

# Minerals in the World Economy

By Charles L. Kimbell<sup>1</sup>

The year 1979 was a period of increased activity for the world's mineral industry, distinctly in contrast with 1978 when estimated world crude mineral output value declined slightly and most phases of the industry's activity were somewhat curtailed. In 1979, most major mineral commodities recorded significant gains in output, with a substantial number achieving new record highs; details on trade levels for 1979 were not available, but increases over those of 1978 were expected on the basis of partial data. Consumption of most commodities edged higher; in some cases the higher demand levels were met largely through draw-downs of stocks accumulated in recent years, while in other cases notable output increases were required to meet demand.

Actually, 1978 was not a bad year for all elements of the mineral industry if changes in output levels of the various commodities are considered as a measure of performance. There were far more individual commodities registering production increases between 1977 and 1978 than registered declines, but some of those reported as declining were relatively major commodities (bauxite, aluminum, copper and zinc were notable). Moreover, the upturn in productive activity in 1978 was not matched by increases in profits. However, 1979 was unquestionably a year of renewed expansion efforts, although some commodity areas, most notably the steel industry component, were still experiencing difficulties.

During 1978-79, a number of political events—some international in scope, some confined largely to single nations—had significant influence upon world mineral supplies, and other such events had the potential of having significant impact on the world's mineral industry.

Most notable of these was the continuing crisis situation in Iran. In early 1978, industrial activity there was somewhat impaired by civil disorders directed at the regime of Shah Muhammad Riza Pahlavi. Later in 1978 major strikes and riots occurred, and as 1979 began, the Shah departed the nation, leaving the Government in the hands of Prime Minister Baktiar. Among efforts to appease the rebellious factions, that Government officially prohibited oil exports to Israel and the Republic of South Africa, although this was more symbolic than practical because total oil exports had fallen to a trickle as domestic disorders so reduced output that it was barely more than adequate to meet internal demand. It should be noted that curtailment of oil output in early 1979 was probably matched by curtailments in production of virtually all other mineral products, although reporting on such activities has been very sparse and of questionable value since the deposal of the Shah. There was evidence of some resumption of activities in the early spring of 1979 as the Baktiar regime was replaced by the provisional government of Mehdi Bazargan, the group installed by Ruhollah Khomeni, but restoration of normal economic activity was impossible owing to civil disorders that continued to plague the nation, most significantly those in oil-rich Khuzistan Province and neighboring Kurdistan, both along the Iran-Iraq border, where Arabic ethnic minorities complained of oppression by the Khomeni regime and where problems flared into open fighting with the revolutionary militia.

The November seizure of the U.S. Embassy led to a new round of problems for Iran's mineral industry—termination of shipments of oil industry equipment from the

United States, the freezing of all Iranian assets in the United States, and further displays of unrest in Iran itself, where through yearend the provisional government often was unable to establish policy awaiting decisions from Khomeni. Although reporting of general mineral industry activities has been very sparse, it is believed that almost all elements of Iran's mineral industry suffered substantially during this period.

Of less significance to the world, but with rather ominous overtones, was the U.S.S.R.'s massive military intervention in the internal civil strife in Afghanistan, in late December 1979. The nation's small developed mineral industry has little significance to the rest of the world except for modest natural gas exports to the U.S.S.R.; the landlocked country's undeveloped mineral potential, somewhat more promising than that thus far developed, seemed more of a prize. Perhaps more significant, however, was the Soviet presence in this nation, on the eastern border of troubled Iran, and near the strategic Persian Gulf Strait of Hormuz, through which must move a very large part of the oil exports from Iran, Iraq, Bahrain, Kuwait, Saudi Arabia, Qatar, and the United Arab Emirates.

Elsewhere, civil strife and international economic sanctions adversely affected mineral industry output in Southern Rhodesia during 1978-79. In this country, briefly styled "Zimbabwe-Rhodesia" and slated to become simply "Zimbabwe" in 1980, the establishment of a black majority government led to a cease-fire between government troops and rebels in late 1979, to a lifting of economic sanctions, and to publication for the first time in 16 years of detailed production statistics on the output of all major mineral commodities. These data, at least for the most recent 4 years, appear in the Southern Rhodesia chapter of this volume.

In Zaire, civil strife, intensified by rebels operating from adjacent Angola, sharply curtailed copper-cobalt mining and processing activities in the Shaba (formerly Katanga) copper belt area in May 1978, and although these problems temporarily curtailed mining activities in the area and drove cobalt prices to record highs (a 350% increase between January 1978 and February 1979), industry activities seem to have settled to a more normal level by yearend 1979.

In northern Africa, the rich phosphate potential of the Western Sahara area, formally annexed by Morocco and Mauritania in 1976, remained inoperative due to insur-

gent activities, backed according to Moroccan authorities by Algerian interests. On August 5, 1979, Mauritania renounced its claim to any portion of Western Sahara, in favor of the guerilla organization, leaving Morocco to continue the struggle on its own. This dispute represented only a part of Mauritania's mineral industry setbacks: The recession-status of the world steel industry curtailed exports of iron ore, Mauritania's foremost mineral product, and the country's single substantial copper mine closed in 1978.

Slightly to the south, Liberia's Government was under considerable pressure as a result of economic conditions which involved, among other elements, the depressed world iron ore market (one of Liberia's major exports) and increased petroleum prices (one of the nation's major imports).

The nations of Eastern Europe seemed to be experiencing difficulties in meeting performance goals set under the various development plans so popular in that area. Details of these shortfalls are provided in individual country chapters in this volume.

In Southeast Asia, Vietnam, just showing signs of recovery from over 20 years of warfare of one kind or another, suffered severely from the Chinese invasion of late 1978 and early 1979, and several elements of that country's mineral industry were substantially affected. In neighboring Laos and Cambodia, little progress in mineral industry development was discerned, and internal political strife continued.

In mainland China, continued improvement of relations with the west led to increased flow of information on mineral industry development and activities, and to growing efforts directed toward a "transfusion" of technology. The most prominent mineral-related commodities traded between the United States and mainland China in 1979 (following the establishment of diplomatic ties) were petroleum machinery (the United States to China) and tin (China to the United States).

In the Western Hemisphere, Mexico registered substantial economic growth based on its blooming oil industry; this growth was significantly influenced by the unstable conditions of the Near East.

In Bolivia, a successful coup by the military against the recently installed Guevara Government led to general strikes that included the nation's tin mines in late 1979, curtailing that country's mining output for the last 2 months of the year.

In Chile, mineral industry activity was strengthened as general economic condi-

tions showed improvements; the runaway inflation rate seemed to be being curbed and new government appointments were made to the posts of economics minister and minister of mining, these jobs being

filled by individuals known to be strong supporters of free enterprise and denationalization. It remained to be seen, however, what effects if any, this might have on the nation's huge copper industry.

## PRODUCTION

The estimated value of world crude mineral production in 1979 was \$201,300 million in terms of constant 1973 dollars, nearly 5.2% above the 1978 level of \$191,400 million and 4.2% above the revised 1977 level of \$193,100 million. The value increase was

somewhat higher than the actual quantitative increase, however, because of generally higher unit prices in the more recent years. The following tabulation summarizes approximate data on value of world mineral production for selected years:

Year	Billion constant 1973 dollars	
	Value of 53 <sup>1</sup> major crude mineral commodities <sup>2</sup>	Value of all crude mineral commodities <sup>3</sup>
1950	46.2	52.6
1953	60.3	69.3
1958	77.4	93.0
1963	85.6	104.9
1968	99.2	120.2
1973	159.2	189.6
1974 <sup>r</sup>	161.3	180.7
1975	<sup>r</sup> 152.3	170.6
1976 <sup>r</sup>	164.5	184.2
1977 <sup>r</sup>	172.4	193.1
1978	170.9	191.4
1979	179.7	201.3

<sup>r</sup>Revised.

<sup>1</sup>The list of commodities included appears in table 5 of the 1974 edition of this chapter; one commodity covered in 1950-68 (beryl) is excluded from the 1973-77 figures, but the overall impact of this omission is regarded as insignificant.

<sup>2</sup>Data for all years except 1974-77 are as reported in *Annales des Mines*, December 1975, p. 13; data for 1974-77 are extrapolated from the 1973 *Annales des Mines* figures on the basis of the United Nations index of extractive industry production in the United Nations Monthly Bulletin of Statistics, August 1979, p. xiv.

<sup>3</sup>Data extrapolated from those values for 53 commodities to compensate for commodities not included in the source of that data. For details on the basis of extrapolation, see relevant text in the 1974 edition of this chapter under "Value of World Mineral Production."

The foregoing data belittle the role of the mineral industry in the world economy, however, by representing only an approximation of the value of crude production from mines, quarries, and wells, rather than the enhanced value that results from beneficiation, smelting, refining, and other equivalent downstream processing. Moreover, these data do not reflect value added due to transporting mineral materials from production areas to consuming areas. If the value added through processing—smelting of metals, refining of oil, and manufacture of basic materials such as cement and fertilizers—were included, a 1979 figure on the order of \$480,000 million could be regarded as a conservative estimate of the value of output of primary mineral-processing plants. An additional, unestimated increment should also be added for the value of secondary metals produced. It

should be stressed that crude and processed mineral commodities constitute not only the overwhelming dominant share of the total raw material base for all manufacturing endeavors, but also represent a significant requirement for the agricultural industries because of that industry's need for fertilizers of mineral origin as well as the overwhelmingly dominant source of energy for industry throughout the world and for individual energy requirements in all developed countries and a number of developing countries as well.

