold auction.

Subsequently, on October 25, the U.S. Treasury announced that it would sell up to 1.25 million ounces of gold on November 1. The final amount to be sold will be set only after the Treasury has opened and examined all bids. Theoretically, the Treasury could decide not to sell any of the 1.25 million ounces if it is not happy with the bids received.

On October 24, controls against the purchase of gold by residents of the United Kingdom were lifted. Gold bullion sales to U.K. residents will be subject to the standard Value Added Tax of 15 per cent, but gold coins which are legal tender in their country of origin will not be subject to Value Added Tax.

Le minerai de fer

Les réserves de minerai de fer du Mexique seront épuisées dans quelques années. Pour cette raison la compagnie HYLSA étudie la possibilité d'importer du minerai de fer du Brésil en échange pour de l'huile lourde dont le pays est déficient. Si une entente peut être conclue la compagnie HYLSA a l'intention d'augmenter considérablement sa capacité de production d'acier qui est de l'ordre de 1.5 million de tonnes par année.

Acier

La Sydney Steel Corporation de Sydney Nouvelle-Écosse vient d'annoncer à certains de ses clients qu'elle déclarerait force majeure sur la vente de billettes d'acier à cause d'une diminution de production qui est prévue pour le premier novembre 1979. Environ six clients seront affectés dont deux compagnies Canadiennes. La production sera réduite de 25 pourcent à 450 000 tonnes par année ce qui éliminiera environ 800 emplois. Un seul des deux hauts fourneaux ainsi que trois des cinq fours Martin seront maintenus en opération. La production de rails et de lingots ne sera pas affectée.

La compagnie Dominion Foundries and Steel, Limited (Dofasco) vient d'annoncer un projet d'expansion de \$350 million pour la construction d'un laminoir à chaud d'une capacité annuelle de 4 million de tonnes. Le nouveau laminoir portera la capacité totale de laminage à 7.7 million de tonnes par année. Un représentant de Dofasco a également annoncé que la prochaine expansion majeure sous considération serait la construction d'un cinquième haut fourneaux.

Lead

During October, lead prices on the LME rose in sterling terms until mid-month, after which they declined. Because of the steady drop in the sterling/U.S. dollar rate, prices in the U.S. dollar terms lost ground to a greater extent. The LME cash price for lead at month end was equivalent to 54 (U.S.) cents a pound, down 7 (U.S.) cents a pound from the price one month earlier. Producer prices in U.S. and in Canada were 63 and 71 cents a pound respectively. Stocks of lead on the LME declined from 26 375 tonnes at the end of September to 20 800 tonnes on October 26.

The International Lead and Zinc Study Group met during October. The meeting is covered by a special item later in this report.

Noranda Mines Limited announced on October 2 that it had assumed ownership of Heath Steele Mines Limited by acquiring the shares formerly owned by AMAX. Noranda now owns a 75 per cent interest in the Little River Joint Venture which owns a New Brunswick zinc, lead and smelter copper mine.

Cyprus Anvil Mining Corporation lifted the force majeure on lead/zinc concentrate shipments to its customers effective October 12. The force majeure was declared as a result of an illegal strike which began on September 17 by workers at its Faro, Yukon Territory mine.

Lead Industries Group Ltd. of the U.K. completed the purchase of four plants from N L Industries, Inc. during October. The facilities, which produce lead solder and oxides were sold for \$40 million. A further \$10 million in working capital was retained by N L Industries.

The Occuptional Safety and Health Administration in the U.S. issued a clarification of its medical removal protection under its new lead standard, extending protection back beyond the March 1 effective date of the standard. Under the standard, workers with high blood levels must be placed in other unexposed jobs at no loss in pay, seniority or other employment rights until their blood levels fall to acceptable readings.

A group of six U.S. lead consuming companies protested the new 4 per cent ad valorem tariff for lead which will go into effect next January 1. They may approach Congress for relief from the tariff. Because of the rapid rise in lead prices which has taken place in recent months the effect of the ad valorem rate will be to double the present tariff on lead imported into the U.S.