## PRODUCTION INDEX PATTERNS

The following tabulation summarizes the growth in world mineral industry output as reflected by the United Nations' indexes (1975=100) for extractive mineral industry components:

Year	Index numbers (1975=100)			
	Coal	Crude petroleum and natural gas	Metals	Total
1973	97.3	106.9	104.6	104.5
1974	96.6	108.4	105.6	105.9
1975	100.0	100.0	100.0	100.0
1976	101.5	110.0	102.4	108.0
1977	102.6	116.2	103.7	113.2
1978	101.9	115.4	101.8	112.2
1979	106.6	122.0	103.8	118.0

Source: United Nations. Monthly Bulletin of Statistics, August 1979, v. 33, No. 8, New York, 1979, p. xiv.

Comparison between the world extractive industry indexes in the foregoing tabulation and the indexes for processing sectors of the mineral industry presented in the following tabulation demonstrate the substantially higher levels of growth in production value for downstream products:

Year	Index numbers (1975=100)		
	Nonmetallic mineral products	Chemicals, petroleum, coal, and rubber products	Base metals
1973	100.3	102.4	107.8
1974	102.8	105.8	110.8
1975	100.0	100.0	100.0
1976	107.7	111.6	107.9
1977	112.6	121.4	109.2
1978	118.5	125.7	114.7
1979	123.1	133.6	120.2

Source: United Nations. Monthly Bulletin of Statistics, August 1980, v. 33, No. 8, New York, 1980, p. xv.

For details on differences in mineral industry index pattern growth for various world areas, see the source publication for the foregoing tabulations.

### QUANTITATIVE COMMODITY OUTPUT

Total world production of 95 distinct mineral commodities and/or specific forms of

mineral commodities is given in table 1 for 1976-79. Of these commodities, 80 registered gains and 15 recorded declines in 1979 relative to 1978 output levels, compared with 70 reporting gains and 25 recording declines between 1977 and 1978, and 73 reporting gains and 22 recording declines between 1976 and 1977. Of the 48 metals commodities listed, 33 were produced in greater quantities in 1979 than in 1978; of the 36 nonmetals commodities recorded, 30 were produced at higher levels in 1979 than in 1978; and among the 11 fuels listed, all but 2 were produced in greater quantities in 1979 than in 1978. Probably the most notable decline in output in 1979 was that recorded for gold, this in the face of the upward spiraling price for that commodity.

No viable means exists to sum up the overall production performance of the non-fuel mineral industry except on a value basis, and for these commodities, exactitudes on value are not available for detailed review. Among the fuel commodities, however, a pattern of overall growth can be demonstrated by United Nations' data in which all fuels are reduced to a common energy equivalent basis. The following tabulation summarizes world energy output for 1973-79 (1979 data estimated):

Year	Million metric tons of standard coal equivalent				
	Coal	Crude petroleum and natural gas liquids	Natural gas	Hydro and nuclear electricity	Total
1973	2,426	4,247	1,539	186	8,398
1974	2,457	4,261	1,560	209	8,487
1975	2,577	4,054	1,568	224	8,422
1976	2,650	4,381	1,633	232	8,896
1977	2,763	4,569	1,671	250	9,254
1978	2,784	4,557	1,735	257	9,332

<sup>1</sup>Data do not add to totals shown because of independent rounding.

Source: United Nations. World Energy Supplies 1973-78. Statistical Papers, Series J, No. 22, New York 1979, p. 14.

Total output of energy in all forms in 1979 was estimated to be nearly 2.8% above the 1978 level, which in turn was only 0.8% above that of 1977. As a result of the rapidly escalating cost of petroleum and the less-

than-sure availability of oil supplies from the Near East, coal production registered a more substantial increase between 1978-79 than did the other fuels.

## TRADE

In 1978, the aggregate value of total world trade in mineral commodities reached an estimated \$392,500 million, a very modest increase (only 1.7%) above the previous record high set in 1977. Comparable data for 1979 were not available in time for inclusion in this chapter; available informa-

tion clearly suggested a significant increase, but was far too sparse to provide a basis for a reasonable estimate of the percentage growth. The following tabulation summarizes the growth pattern in mineral commodity trade for 1973-78, as well as the role of that trade in total commodity trade:

Year	Estimated value of all mineral commodities traded (millions)	Change from previous year (percent)	Mineral commodities share of all commodities traded (percent)
1973	\$151,800	46.3	26.5
1974	<sup>r</sup> 325,100	<sup>r</sup> 114.2	38.8
1975	<sup>r</sup> 312,800	<sup>r</sup> 3.8	35.8
1976	<sup>r</sup> 353,700	<sup>r</sup> 13.1	34.4
1977	<sup>r</sup> 385,900	<sup>r</sup> 9.0	30.4
1978	392,500	1.7	

<sup>r</sup>Revised.

Clearly, 1978 marked a pronounced change in the growth of value of mineral commodity trade, in all likelihood as the result of both a lower rate of increase in unit prices for fuel (the factor that was overwhelmingly dominant in the growth rates for both 1973 and 1974 and an actual reduction in the quantities of fuels moved. The rather pronounced decline in the share of total trade accounted for by minerals was, to an extent the result of the increasing value of nonmineral commodities, which in turn was related to minerals in that it reflected the high cost of energy in production of other manufactures.

Table 2, which served as the basis for the

estimates of total mineral commodity trade appearing in the foregoing tabulation, provides reported data on the value of trade in major mineral commodity groups and total commodity trade for 1974-78. Table 3 shows the percentage share of major mineral commodity groups in the total trade of these commodities for 1974-78, and table 4 provides individual growth (or decline) rates for each of the major mineral commodity groups for the same years.

Major mineral commodity trade by region (such as tables 8-10 in the 1976 edition) may be obtained for 1974-78 directly from the United Nations' Monthly Bulletin of Statistics for May 1980.

## CONSUMPTION

### NONFUEL MINERAL COMMODITIES

There was an upturn in the use of most major nonfuel mineral commodities during 1978-79. In the case of some commodities, this growth in use was met by drawdowns of stocks held by both producers and consumers, with little reflection at demand increases in production; but for other commodities there were corresponding increases in output.

### MINERAL FUEL COMMODITIES

Data published by the United Nations show a 2.5% increase in total world energy consumption between 1977 and 1978, a somewhat lower growth than the 3.2% increase between 1976 and 1977, and substantially below the 6.0% growth between 1975 and 1976, but well ahead of the 0.4% increase reported between 1974 and 1975. At the time of preparation of this chapter, data

for 1979 was not yet available, but a level about equal to the 2.5% 1977-78 increase is suggested, with solid fuels showing the most

appreciable gain. The following tabulation summarizes world total energy consumption by source for 1973-78:

Year	Million metric tons of standard coal equivalent				
	Solid fuels	Liquid fuels	Natural gas	Hydro and nuclear electricity	Total
1973	2,452	3,578	1,517	187	7,734
1974	2,489	3,585	1,545	209	7,779
1975	2,516	3,524	1,545	224	7,808
1976	2,646	3,770	1,633	231	8,280
1977	2,744	3,896	1,651	250	8,541
1978	2,803	3,959	1,737	256	8,755

<sup>1</sup>Data do not add to totals shown because of independent rounding.

Source: United Nations World Energy Supplies 1973-78. Statistical Papers, Series J, No. 22, New York, 1979.

From this tabulation, it is evident that between 1977 and 1978, growth in natural gas (up 5.2%) was the most substantial component of the overall energy consumption growth, reflecting efforts of producing nations to utilize a great proportion of their gross production of this commodity, reducing flaring, venting to the atmosphere, and

reinjection to reservoirs to the maximum extent possible. Use of all other energy forms grew also, but at rates lower than that of total energy use. As a result, natural gas accounted for 19.84% of total energy consumed, only a fractionally lower share than its recorded high (19.86%) set in 1974.

## INVESTMENT

Data published by the U.S. Department of Commerce relating to U.S. foreign investment in mineral industry activities show continued growth in petroleum related activities during 1976-79 inclusive, but with a sharply higher increase in 1979 than in foregoing years; in contrast, investment in mining, which advanced only marginally in 1976-77, turned downward in 1978, and then showed a considerable upturn in 1979. However, these growths, measured in terms of current dollars, would be substantially less significant if they were to be deflated to adjust for the inflation rate.

Unfortunately, reasonably comprehen-

sive data on worldwide mineral industry activity are not available for 1979, and for 1978 only a few geographic and commodity areas are available. Table 5, showing Organization for Economic Cooperation and Development (OECD) data on steel industry investment shows the 1978 downturn reflected also in U.S. foreign mining investment data, which, together with that for petroleum, both for 1978-79, are presented in table 6. The data for 1978 presented in table 5 have not been totaled owing to the absence of figures for Japan which accounted for over one-third of the 1977 total for OECD countries.

## TRANSPORTATION

### MARINE TRANSPORT

Tankers, bulk carriers, and freighters are the three classes of vessels engaged in transporting mineral commodities. The number, gross tonnage, and deadweight tonnage of these vessels, as reported by the U.S. Maritime Administration for 1974-78 are given in table 7. Although there is a modest difference in reporting categories between 1974 and 1975-78, this difference (inclusion of refrigerated vessels among freighters rather than among other vessels

in the latter period) is of little overall significance. It should be noted that vessels in each of the three categories are not wholly devoted to mineral commodity transport. Tankers, although largely engaged in moving crude oil and refinery products, also transport some liquid chemicals, wine, molasses, and whale oil. Bulk carriers move agricultural products as well as crude minerals and mineral fertilizers, while freighters, because of their great variety, can be wholly devoted to hauling mineral products

or wholly to moving nonmineral goods, as well as carrying mixed mineral and non-mineral cargos.

Table 8 gives information on total loadings and unloadings of vessels, divided between tanker-type cargo and dry cargo, for the years 1974-78. While it is recognized that these figures on loadings and unloadings include goods other than minerals, they nevertheless serve as a reasonable measure of mineral commodity shipments, because the preponderance of total weight of all goods moved is accounted for by minerals. Some measure of the significance of mineral commodity movement to total commodity movement is apparent in data for the world's two major canals, the Panama and the Suez, and it should be noted that figures for these waterways are skewed in favor of nonmineral commodities by both waterways' inability to handle large super-tankers and bulk cargo vessels engaged in ore trade. Although exact recent figures are not available, it appears likely that minerals and mineral products account for three quarters or more of total cargo carried in any 1 year on a weight basis.

Tables 9 and 10 provide a geographic breakdown of loadings and unloadings of dry cargo and tanker cargo, respectively, for 1976-78 on a tonnage basis. Again recognizing that both tables include mineral and nonmineral goods, but also recognizing the dominance of mineral materials from the viewpoint of tonnage, these tables give some idea of the relative importance of various world areas as origins and destinations for mineral materials.

**Bulk Carriers.**—In 1978, the world's bulk carrier fleet decreased by 281 vessels, compared with an increase of 362 vessels in 1977. This represented a 5.7% decline growth in 1978 on the basis of the number of vessels, but in terms of gross tonnage there was a 0.5% increase and in terms of deadweight tonnage there was a 1% increase demonstrating the continued gradual shift toward larger vessels. In 1978, the average bulk carrier grossed 22,423 tons and had a deadweight tonnage of 38,795 compared with 1977 figures of 21,034 and 36,219 tons, respectively. The following tabulation shows the distribution of the world bulk carrier fleet by country of registry in 1978:

Country	Number of vessels	Deadweight tonnage (thousand tons)
Liberia -----	932	43,109
Greece -----	784	23,161
Japan -----	517	21,992
Norway -----	267	16,519
United Kingdom -----	252	12,227
Panama -----	309	7,604
Italy -----	151	7,503
India -----	104	4,382
Germany, Federal Republic of -----	63	5,573
Sweden -----	54	3,277
U.S.S.R. -----	150	2,895
France -----	52	2,762
Singapore -----	77	2,629
Poland -----	79	2,274
China, mainland -----	67	2,105
Brazil -----	33	2,041
Spain -----	63	2,035
Other -----	697	20,348
Total -----	4,651	180,436

**Freighters.**—In 1978, the world's freighter fleet increased by 1,965 vessels, a 16.1% increase. In terms of gross tonnage, there was only a 7.7%, increase and in terms of deadweight tonnage the increase was only 7.4%; thus average vessel size decreased for the first time in several years. The average freighter in 1978 had a gross weight of 6,202

tons (6,686 tons in 1977) and a deadweight tonnage of 8,341 tons (9,022 tons in 1977), a substantial decrease when the number of vessels involved is considered. The following tabulation shows the distribution of the world's freighter fleet by country of registry in 1978:

Country	Number of vessels	Deadweight tonnage (thousand tons)
Greece	1,484	13,993
Panama	1,572	12,057
U.S.S.R.	1,801	10,858
United States	481	6,874
Japan	782	6,783
Liberia	610	6,655
United Kingdom	589	6,185
Germany, Federal Republic of	443	4,202
China, mainland	405	4,127
Singapore	428	3,749
India	220	2,583
Norway	271	2,532
Cyprus	427	2,511
Netherlands	348	2,398
Other	4,280	32,446
Total	14,141	117,953

It is noteworthy that Panama displaced the U.S.S.R. as the second ranked nation in terms of deadweight tonnage; this followed the U.S.S.R.'s loss of first place to Greece in 1977.

**Tankers.**—In 1978, the world's tanker fleet was 100 vessels smaller than in 1977, a decrease of 1.9%. The gross tonnage for vessels of this class declined by 1.6% and the deadweight tonnage by 1.5%. The declining number of tonnages of tankers reflected the reduced growth rates in world petroleum movement and supply. The upward trend in the average size of tankers however continued, with the average tanker in 1978 grossing 34,849 tons (34,766 tons in 1977) and having a deadweight tonnage of 65,885 tons (65,625 tons in 1977). The following tabulation distributes the world's tanker fleet by country of registry in 1978:

Country	Number of vessels	Deadweight tonnage (thousand tons)
Liberia	883	104,303
Japan	473	31,129
Norway	315	30,738
United Kingdom	357	27,927
Greece	364	19,689
France	128	14,754
United States	302	13,924
Panama	251	12,617
Italy	226	9,487
Spain	131	9,340
U.S.S.R.	471	7,321
Germany, Federal Republic of	81	6,497
Sweden	76	6,294
Denmark	74	5,631
Singapore	112	5,538
Netherlands	63	4,293
Other	926	35,298
Total	5,233	344,780

### OCEAN FREIGHT RATES

Following a general (although not universal) downturn in ocean freight rates between 1976 and 1977, the worldwide inflationary spiral accentuated by ever-increasing fuel costs had the inevitable effect of increasing shipping costs, and thus freight rates increased for both tanker cargos and dry cargos, virtually without any exception, throughout 1978-79. By yearend 1979, most of the various rates listed by the United Nations in their Monthly Bulletin of Statistics (tables published in January, March, June, and September issues) had reached levels that were nearly double to more than double the 1977 level, and in a few cases were about three times the 1977 rate.



**PANAMA AND SUEZ CANALS**

The Panama Canal reported overall increases in activity during both 1978-79 (fiscal years ending September 30 of each year),

both in terms of the number of vessels transiting the canal and in terms of the amount of cargo moved—both mineral commodities and other commodities as shown in the following tabulation:

	Fiscal year <sup>1</sup>		
	1977	1978	1979
<b>Number of transits:</b>			
Commercial ocean traffic	11,896	12,677	12,935
Other traffic	1,191	1,131	1,427
Total	13,087	13,808	14,362
<b>Cargo moved:</b>			
Commercial ocean traffic:			
Mineral commodities	66,195	83,614	90,082
Other commodities	58,758	61,191	66,503
Subtotal	124,953	144,805	156,585
Other traffic	219	304	370
Total	125,172	145,109	156,955

<sup>1</sup>Revised.

<sup>1</sup>Year ending September 30 of that stated.

At the end of fiscal year 1979 (September 30), the legal status of the canal area altered markedly, as the Panama Canal Zone ceased to exist, after 65 years of operation of the canal.

In fiscal year 1979, mineral commodities accounted for 57.5% of all commercial ocean traffic through the Panama Canal, a

slightly smaller share than the 57.7% of fiscal year 1978, but greater than the 53.0% share accounted for by minerals in fiscal year 1977.

The following tabulation distributes mineral commodity trade through the canal during 1977-79 by major group:

Commodity group	Thousand metric tons		
	1977	1978	1979
<b>Metals:</b>			
<b>Ores and concentrates:</b>			
Bauxite .....	1,194	1,414	1,184
Chromite .....	132	134	160
Copper .....	514	696	508
Iron .....	2,837	1,600	1,163
Lead .....	254	117	144
Manganese .....	396	314	485
Tin .....	68	63	55
Zinc .....	628	685	739
Other and unspecified .....	1,140	1,383	1,524
<b>Total</b> .....	<b>7,163</b>	<b>6,406</b>	<b>5,962</b>
<b>Ingots and semimanufactures:</b>			
Aluminum .....	116	100	280
Copper .....	802	838	895
Iron and steel <sup>1 2</sup> .....	10,296	11,478	10,763
Lead .....	106	147	120
Tin <sup>1</sup> .....	161	160	141
Zinc .....	138	157	98
Other .....	217	244	234
<b>Total</b> .....	<b>11,836</b>	<b>13,124</b>	<b>12,531</b>
<b>Nonmetals:</b>			
Borax .....	476	465	462
Cement .....	389	369	309
Clays, fire and china .....	322	266	423
Fertilizers .....	7,278	8,059	9,350
Salt .....	851	853	931
Sulfur .....	1,260	1,277	1,481
Other .....	402	398	798
<b>Total</b> .....	<b>10,978</b>	<b>11,687</b>	<b>13,754</b>
<b>Mineral fuels:</b>			
Carbon black .....	12	84	154
Coal and coke .....	13,128	11,093	14,111
Petroleum:			
Crude .....	12,799	32,843	30,478
Refined .....	10,279	8,377	13,092
<b>Total</b> .....	<b>36,218</b>	<b>52,397</b>	<b>57,835</b>
<b>Grand total</b> .....	<b>66,195</b>	<b>83,614</b>	<b>90,082</b>

<sup>1</sup>Tinplate is included under tin in source publication.

<sup>2</sup>Includes a category identified simply as "scrap" in source publication, which may include scrap other than iron and steel scrap.

In terms of the major mineral commodity groups, fuels were dominant in each year, 1977-79, increasing their share of the total tonnage from 54.7% in 1977 to 64.2% in 1979, as crude oil supply patterns were altered. Metals ranked second, with steel semimanufactures as the dominant single commodity element; among the nonmetals, fertilizer materials were overwhelmingly dominant.