The chief executive officer of Amalgamated Metals Corporation Ltd. told the October American Metals Market Forum, held in London, that substantial increases in primary and secondary lead production capacity will be needed in the future. Assuming an annual growth rate of only 2 per cent, lead producers would have to meet demand for 6.2 million tonnes of consumption by 1985, and 8.3 million tonnes by the year 2000.

Mercury

The General Services Adminstration (GSA) of the United States sold 600 flasks (76 pounds each) of mercury to Northbrook Metals Inc., Northbrook, Illinois for an average price of \$320.65 (U.S.) a flask. The mercury bid price is well above the average monthly price of \$171.55 (U.S.) per flask for the month of December 1978. The next sale of the GSA will be held on November 13, when 1,000 flasks will be offered.

Nickel

Labour strikes continue to be a problem for nickel companies. Workers at Inco Limited's refinery at Clydach, Wales have been on strike since October 18 and employees at the Port Nickel refinery of AMAX Inc. went out on strike August 31.

Talks have broken off between Inco Europe Limited and the Transport and General Workers Union representing the 600 employees at the Clydach refinery and there is no indication when negotiations will be resumed. Production at Clydach, which produces nickel pellets, powders, oxides and salts was run down ahead of the strike and has been at a standstill since the strike began. An Inco spokesman says that force majeure has not been declared as the company's Canadian and world stocks can meet customers needs for the foreseeable future.

At AMAX's Port Nickel refinery, 420 union workers walked off the job after turning down the company's proposal for a new three-year contract to replace the one that expired at the end of August. Since the strike began, the hydrometallurgical plant has been operated by supervisory and salaried personnel at about 60 per cent of its 80 million pounds a year capacity.

Silver

The opening price for silver for the month of October 1979 as quoted by Handy & Harman, was \$18.00 (U.S.) an ounce, an all time high for the month. Silver dropped from this high to a low of \$15.45 (U.S.) an ounce for the month on October 4, as a result of market adjustment to the recent steady price increase. The silver price was comparatively stable for the remainder of the month, varying from the above low price to a high of \$17.57 (U.S.) an ounce, closing at \$16.40 (U.S.) an ounce for the month.

The average silver price for October 1979 was \$16.78 (U.S.) an ounce compared with \$13.96 (U.S.) an ounce for September and \$9.33 (U.S.) an ounce for August. The average silver price in Canadian dollars for the month of October was \$634.70 a kilogram (\$19.74 Cdn.) an ounce compared with \$523.10 a kilogram (\$16.27 Cdn. an ounce).

Dome Exploration (U.S.) Limited, a subsidiary of Dome Mines, Limited reported that it had signed a letter of intent to acquire the assets of Earth Resources Company of Dallas Mining Division for \$28 (U.S.) million plus a royalty interest for 20 years on the production of the DeLamar silver-gold property near DeLamar, Idaho. The deal includes the sale of Earth Resources DeLamar silver mine, the NAC Imiento copper mine which has been idle since 1975, all exploration projects, industrial mineral developments, technology and patents.

Dome Mines will have a 50 per cent interest, Campbell Red Lake Mines Limited 40 per cent interest and Sigma Mines (Quebec) Limited a 10 per cent interest. Subject to various approvals the sale is expected to be closed by December 31, 1979.

Eastman Kodak Company reported that it was increasing the price for X-Ray films as a result of the recent sharp rise in the price of processed silver. The list price for medical and dental films will be raised by about 12 per cent and the price for industrial films about 15 per cent to be effective October 26. This price increase is in addition to an average price increase of 6.2 per cent effective September 26, 1979. Kodak reported that the price of X-Ray films are directly affected by silver price movements because of their high silver content. A recent new report estimates Kodak's annual silver consumption to be about 1 648 480 kilograms a year (50 million ounces), mostly used for X-Ray film.

Tin

On October 16, the U.S. Senate passed HR-595 which calls for the sale of 35,000 long tons of tin, 15 million ounces of silver and 1.5 million carats of industrial diamonds.

The Senate version (HR-595) authorizes the contribution of up to 5,000 long tons of tin to the International Tin Council.

It is now up to a House and Senate conference committee to work out the language of the final bill. The House version of HR-595 (passed on April 3, 1979) contains only the tin sales provision and a provision for the U.S. contribution to the International Tin Agreement.