For greater detail on mineral movements through the Panama Canal, see the Panama Canal Company Annual Report series.

More recent detailed data on Suez Canal operations than that included in the 1977 edition of this chapter have not become

available since its preparation, but general reports clearly show that there was an increase in the volume of cargo moved through the canal in 1978-79, although details on the role of mineral commodities in this trade are not available. Efforts to make possible the handling of larger vessels continued.

### PIPELINES

Limitations of time and space preclude a detailed appraisal of worldwide progress on pipelines; major projects in individual countries are reported within the individual country chapters.

## PRICES

Comprehensive data on world prices for crude minerals and mineral products are not available; tables 11, 12 and 13 summarize nonferrous metal prices in the United States, the United Kingdom and Canada respectively, for 1976 to 1979 inclusive, with monthly data provided in each case for 1978 and 1979. For these 2 years, the general trend for each of the major metals listed was upward; there were minor fluctuations on a monthly basis which can be noted from the tables, but except for the U.S. copper-zinc prices for 1978 and the Canadian zinc price for 1978, all 1978 annual average prices topped 1977 annual averages, and without exception, 1979 annual averages topped those of 1978 in all three markets.

Probably the most noteworthy price trends not demonstrated in tabular form for

1978-79 were the continued growth in fuel prices, particularly for crude oil and its products, with the obvious impact on the prices of all goods whose production requires significant expenditures for energy materials. However, rivaling these in importance was the sharp upturn in the price of gold beginning in the last few months of 1979. (A similar, although somewhat more steady, increase in silver prices is reflected in tables 11-13.) This upturn in gold, far more the result of speculative buying than any upturn based either on normal supply-demand imbalance or increasing cost of mining-processing, continued at a frantic rate at yearend 1979, with the price topping \$600 per troy ounce, and although destined ultimately for a sharp decline, that point was not reached within 1979.

## STATISTICAL SUMMARY OF WORLD PRODUCTION AND TRADE OF MAJOR MINERAL COMMODITIES

The final 24 tables of this chapter (tables 14-37) extend the statistical series on production that was started in the 1963 edition of the International Area Reports volume of the Minerals Yearbook and was subsequently updated and expanded in the 1965 and 1967-77 editions. They are primarily a supplement to other statistical data within this chapter but also serve as a summary of international production data for major mineral commodities covered in greater detail on a commodity basis in volume I of the 1976 Minerals Yearbook and on a country basis in the balance of volume III.

In this edition, the data presented in these tables in most instances correspond both with the data in the individual commodity world production tables appearing in volume I and in the individual country chapters of volume III. The few differences that exist are the result of the receipt of revised data for inclusion in a country chapter subsequent to the completion of the commodity chapter. The most notable example is the inclusion in these tables and in the commodity chapter of actual reported figures for Southern Rhodesia (Zimbabwe-Rhodesia), where official reports of actual output for the past 15 years became available at midyear 1980.

One of the commodities covered is reported on a different basis than in foregoing

editions; nitrogen, previously reported on the basis of the nitrogen content of nitrogen fertilizers produced, is reported in this edition in terms of the nitrogen content of ammonia production. This is regarded as an improvement over the previous reporting practice in two respects. First, it represents a more complete coverage of the commodity than was the case previously, for it covers not only that nitrogen used in fertilizer production, but also that used in the manufacture of nonfertilizer nitrogen-containing chemicals (leaving only nitrogen gas not included, which is not within the scope of the Bureau's responsibilities). Second, the new series reflects the production of the nitrogen at the first measurable stage of its production, whereas the former reporting practice measured in some cases a downstream product produced in part from imported ammonia.

Regretfully, the series of data on world trade in major mineral commodities that has appeared in most previous editions of this chapter (tables 57-69 in the 1976 edition) could not be included for a second year owing to scheduling problems. Hopefully, these tables will be resumed in the 1980 edition.

<sup>1</sup>Supervisory physical scientist, Geographic Statistics Staff, Branch of Foreign Data.

Table 1.—World production of major mineral commodities<sup>1</sup>

Commodity and unit of measure	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
<b>METALS</b>				
Aluminum:				
Bauxite, gross weight <sup>2</sup> thousand metric tons ..	78,988	83,989	82,609	88,394
Alumina, gross weight ----- do. ....	26,758	29,460	29,552	30,526
Unalloyed ingot metal ----- do. ....	12,529	13,676	13,437	14,507
Antimony, mine output, metal content metric tons ..	68,498	65,971	65,737	71,538
Arsenic, white <sup>3</sup> 4 ----- do. ....	34,227	32,301	32,549	32,830
Beryl concentrate, gross weight <sup>3</sup> 4 ----- do. ....	2,316	2,499	2,806	2,779
Bismuth <sup>3</sup> ----- do. ....	3,986	4,475	4,423	4,264
Cadmium metal, smelter ----- do. ....	16,773	17,935	16,765	18,260
Chromite, gross weight <sup>4</sup> thousand metric tons ..	8,536	9,228	9,025	9,580
Cobalt:				
Mine output, metal content ----- metric tons ..	21,402	21,800	25,229	28,693
Metal, refined ----- do. ....	18,771	19,146	22,575	26,223
Columbium-tantalum concentrates <sup>4</sup> 5 ----- do. ....	23,080	21,618	23,560	25,109
Copper:				
Mine output, metal content thousand metric tons ..	7,451	7,661	7,557	7,607
Metal:				
Smelter:				
Primary <sup>6</sup> ----- do. ....	7,251	7,497	7,435	7,531
Secondary <sup>7</sup> ----- do. ....	518	532	489	505
Refined:				
Primary <sup>6</sup> ----- do. ....	7,066	7,337	7,431	7,517
Secondary <sup>7</sup> ----- do. ....	1,173	1,200	1,276	1,367
Gold, mine output, metal content thousand troy ounces ..	39,021	38,923	39,063	38,880
Iron and steel:				
Iron ore, gross weight thousand metric tons ..	882,945	840,847	854,508	909,629
Metal:				
Pig iron ----- do. ....	509,286	505,743	527,800	528,355
Ferroalloys ----- do. ....	12,223	11,824	11,965	13,080
Steel, crude ----- do. ....	663,309	670,471	710,648	738,407
Lead:				
Mine output, metal content ----- do. ....	3,303	3,406	3,445	3,513
Metal, smelter:				
Primary <sup>6</sup> ----- do. ....	3,370	3,295	3,469	3,535
Secondary <sup>7</sup> ----- do. ....	1,673	1,945	1,873	1,937
Magnesium metal, smelter, primary <sup>8</sup> metric tons ..	244,749	251,255	282,273	301,812
Manganese ore, gross weight thousand metric tons ..	24,652	22,825	22,382	24,418
Mercury, mine output, metal content 76-pound flasks ..	243,274	199,539	183,597	188,502
Molybdenum, mine output, metal content metric tons ..	88,679	95,126	100,225	101,796
Monazite concentrate (source of rare-earth metals and thorium) ----- do. ....	12,070	15,791	21,573	23,634
Nickel:				
Mine output, metal content thousand metric tons ..	800	821	664	702
Metal, smelter ----- do. ....	771	728	622	646
Platinum-group metals, mine output thousand troy ounces ..	5,978	6,310	6,332	6,660
Selenium metal, smelter <sup>4</sup> 5 ----- metric tons ..	1,125	1,371	1,428	1,559
Silver, mine output, metal content thousand troy ounces ..	316,303	340,213	334,657	344,457
Tellurium metal, smelter <sup>4</sup> 5 ----- metric tons ..	101	133	157	162
Tin:				
Mine output, metal content ----- do. ....	228,364	235,909	251,183	256,002
Metal, smelter ----- do. ....	233,622	232,378	244,945	261,631
Titanium concentrates, gross weight:				
Ilmenite <sup>4</sup> 5 ----- thousand metric tons ..	3,165	3,315	3,504	3,492
Rutile <sup>3</sup> 4 ----- do. ....	121	363	322	382
Titaniferous slag ----- do. ....	818	694	941	777
Tungsten, mine output, metal content metric tons ..	41,270	42,675	45,459	45,105
Uranium oxide, mine output, U <sub>3</sub> O <sub>8</sub> content <sup>4</sup> 5 do. ....	23,400	33,565	40,473	42,043
Vanadium, mine output, metal content ----- do. ....	28,334	30,152	31,864	37,614
Zinc:				
Mine output, metal content thousand metric tons ..	5,690	5,906	5,878	5,998
Metal, smelter:				
Primary <sup>6</sup> ----- do. ....	5,370	5,527	5,614	5,998
Secondary <sup>7</sup> ----- do. ....	242	224	207	235
Zirconium concentrate <sup>3</sup> 4 5 ----- do. ....	448	432	446	544
<b>NONMETALS</b>				
Asbestos ----- do. ....	5,085	5,221	5,154	5,287
Barite ----- do. ....	5,247	5,821	6,815	6,978
Boron minerals ----- do. ....	2,341	2,748	3,075	2,612
Bromine <sup>4</sup> ----- do. ....	298	289	324	345
Cement, hydraulic ----- do. ....	745,144	798,812	846,197	885,090

See footnotes at end of table.

Table 1.—World production of major mineral commodities<sup>1</sup> —Continued

Commodity and unit of measure	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
NONMETALS—Continued				
Clays: <sup>4</sup>				
Bentonite <sup>5</sup> ----- thousand metric tons..	5,012	5,269	5,864	5,940
Fuller's earth <sup>5</sup> ----- do -----	1,727	1,638	1,695	1,728
Kaolin ----- do -----	16,281	18,002	19,342	20,045
Corundum, natural ----- metric tons..	8,566	9,865	9,818	9,892
Diamond: <sup>4</sup>				
Gem ----- thousand carats..	9,675	10,358	10,417	10,657
Industrial ----- do -----	29,021	28,724	28,536	29,041
Total ----- do -----	38,696	39,082	38,953	39,698
Diatomite <sup>4</sup> ----- thousand metric tons..	1,725	1,758	1,789	1,764
Feldspar <sup>4</sup> ----- do -----	2,806	2,938	3,088	3,098
Fluorspar ----- do -----	4,440	4,653	4,797	4,877
Graphite <sup>3</sup> ----- metric tons..	458,389	505,383	534,670	523,776
Gypsum ----- thousand metric tons..	65,946	70,809	76,156	75,814
Iodine ----- metric tons..	10,064	10,636	10,679	11,189
Lime <sup>4</sup> ----- thousand metric tons..	89,800	91,408	92,603	94,914
Magnesite <sup>3</sup> ----- do -----	9,021	9,673	9,695	10,063
Mica <sup>4</sup> ----- do -----	214	226	246	243
Nitrogen, N content of ammonia <sup>10</sup> ----- do -----	56,891	62,156	66,060	70,491
Perlite ----- do -----	1,271	1,361	1,399	1,420
Phosphate rock and guano ----- do -----	107,514	116,568	125,064	126,829
Potash, marketable, K <sub>2</sub> O equivalent ----- do -----	24,386	25,801	26,000	26,345
Pumice <sup>4</sup> <sup>5</sup> ----- do -----	15,229	15,713	17,775	17,675
Salt ----- do -----	160,097	158,382	157,900	165,743
Sodium compounds, n.e.s.: <sup>4</sup>				
Sodium carbonate ----- do -----	25,035	27,226	28,383	28,531
Sodium sulfate ----- do -----	4,450	4,219	4,152	4,274
Strontium minerals <sup>4</sup> <sup>5</sup> ----- metric tons..	68,797	91,837	85,608	78,500
Sulfur, elemental basis:				
Elemental <sup>11</sup> ----- thousand metric tons..	17,086	16,449	17,124	17,913
From pyrite ----- do -----	9,426	9,413	9,469	9,862
Byproduct <sup>12</sup> ----- do -----	24,376	26,231	26,806	27,059
Total ----- do -----	50,888	52,093	53,399	54,834
Talc, soapstone, pyrophyllite ----- do -----	5,242	5,625	5,833	6,287
Vermiculite <sup>4</sup> <sup>5</sup> ----- metric tons..	523,149	523,974	559,020	554,059
MINERAL FUELS AND RELATED MATERIALS				
Carbon black <sup>4</sup> <sup>5</sup> ----- thousand metric tons..	3,666	3,727	4,021	4,141
Coal:				
Anthracite ----- million metric tons..	190	211	217	223
Bituminous coal ----- do -----	2,309	2,400	2,445	2,613
Lignite ----- do -----	889	912	919	941
Total ----- do -----	3,388	3,523	3,581	3,777
Coke: <sup>13</sup>				
Metallurgical ----- thousand metric tons..	378,106	369,329	365,555	376,788
Other ----- do -----	19,015	18,624	19,983	18,863
Gas, natural, marketed ----- billion cubic feet..	48,236	49,948	51,789	53,209
Natural gas liquids <sup>4</sup> ----- million 42-gallon barrels..	1,043	1,082	1,080	1,177
Peat ----- thousand metric tons..	66,577	66,305	67,069	66,633
Petroleum:				
Crude ----- million 42-gallon barrels..	21,108	21,882	22,167	22,993
Refined ----- do -----	21,358	22,429	22,835	23,461

<sup>e</sup>Estimate. <sup>P</sup>Preliminary.<sup>1</sup>Incorporates numerous revisions from world production tables and country production tables appearing in volumes I and III, respectively, of the Minerals Yearbook, as well as from the table corresponding to this table in previous editions of this chapter.<sup>2</sup>Includes bauxite equivalent of nepheline syenite and alunite produced in the U.S.S.R. (the only producer on record of such materials as a source of aluminum).<sup>3</sup>Excludes data for the United States (withheld to avoid disclosing company proprietary data).<sup>4</sup>Excludes data for China (no adequate basis for estimation available).<sup>5</sup>Excludes data for the U.S.S.R. (no adequate basis for estimation available).<sup>6</sup>Includes all metal clearly identified as primary as well as all metal that cannot be subdivided clearly between primary and secondary (see footnote 7).<sup>7</sup>Includes only that metal that is clearly identified as secondary. Some countries do not distinguish between primary and secondary and for some of these, no basis is available for estimating the breakdown of total production. For such countries, the total has been included under primary (see footnote 6).<sup>8</sup>Excludes data for the United States (withheld to avoid disclosing company proprietary data), which in previous years accounted for approximately 50% of the world total.<sup>9</sup>Includes leucoxene.<sup>10</sup>Data are for years ending June 30 of that stated.<sup>11</sup>Comprises sulfur produced by the Frasch process plus sulfur mined in the elemental state from ores.<sup>12</sup>Comprises sulfur recovered from coal gasification, metallurgical operations (except pyrite processing), natural gas, petroleum, tar sands, spent oxides, and gypsum, whether recovered in the elemental state or as a sulfur compound.<sup>13</sup>Production of coke other than metallurgical by China and the U.S.S.R. is included with metallurgical coke production.

**Table 2.—Value of world export trade in major mineral commodities<sup>1</sup>**

(Million U.S. dollars)

Commodity group	1974 <sup>r</sup>	1975 <sup>r</sup>	1976 <sup>r</sup>	1977 <sup>r</sup>	1978
<b>Metals:</b>					
All ores, concentrates, scrap -----	14,980	15,002	16,198	15,788	15,889
Iron and steel -----	46,445	45,761	44,667	46,755	57,150
Nonferrous metals -----	24,829	18,462	21,711	24,240	28,770
Subtotal -----	86,254	79,225	82,576	86,783	101,809
Nonmetals, crude only -----	5,785	6,191	6,281	6,964	6,702
Mineral fuels -----	172,924	169,508	199,444	220,777	211,351
Total -----	264,963	254,924	288,301	314,524	319,862
All commodities -----	838,268	872,978	990,163	1,123,202	1,290,258

<sup>r</sup>Revised.

<sup>1</sup>Data presented are for selected major commodity groups of the Standard International Trade Classification Revised (SITC-R) and as such exclude some mineral commodities classified in that data array together with other (nonmineral) commodities. SITC-R categories included are as follows: All ores, concentrates, and scrap—SITC Division 28; iron and steel—SITC Division 67; nonferrous metals—SITC Division 68; nonmetals (crude only)—SITC Division 27; and mineral fuels—SITC Division 3. Major items not included are the metals, metalloids, and metal oxides of SITC Group 513; mineral tar and other coal-, petroleum-, and gas-derived crude chemicals of SITC Division 52; manufactured fertilizers of SITC Division 56; and nonmetallic mineral manufactures of SITC Groups 661, 662, 663, and 667. Data include special category exports, ships' stores and bunkers, and other exports of minor importance, and exclude the intertrade of the centrally planned economy countries of Asia and trade between the Federal Republic of Germany and the German Democratic Republic.

Source: United Nations. Monthly Bulletin of Statistics, New York, v. 34, No. 5, May 1980, pp. xxxiv-lvi.

**Table 3.—Distribution of value of world export trade in major mineral commodity groups, by commodity group<sup>1</sup>**

(Percent)

Commodity group	1974	1975	1976	1977	1978
<b>Metals:</b>					
All ores, concentrates, scrap -----	<sup>r</sup> 5.7	<sup>r</sup> 5.9	<sup>r</sup> 5.6	<sup>r</sup> 5.0	5.0
Iron and steel -----	17.5	18.0	15.5	14.9	17.8
Nonferrous metals -----	<sup>r</sup> 9.3	7.2	7.5	<sup>r</sup> 7.7	9.0
Subtotal -----	<sup>r</sup> 32.5	<sup>r</sup> 31.1	<sup>r</sup> 28.6	27.6	31.8
Nonmetals, crude only -----	2.2	2.4	2.2	2.2	2.1
Mineral fuels -----	<sup>r</sup> 65.3	<sup>r</sup> 66.5	<sup>r</sup> 69.2	70.2	66.1

<sup>r</sup>Revised.<sup>1</sup>For detailed definition of groups, see footnote 1, table 2.**Table 4.—Growth of value of world export trade in major mineral commodity groups<sup>1</sup>**

(Percent change from previous year)

Commodity group	1974	1975	1976	1977	1978
<b>Metals:</b>					
All ores, concentrates, scrap -----	+36.7	+0.2	+7.8	-2.5	+0.6
Iron and steel -----	+63.2	-1.5	-2.4	+4.7	+22.2
Nonferrous metals -----	+43.5	-25.6	+17.6	+11.6	+18.7
All metals -----	+52.1	-8.1	+4.2	+5.1	+17.3
Nonmetals, crude only -----	+50.6	+7.0	+1.5	+10.9	-3.8
Mineral fuels -----	+173.8	-2.0	+17.7	+10.7	-4.3
All major mineral commodity groups -----	114.2	-3.8	+13.1	+9.1	+1.7
All commodities -----	46.1	+4.1	+13.4	+13.4	+14.9

<sup>1</sup>For detailed definition of groups, see footnote 1, table 5.