This disposal action by the U.S. will no doubt have a depressing effect on the price of tin, however, it is understood that the U.S. will conduct an orderly disposal in consultation with the International Tin Council. The LME tin price dropped 26 cents per pound following the Senate action.

Titanium Slag

The workers for QIT-Fer et Titane Inc. ended their four month strike against the company by returning to work on October 17. Operations will be resumed after equipment damaged during the strike has been repaired.

INDUSTRIAL MINERALS AND PRODUCTS

Asbestos

Quebec is apparently proceeding more slowly with its plans to expropriate the Quebec assets of Asbestos Corporation Limited (ACL). This is contrary to what may have been expected following the recent rejection by General Dynamics Corporation (GDC) of Quebec's \$42 a share offer for GDC's 1.5 million shares of ACL. Government lawyers tabled a promise from the Quebec Cabinet to withhold any expropriation order until negotiations have taken place between the state asbestos agency, la Société nationale de l'amiante (SNA) and senior executives of the company. Also, now there is apparently less likelihood of a "snap" expropriation, with a takeover price to be determined at a later date, because Quebec Appeals Court judges asked the provincial government to give at least 15 days notice before ordering a takeover of the company's assets.

New negotiations will be aimed at resolving terms of an expropriation and the method of transferring management to SNA.

MINERAL FUELS AND PRODUCTS

Coal

The Nova Scotia provincial government recently proposed a \$1.3 billion multi-year energy development program that would reduce dependence on imported oil for electricity generation through greater use of indigenous coal resources and other energy options. The plan would result in a doubling of coal production, increased coal exploration programs and testing of new coal burning systems, in addition to instituting energy conservation programs and investigating other energy options. The

proposed doubling of coal production would involve one new coal mine and expansion at two existing mines on Cape Breton Island. Conversion of certain oil-fired thermal power plants to coal, and construction of 600 additional megawatts of coal fired capacity at the new Lingan power station is also under consideration. If all elements of the plan were completed, Nova Scotia's dependence on imported oil would be significantly reduced in the 1980s.

Crude Oil and Natural Gas

In October 1976, the Governments of Canada and Saskatchewan had entered into an agreement whereby each would contribute to a total of \$16.2 million towards experimental heavy oils projects proposed by companies. These projects, located in Saskatchewan, must recover the very viscous heavy oil by "exotic" methods known as tertiary or third-generation recovery. This includes steam injection, fireflood, steam soaking and other thermal and injection methods which makes the oil flow more effectively into the wellbore from the reservoir. There are currently three projects operating under this cost-shared scheme, which is called the Canada-Saskatchewan Heavy Oil Agreement, and both governments will provide 50 per cent of predetermined costs to the companies involved.

In the Lloydminster area, Mobil Oil Canada, Ltd. is operating an experimental pilot project in the Celtic field. This project is expected to cost \$15 million over a five-year period, which includes \$9 million for wells and facilities and \$6 million for operating costs. This project will utilize a process called "wet combustion"; that is, heat will be generated by burning some of the oil in the formation, with combustion supported by pumping air down injection wells. Water is also injected periodically which forms steam in the reservoir; this process "thins out" the oil and enhances recovery. Of the estimated four billion barrels of heavy oil-in-place in the project area, Mobil expects to recover much more than the 10 per cent recovered by primary and secondary methods.

Another heavy oil project in the Lloydminster area is being supported by Murphy Oil Company Ltd. and Canadian Reserve Oil and Gas Ltd. at the Eyehill pool. Murphy, the operator, is applying a combined combustion and steam injection technique to the deposit. The cost of the wells and facilities is expected to be \$8.5 million and the annual operating cost is \$1.9 million. The two governments would each contribute \$2 million under the terms of the agreement. Of the 25 wells in the project, nine are to be injection wells. Murphy expects to recover 40 per cent of the one billion barrels of heavy oil-in-place with this enhanced recovery technique.