**Table 5.—Annual investment expenditure in the steel industry for selected countries**

(Million dollars unless otherwise specified)

Country or country group	1976	1977	1978
EEC -----	1,293	2,360	2,055
EFTA <sup>2</sup> -----	816	476	375
Other countries:			
Australia -----	164	140	132
Canada -----	392	416	384
Japan -----	3,443	3,824	NA
Spain -----	420	476	309
Turkey -----	271	304	387
United States -----	3,255	2,850	2,538
Total -----	12,054	10,846	NA

<sup>1</sup>Revised. NA Not available.

<sup>2</sup>Source reports that values for European Economic Community (EEC) countries are in terms of "million units of account." For the Federal Republic of Germany (included in EEC in this tabulation), the source indicates that for 1976, 823.1 million "units of account" was equivalent to \$855.3 million (no conversion rate given for other countries for 1976 and no conversion rate given for any country for 1977, and no further explanation is offered).

<sup>3</sup>European Free Trade Association (EFTA) figures exclude data for Switzerland.

<sup>4</sup>Figures have been totaled as if EEC data were in U.S. dollars, in keeping within totals appearing in a graph in source publication (see footnote 1).

Source: Organization for Economic Cooperation and Development. The Iron and Steel Industry in 1977. Paris, 1979, p. 25; and The Iron and Steel Industry in 1978. Paris, 1980, p. 25.

**Table 6.—U.S. direct foreign investment in mineral industries:  
Value, earnings, and income**

(Million dollars)

Area and country	Mining, smelting, refining			Petroleum		
	Value	Income <sup>1</sup>	Interest, dividends, earnings <sup>2</sup>	Value	Income <sup>1</sup>	Interest, dividends, earnings <sup>2</sup>
1976 -----	7,060	929	591	28,408	5,123	4,385
1977 -----	7,073	813	612	31,420	5,481	4,646
1978: -----						
Canada -----	3,006	196	125	8,246	983	419
Latin America and other Western Hemisphere:						
Latin American Republics:						
Chile -----	W	-3	-2	W	W	W
Peru -----	W	W	W	W	122	123
Venezuela -----	W	4	4	392	42	37
Other <sup>3</sup> -----	1,248	51	61	1,756	199	69
Subtotal -----	1,248	52	63	2,148	363	229
Other Western Hemisphere -----	399	125	125	1,744	186	134
Total <sup>4</sup> -----	1,647	177	188	3,892	549	363
Europe:						
EEC:						
Denmark and Ireland -----	1	-1	( <sup>5</sup> )	615	-58	-45
United Kingdom -----	W	-2	-3	6,329	165	222
Other <sup>3 6</sup> -----	6	-3	( <sup>6</sup> )	5,653	621	327
Subtotal -----	7	-6	-3	12,597	728	504
Other Western Europe -----	22	-1	( <sup>6</sup> )	2,525	300	311
Total <sup>4</sup> -----	29	-6	-3	15,122	1,028	816
Africa:						
South Africa, Republic of -----	W	14	9	W	W	W
Other -----	556	W	W	1,856	365	256
Total <sup>7</sup> -----	556	14	9	1,856	365	256
Near East -----	W	1	--	-3,701	1,483	1,450
Far East and Pacific:						
Japan -----	--	--	--	1,694	221	66
Australia -----	1,296	223	175	907	206	150
New Zealand -----	W	1	1	W	W	W
Other -----	W	W	W	3,314	820	752
Total -----	1,296	224	176	4,915	1,247	968

See footnotes at end of table.

**Table 6.—U.S. direct foreign investment in mineral industries:  
Value, earnings, and income —Continued**

(Million dollars)

Area and country	Mining, smelting, refining			Petroleum		
	Value	Income <sup>1</sup>	Interest, dividends, earnings <sup>2</sup>	Value	Income <sup>1</sup>	Interest, dividends, earnings <sup>2</sup>
1978—Continued						
International and unallocated shipping	--	--	--	2,557	-8	63
Grand total <sup>4</sup>	6,990	616	527	33,710	5,707	4,352
1979:						
Canada	3,151	436	342	9,168	1,654	826
Latin America and other Western Hemisphere:						
Latin American Republics:						
Chile	9	W	W	W	9	4
Peru	812	W	W	646	308	307
Venezuela	W	5	3	431	108	60
Other <sup>3</sup>	471	261	243	1,564	201	72
Subtotal	1,292	266	246	2,641	626	443
Other Western Hemisphere	360	111	111	1,927	746	305
Total <sup>4</sup>	1,652	377	357	4,568	1,372	749
Europe:						
EEC:						
Denmark and Ireland	1	-2	( <sup>5</sup> )	212	-42	-39
United Kingdom	18	-5	-6	7,236	1,577	716
Other <sup>3</sup> <sup>6</sup>	--	-2	( <sup>5</sup> )	8,117	2,560	642
Subtotal	19	-9	-6	15,565	4,095	1,319
Other Western Europe	25	( <sup>6</sup> )	( <sup>5</sup> )	2,990	435	264
Total <sup>4</sup>	44	-9	-6	18,555	4,530	1,583
Africa:						
South Africa, Republic of	W	27	16	W	111	10
Other	589	W	W	2,161	1,181	1,100
Total <sup>7</sup>	589	27	16	2,161	1,292	1,110
Near East	W	2	( <sup>5</sup> )	W	W	W
Far East and Pacific:						
Japan	--	--	--	2,111	307	131
Australia	1,300	330	223	1,211	W	167
New Zealand	W	2	2	W	W	-8
Other	W	W	W	W	W	W
Total	1,300	332	225	3,322	307	290
International and unallocated shipping	--	--	--	2,502	237	198
Grand total <sup>4</sup>	7,185	1,232	987	41,533	13,222	8,243

<sup>1</sup>Revised. W Withheld (in source publication) to avoid disclosing company proprietary data.<sup>2</sup>Sum of U.S. share in net earnings of subsidiary and branch profits.<sup>3</sup>Sum of interest, dividends, and earnings of unincorporated affiliates.<sup>4</sup>Calculated, by difference between listed detail and reported total.<sup>5</sup>Detail may not add to totals shown because of independent rounding and exclusion of some data in detail.<sup>6</sup>Less than 1/2 unit.<sup>7</sup>Includes Belgium, France, the Federal Republic of Germany, Italy, Luxembourg, and the Netherlands.<sup>8</sup>Not reported in source; sum of reported detail, and incomplete in some cases, owing to withheld data in detail.

Source: U.S. Department of Commerce. Survey of Current Business. V. 60, No. 8, August 1980, pp. 27-36.



Table 7.—World merchant fleet distribution, by type<sup>1</sup>

	1974	1975	1976	1977	1978
<b>Number of vessels:</b>					
Tankers .....	5,121	5,311	5,383	5,333	5,233
Bulk carriers .....	4,075	4,272	4,570	4,932	4,651
Freighters .....	<sup>2</sup> 11,449	12,575	12,923	12,176	14,141
Other .....	<sup>3</sup> 1,804	714	710	655	487
<b>Total .....</b>	<b>22,449</b>	<b>22,872</b>	<b>23,586</b>	<b>24,096</b>	<b>24,512</b>
<b>Gross tonnage:</b>					
Tankers .....	143,399	163,731	179,116	185,405	182,367
Bulk carriers .....	82,313	88,194	95,451	103,741	104,291
Freighters .....	<sup>2</sup> 68,855	75,284	77,939	81,414	87,700
Other .....	<sup>3</sup> 11,799	5,833	5,697	5,268	4,551
<b>Total .....</b>	<b>306,366</b>	<b>333,042</b>	<b>358,203</b>	<b>375,828</b>	<b>378,909</b>
<b>Deadweight tonnage:</b>					
Tankers .....	261,440	302,217	335,600	349,976	344,780
Bulk carriers .....	139,267	150,080	163,298	178,633	180,436
Freighters .....	<sup>2</sup> 93,476	101,248	104,639	109,857	117,953
Other .....	<sup>3</sup> 9,165	3,027	2,962	2,753	2,319
<b>Total .....</b>	<b>503,348</b>	<b>556,572</b>	<b>606,499</b>	<b>641,219</b>	<b>645,488</b>

<sup>1</sup>Maritime Administration classification. Tankers include whaling tankers. Vessels shown here as "Other" include combination passenger and cargo and combination passenger and refrigerated cargo. The contribution of these vessels to mineral commodity trade is regarded as unimportant. Data are as of December 31 of year indicated.

<sup>2</sup>Excludes refrigerated freighters.

<sup>3</sup>Includes refrigerated freighters.

Source: U.S. Department of Commerce, Maritime Administration. Merchant Fleets of the World. Annual issues covering 1973 through 1977, and unpublished data supplied for 1978.

Table 8.—World shipping loadings and unloadings<sup>1</sup>

(Million metric tons)

	1974	1975	1976	1977 <sup>2</sup>	1978
<b>Loadings:</b>					
Tanker cargo .....	1,837	1,644	1,803	1,868	1,840
Dry cargo .....	1,476	1,428	1,588	1,585	1,621
<b>Total .....</b>	<b>3,313</b>	<b>3,072</b>	<b>3,391</b>	<b>3,453</b>	<b>3,461</b>
<b>Unloadings:</b>					
Tanker cargo .....	1,784	1,660	1,814	1,869	1,818
Dry cargo .....	1,477	1,396	1,469	1,531	1,560
<b>Total .....</b>	<b>3,261</b>	<b>3,056</b>	<b>3,283</b>	<b>3,400</b>	<b>3,378</b>

Source: United Nations. Monthly Bulletin of Statistics, New York. V. 34, No. 1, January 1980, p. xxxv.

Table 9.—World shipping of dry cargo, by geographical area

(Million metric tons)

Area	Loadings			Unloadings		
	1976	1977	1978	1976	1977	1978
<b>Market economy countries:</b>						
<b>Developed:</b>						
Australia and New Zealand	163	<sup>r</sup> 172	146	19	20	21
Canada	111	116	113	38	41	45
Japan	76	79	81	335	<sup>r</sup> 322	301
South Africa, Republic of	26	30	40	7	<sup>r</sup> 11	8
United States	252	<sup>r</sup> 249	265	114	<sup>r</sup> 137	152
Western Europe	323	<sup>r</sup> 315	378	579	<sup>r</sup> 568	626
Other	4	<sup>r</sup> 4	4	--	<sup>r</sup> 1	1
Total	955	<sup>r</sup> 965	1,027	1,092	<sup>r</sup> 1,100	1,154
<b>Developing:</b>						
Caribbean	24	<sup>r</sup> 25	25	12	<sup>r</sup> 17	12
Venezuela	22	<sup>r</sup> 25	25	7	7	8
Other Latin America	149	<sup>r</sup> 145	150	51	<sup>r</sup> 57	62
Far East	144	<sup>r</sup> 155	130	110	<sup>r</sup> 144	121
Near East	46	<sup>r</sup> 22	36	44	<sup>r</sup> 45	49
Northern Africa	34	<sup>r</sup> 29	39	30	<sup>r</sup> 37	39
Other Africa	81	66	60	25	32	23
Other	10	<sup>r</sup> 17	6	4	<sup>r</sup> 6	2
Total	510	<sup>r</sup> 484	471	283	<sup>r</sup> 345	316
<b>Centrally planned economy countries:</b>						
U.S.S.R.	66	<sup>r</sup> 69	70	<sup>r</sup> 33	26	38
Other	57	<sup>r</sup> 67	53	<sup>r</sup> 61	60	52
Total	123	136	123	94	86	90

<sup>r</sup>Revised.

Source: United Nations. Monthly Bulletin of Statistics, New York. V. 34, No. 1, January 1980, pp. xxxv-xxxviii.

Table 10.—World shipping of tanker cargo, by geographical area

(Million metric tons)

Area	Loadings			Unloadings		
	1976	1977	1978	1976	1977	1978
<b>Market economy countries:</b>						
<b>Developed:</b>						
Australia and New Zealand	3	<sup>r</sup> 3	4	16	16	17
Canada	4	4	4	18	18	17
Japan	--	--	--	241	<sup>r</sup> 260	255
South Africa, Republic of	--	--	--	17	<sup>r</sup> 16	17
United States	6	<sup>r</sup> 1	9	374	<sup>r</sup> 431	394
Western Europe	115	<sup>r</sup> 138	128	736	<sup>r</sup> 732	106
Other	21	21	21	28	<sup>r</sup> 24	24
Total	149	<sup>r</sup> 167	166	1,430	<sup>r</sup> 1,497	1,430
<b>Developing:</b>						
Caribbean	56	<sup>r</sup> 48	72	101	<sup>r</sup> 93	94
Venezuela	109	<sup>r</sup> 103	100	--	<sup>r</sup> 67	--
Other Latin America	19	<sup>r</sup> 21	27	68	<sup>r</sup> 111	65
Far East	93	<sup>r</sup> 111	109	117	<sup>r</sup> 111	130
Near East	1,023	<sup>r</sup> 1,033	989	24	<sup>r</sup> 27	24
Northern Africa	145	<sup>r</sup> 160	158	16	<sup>r</sup> 11	11
Other Africa	119	<sup>r</sup> 124	110	<sup>r</sup> 17	<sup>r</sup> 16	14
Other	--	--	1	<sup>r</sup> 1	<sup>r</sup> 5	2
Total	1,564	<sup>r</sup> 1,600	1,566	344	<sup>r</sup> 330	340
<b>Centrally planned economy countries:</b>						
U.S.S.R.	78	<sup>r</sup> 85	88	8	7	8
Other	<sup>r</sup> 12	<sup>r</sup> 16	20	<sup>r</sup> 32	<sup>r</sup> 35	40
Total	<sup>r</sup> 90	<sup>r</sup> 101	108	<sup>r</sup> 40	<sup>r</sup> 42	48

<sup>r</sup>Revised.

Source: United Nations. Monthly Bulletin of Statistics, New York. V. 34, No. 1, January 1980, pp. xxxv-xxxviii.

Table 11.—Nonferrous metal prices in the United States

(Average, cents per pound unless otherwise specified)

Year and month	Alumi- num <sup>1</sup>	Copper <sup>2</sup>	Lead <sup>3</sup>	Zinc <sup>4</sup>	Tin <sup>5</sup>	Silver <sup>6</sup>
1976 -----	44.341	68.824	23.102	37.010	349.241	435.346
1977 -----	51.339	65.804	30.703	34.386	499.381	462.302
1978:						
January -----	53.000	62.625	33.000	30.500	549.000	493.395
February -----	53.000	62.593	33.000	30.063	549.833	493.563
March -----	53.000	61.410	33.000	29.000	518.478	527.286
April -----	53.000	63.625	33.000	29.000	499.188	511.840
May -----	53.000	63.768	31.000	29.000	531.591	512.068
June -----	52.000	65.569	31.000	29.012	555.227	531.586
July -----	53.000	63.079	31.000	29.800	563.350	533.065
August -----	53.000	66.232	32.168	31.156	592.087	549.496
September -----	53.000	66.632	34.059	32.373	633.500	557.480
October -----	53.000	69.495	36.610	32.829	710.333	591.791
November -----	53.000	70.191	38.000	34.425	693.050	586.645
December -----	53.900	70.897	38.000	34.498	644.450	592.850
Average -----	53.075	65.510	33.653	30.971	586.674	540.089
1979:						
January -----	55.000	75.574	40.760	34.574	643.273	625.455
February -----	55.000	88.697	43.632	35.617	685.222	741.716
March -----	55.341	95.718	45.749	37.241	713.864	744.518
April -----	58.000	97.322	48.000	38.993	691.619	749.250
May -----	58.000	90.234	48.805	39.387	695.000	837.346
June -----	58.000	87.241	56.510	39.387	707.857	853.833
July -----	58.000	85.768	58.066	39.387	708.333	913.505
August -----	58.000	90.335	57.913	36.902	687.391	933.387
September -----	60.079	94.853	58.004	35.797	721.632	1,395.916
October -----	65.318	98.106	61.057	36.206	749.773	1,678.073
November -----	66.000	98.708	57.262	36.823	766.316	1,660.265
December -----	66.000	105.448	55.947	37.233	788.750	2,179.278
Average -----	59.395	92.334	52.642	37.296	713.253	1,109.379

<sup>1</sup>Unalloyed ingot, 99.5%, delivered United States.<sup>2</sup>Electrolytic copper, domestic refineries, on Atlantic seaboard.<sup>3</sup>Refined lead, nationwide.<sup>4</sup>Prime Western slab, f.o.b. East St. Louis.<sup>5</sup>Straits tin, New York.<sup>6</sup>Cents per troy ounce, 999 fine, New York.

**Table 12.—Nonferrous metal prices in the United Kingdom<sup>1</sup>**

(Average, U.S. cents per pound unless otherwise specified)

Year and month	Alumi- num <sup>2</sup>	Copper <sup>3</sup>	Lead <sup>4</sup>	Zinc	Tin <sup>5</sup>	Silver <sup>6</sup>
1976-----	40.400	64.051	20.502	32.304	349.123	434.922
1977-----	51.890	59.380	28.002	26.733	489.539	463.310
1978:						
January-----	59.690	57.191	30.033	23.469	549.192	494.521
February-----	59.830	55.188	26.423	21.620	551.284	496.105
March-----	58.770	56.862	26.345	23.005	518.947	525.157
April-----	57.050	58.286	25.957	25.115	498.897	515.283
May-----	56.080	59.072	24.652	25.432	532.102	514.305
June-----	56.670	60.444	25.839	26.169	562.789	533.174
July-----	58.450	60.652	26.390	26.448	564.107	535.241
August-----	59.860	64.685	28.964	28.007	590.231	553.737
September-----	62.570	65.419	31.410	28.727	630.742	559.605
October-----	64.650	68.331	37.632	32.262	691.032	594.688
November-----	63.150	66.665	36.474	31.149	684.478	587.208
December-----	68.960	69.551	38.929	31.136	644.011	593.571
Average-----	60.060	61.826	29.803	26.870	583.912	541.883
1979:						
January-----	57.376	75.264	44.967	32.641	630.544	621.001
February-----	65.405	88.191	47.791	35.921	665.883	734.710
March-----	69.932	92.973	53.318	36.004	684.403	741.622
April-----	71.184	95.237	52.601	35.739	688.356	745.084
May-----	71.553	87.373	56.158	35.275	697.400	839.377
June-----	72.484	85.181	62.627	34.133	732.639	855.900
July-----	69.594	82.283	57.644	32.794	716.438	915.618
August-----	70.804	89.650	54.962	30.124	671.588	930.830
September-----	73.266	95.067	55.771	32.794	698.845	1,377.149
October-----	80.897	94.145	59.768	31.998	727.861	1,666.249
November-----	83.347	94.805	55.492	31.764	743.221	1,666.121
December-----	86.843	100.427	53.334	33.977	771.154	2,237.919
Average-----	72.724	90.113	54.520	33.588	702.678	1,110.965

<sup>1</sup>London Metal Exchange, average settlement prices.<sup>2</sup>Ingot, 99.5%.<sup>3</sup>Electrolytic wirebar.<sup>4</sup>Refined pig lead, 99.97%.<sup>5</sup>Standard tin.<sup>6</sup>U.S. cents per troy ounce, 999 fine.