Texasgulf Inc., on behalf of Total Petroleum (NorthAmerica) Ltd. and Saskatchewan Oil and Gas Corporation, is operating a project under the agreement near the town of Meota. It will receive a contribution of \$1.425 million in order to recover heavy oil using a steam drive method of enhanced recovery. Initially, the process uses a cyclic steam method and later it will use continuous steam injection. Texasgulf expects to recover 40 per cent of the oil-in-place. The total cost of the project is expected to be \$7.1 million for both capital and operating costs.

SPECIAL ITEM

UNCTAD Copper Meeting, Geneva, September 24-28, 1979

The Seventh Preparatory Meeting on Copper was held at Geneva in the week of September 24-28, 1979. The Canadian delegation consisted of ITC, EMR, and Finance, and an industry representative from Inco Limited.

The background events leading up to this meeting are described in previous special items, the most recent of which appeared in the July 1979 issue.

The Seventh Preparatory meeting reached deadlock by midweek between two groups of nations: those who favoured the immediate negotiation of an International Commodity Agreement for copper, and those countries, including Canada who opposed such action.

In an effort to break this deadlock, the chairman, Mr. Widiatmo of Indonesia, tabled a discussion paper as a basis for further negotiations.

In essence, it proposed that nations agree to begin negotiations on an International Commodity Agreement for copper, which would be implemented in three stages, each of two years duration. The first stage would consist of establishing the machinery for further consultation, data collection, assembling and interpretation of statistics, etc. The second stage would involve the introduction of an international buffer stock, and the third stage would consist of the application of other supporting measures.

In order to alleviate the concern of those reluctant to accept a commitment to negotiate, the chairman proposed that at the conclusion of each stage, the council would conduct a full review of the operation of the agreement, and decide whether to implement the following stage as originally negotiated, to amend it by protocol, or to renegotiate it completely. In addition, recognizing that most delegations would require time to study his proposal, the chairman suggeted that the meeting be adjourned and resumed later, thus providing participants time to consider the proposal and its implications.

Several nations, including Peru, Chile, Mexico, and Norway made statements generally supportive of the chairman's proposal, while others, including the U.S.A. and Canada, advocated caution. It was finally agreed that the meeting would adjourn and reconvene later, with further consideration of the chairman's proposal as its first item of business.

The next meeting, a reconvened Seventh Preparatory Meeting will take place in Geneva early in 1980.

SPECIAL ITEM

INTERNATIONAL LEAD AND ZINC STUDY GROUP

The twenty-fourth session of the International Lead and Zinc Study Group was convened in Geneva during the period October 8-12, 1979, under the chairmanship of Mr. S.H. Rochester of Canada. The session was preceded by a meeting of the Study Group's Statistical Committee to review the levels of world production and consumption for lead and zinc in 1979 and 1980. Generally speaking, the results of this world review, projects world supply-demand conditions this year and next that are very favourable for Canada's lead and zinc mining industry.

Lead

In 1979, western world lead mine and metal production and consumption is expected to rise marginally - mine production to 2.56 million tons and metal production to 3.93 million tons (metal production includes mine production and secondary recovery). However, much of the increase in both mine and metal production is being absorbed by rising net exports of concentrates and metal to socialist countries. It is expected that in 1979 demand for lead metal will exceed new supplies by nearly 70,000 tons. This is the fourth successive year in which demand has exceeded new supplies and producers' stocks have gradually been drawn down.

In 1980, lead mine production is forecast to rise by about 6 per cent and metal production by 3 per cent. Little growth is foreseen in lead metal consumption. The forecasts for 1980 show lead metal supplies exceeding demand by nearly 75,000 tons. Although mine and metal production forecasts have seldom been achieved in recent years, most observers felt the new lead mine production in 1980, primarily in South Africa, would ease the severe deficit-supply position for lead which has existed since 1976.

Zinc

The zinc picture is different. In 1979, western world zinc mine production is expected to rise by nearly 2 per cent to 4.73 million tons and zinc metal production by more than 10 per cent to 4.73 million tons - over 350,000 tons above the record level of 1974. Zinc metal consumption in 1979 is expected to rise by 2.4 per cent to 4.67 million tons. After allowing for exports of zinc concentrates and metal to socialist countries at much the same level as in recent years, metal supplies are expected to exceed demand by about 50,000 tons.

The forecasts for 1980 show zinc mine production rising further to nearly 5 million tons but zinc metal production more slowly to 4.78 million tons. Metal consumption is expected to remain at the 1979 level. With little change expected to net exports to socialist countries, metal supplies are forecast to exceed demand by about 75,000 tons in 1980.

In contrast to the forecast, the sharp reduction in zinc concentrate inventories that took place this year are forecast to reoccur next year, but as some observers noted, because these inventories are currently low, there is doubt that this can happen. This would also mean that the forecasts of surplus zinc metal production and rising metal inventories in 1980 are unrealistic.

Other Matters

The Study Group also noted the impact of monetary instability in recent years that had affected the relative competitiveness and profitability of zinc producers in different countries. It further noted that a cautious approach still seemed to be called for in view of the fact that year-to-date zinc metal production had exceeded demand and in this context the Group decided to hold another meeting of the Statistical Committee in April 1980.

Mr. S.H. Rochester (ITC) was re-elected Chairman of the Study Group for the coming year and Mr. D.H. Brown (EMR) was re-elected Chairman of the Production Sub-Committee. Mr. G. Nash (ITC) led the Canadian delegation which included industry representatives from Noranda Mines Limited, Cominco Ltd., Texasgulf Metals Company, Cyprus Anvil Mining Corporation and Hudson Bay Mining and Smelting Co., Limited as well as Mr. D.H. Brown (EMR), Mr. R.G. Bodie (ITC) and Mr. R.J. Jones (ITC).

SPECIAL ITEM

MINERAL SHIPMENTS THROUGH THE PORT OF VANCOUVER

One span of the Canadian National Railways second narrows bridge on Burrard Inlet, Vancouver, was knocked down on October 12 by a Japanese bulk freighter. Repair is likely to take four months. The bridge is the only direct rail link across Burrard Inlet to two bulk terminals used for mineral exports, Neptune Terminals (coal, potash, phosphate rock) and Vancouver Wharves (potash, sulphur, copper concentrate and phosphate rock). Under interim arrangements, all the sulphur and half of the potash normally handled by Vancouver Wharves will be routed on CN and CP lines to Pacific Coast Bulk Terminals at Port Moody. Vancouver Wharves will be able to receive about half of its normal potash deliveries and most of its copper concentrate deliveries by rail barge from CN's barge terminal on the Frazer River. Neptune Terminals Ltd. is likely to be hardest hit as it will be unable to receive coal from Alberta (3.5 million long tons a year) until the bridge is repaired. Neptune has made arrangements to divert these coal shipments to Westshore Terminals Ltd. at Roberts Bank.

The B.C. Railway also provides access to north shore terminals for minerals (sulphur, copper concentrates) as well as for grain and some mineral shipments could be diverted via this link, but most of BCR's spare capacity likely will be devoted to grain diverted from the CN mainline into Vancouver.

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 October.

Reviews, Canadian Minerals Yearbook, 1978, Asbestos; Cadmium; Cobalt; Gold; Iron Ore; Iron and Steel; Rhenium; Phosphate; Salt; Sand and Gravel; Sodium Sulphate; cover; index; price \$1.00 a copy.

The above publications are available from the Publishing Centre, Department of Supply and Services, Ottawa.

INFORMATION FROM THE TRC

Amalgamated Rare Earth Mines Limited changed their name to Rare Earth Resources Limited on August 14, 1979.

Hollinger Mines Limited changed their name to Hollinger Argus Limited on August 23, 1979.

Headvue Mines Limited changed their name to Phaeton Exploration Ltd. on August 22, 1979.

Cochenour Willans Gold Mines, Limited changed their name to Wilanour Resources Limited on August 8, 1979.

Amax Potash Limited changed their name to Amax of Canada Limited on August 30, 1979.

Darius Gold Mines Inc. changed their name to Delfer Gold Mines Inc. - Les Mines d'Or Delfer Inc.

Interprovincial Steel and Pipe Corporation Ltd. is now registered in Manitoba and using the name Ipsco Steel Sales. This is not a name change but rather special name being used in Manitoba only.

Atlas Yellowknife Mines Limited changed their name to Atlas Yellowknife Resources Limited on July 18, 1979.