Table 13.—Nonferrous metal prices in Canada

(Average, U.S. cents per pound unless otherwise specified)

Year and month	Copper <sup>1</sup>	Lead <sup>2</sup>	Zinc <sup>2</sup>	Silver <sup>3</sup>
1976 -----	69.578	22.945	37.368	435.703
1977 -----	65.999	29.536	32.996	461.214
1978:				
January -----	63.340	32.011	29.513	493.788
February -----	67.670	31.672	28.999	493.943
March -----	61.399	31.310	27.535	527.705
April -----	63.672	30.876	27.154	512.299
May -----	65.372	30.781	27.713	512.445
June -----	66.583	30.531	29.215	531.991
July -----	64.092	30.455	30.233	533.966
August -----	66.089	30.997	30.215	549.685
September -----	66.154	31.552	30.652	557.908
October -----	69.910	34.986	32.057	592.152
November -----	75.846	35.802	33.245	587.699
December -----	71.388	35.600	33.058	593.082
Average -----	66.376	32.213	29.966	540.555
1979:				
January -----	74.895	39.190	33.082	625.930
February -----	86.729	41.320	35.463	742.058
March -----	98.717	44.680	37.018	744.941
April -----	100.691	47.540	39.256	749.728
May -----	91.639	47.990	38.940	837.633
June -----	88.971	52.640	38.383	854.219
July -----	86.387	56.710	38.664	916.650
August -----	90.257	56.380	36.306	936.292
September -----	93.616	56.860	35.748	1,396.262
October -----	98.419	60.410	36.586	1,678.487
November -----	98.794	55.100	36.452	1,662.101
December -----	105.498	54.770	37.753	2,159.334
Average -----	92.884	51.130	36.888	1,108.636

<sup>1</sup>Electrolytic wirebar, f.o.b. delivered Canadian points.<sup>2</sup>Pig lead, Prime Western zinc; producer's prices, carload quantities, communicated by Cominco, Ltd.<sup>3</sup>U.S. cents per troy ounce, average price of Cominco, Ltd.

Table 14.—Leading world producers of bauxite

(Gross weight, thousand metric tons)

Country	1976	1977	1978 <sup>p</sup>	1979 <sup>e</sup>
Australia -----	24,084	26,086	24,293	<sup>1</sup> 27,583
Guinea <sup>e</sup> -----	11,316	11,300	12,000	12,500
Jamaica -----	<sup>1</sup> 10,312	11,433	11,736	<sup>1</sup> 11,574
U.S.S.R. <sup>e 2</sup> -----	<sup>1</sup> 6,025	<sup>1</sup> 6,180	6,180	6,180
Surinam -----	<sup>1</sup> 4,587	4,856	5,025	5,000
Yugoslavia -----	2,033	2,044	2,566	<sup>1</sup> 3,012
Hungary -----	2,918	2,949	2,899	3,000
Greece -----	2,551	2,984	2,630	<sup>1</sup> 2,915
Guyana <sup>e</sup> -----	2,686	2,731	2,400	2,400
Brazil -----	827	1,120	1,160	2,400
France -----	2,330	2,059	1,990	2,000
United States -----	<sup>1</sup> 1,989	2,013	1,669	<sup>1</sup> 1,821
India -----	1,448	1,511	1,653	1,600
China, mainland -----	1,000	1,200	1,400	1,500
Total <sup>2</sup> -----	74,106	78,466	77,601	83,485
All others -----	4,882	5,523	5,008	4,909
Grand total <sup>2</sup> -----	78,988	83,989	82,609	88,394

<sup>e</sup>Estimate. <sup>p</sup>Preliminary. <sup>1</sup>Revised.<sup>2</sup>Reported figure.<sup>3</sup>Includes bauxite equivalent of nepheline syenite concentrates and alunite ore (produced in the U.S.S.R. only).

Table 15.—Leading world producers of aluminum

(Thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
United States	<sup>r</sup> 3,856	4,118	3,706	<sup>1</sup> 4,556
U.S.S.R. <sup>e</sup>	1,600	1,640	1,670	1,720
Japan	919	1,188	1,057	<sup>1</sup> 1,010
Canada	633	974	1,048	<sup>1</sup> 848
Germany, Federal Republic of	697	742	740	<sup>1</sup> 742
Norway	<sup>r</sup> 618	628	640	<sup>1</sup> 673
France	385	400	391	<sup>1</sup> 395
United Kingdom	335	350	346	<sup>1</sup> 359
China, mainland <sup>e</sup>	200	250	300	330
Australia	232	248	263	<sup>1</sup> 270
Italy	206	260	268	<sup>1</sup> 269
Spain	211	211	212	<sup>1</sup> 260
Netherlands	256	241	261	<sup>1</sup> 256
Brazil	139	167	186	<sup>1</sup> 240
Romania	207	209	213	215
India	210	179	214	<sup>1</sup> 212
Venezuela	46	43	75	<sup>1</sup> 209
Total	<sup>r</sup> 10,750	11,848	11,590	12,564
All others	<sup>r</sup> 1,779	1,828	1,847	1,943
Grand total	<sup>r</sup> 12,529	13,676	13,437	14,507

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>r</sup>Revised.<sup>1</sup>Reported figure.

Table 16.—Leading world producers of chromite

(Gross weight, thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
South Africa, Republic of	2,409	3,059	3,145	<sup>1</sup> 3,297
U.S.S.R. <sup>e</sup>	<sup>r</sup> 2,120	2,180	2,300	2,400
Albania <sup>e</sup>	830	880	990	1,100
Philippines	<sup>r</sup> 431	538	537	562
Rhodesia, Southern	864	677	478	<sup>1</sup> 542
Turkey <sup>e</sup>	<sup>r</sup> 580	<sup>r</sup> 508	375	450
Brazil	186	310	270	331
India	402	352	266	272
Finland	<sup>r</sup> 175	169	178	190
Total	<sup>r</sup> 7,997	8,673	8,539	9,144
All others	<sup>r</sup> 539	555	486	436
Grand total	<sup>r</sup> 8,536	9,228	9,025	9,580

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>r</sup>Revised.<sup>1</sup>Reported figure.

Table 17.—Leading world producers of mine copper

(Cu content of ore, thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
United States <sup>1</sup>	1,457	1,364	1,358	<sup>2</sup> 1,444
Chile	1,005	1,056	1,036	<sup>2</sup> 1,061
U.S.S.R. <sup>e 1</sup>	800	830	865	885
Canada <sup>1</sup>	731	759	659	<sup>2</sup> 644
Zambia	709	656	643	600
Peru	220	341	367	400
Zaire	444	482	424	377
Poland	267	289	321	325
Philippines	<sup>r</sup> 238	273	264	<sup>2</sup> 298
Australia	218	222	207	234
South Africa, Republic of	197	208	209	<sup>2</sup> 191
Papua New Guinea	176	182	199	<sup>2</sup> 171
China, mainland <sup>e</sup>	100	100	150	150
Total	<sup>r</sup> 6,562	6,762	6,702	6,780
All others	<sup>r</sup> 889	899	855	827
Grand total	<sup>r</sup> 7,451	7,661	7,557	7,607

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>r</sup>Revised.<sup>1</sup>Recoverable.<sup>2</sup>Reported figure.

Table 18.—Leading world producers of gold

(Thousand troy ounces)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
South Africa, Republic of	22,936	22,502	22,649	<sup>1</sup> 22,617
U.S.S.R. <sup>e</sup>	7,700	7,850	8,000	8,160
Canada	1,692	1,734	1,735	<sup>1</sup> 1,581
United States	1,048	1,100	999	<sup>1</sup> 876
Papua New Guinea	<sup>1</sup> 668	740	751	700
Australia	<sup>1</sup> 503	630	648	<sup>1</sup> 588
Philippines	501	558	587	<sup>1</sup> 547
Ghana	532	481	402	<sup>1</sup> 482
Rhodesia, Southern	<sup>1</sup> 387	402	399	386
Total	<sup>1</sup> 35,967	35,997	36,170	35,937
All others	<sup>1</sup> 3,054	2,926	2,893	2,943
Grand total	<sup>1</sup> 39,021	38,923	39,063	38,880

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Reported figure.

Table 19.—Leading world producers of iron ore, iron ore concentrates, and iron ore agglomerates

(Thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
U.S.S.R.	239,109	239,716	244,231	242,000
Australia	93,225	95,923	83,134	<sup>1</sup> 89,000
Brazil	94,087	82,001	84,985	87,400
United States	81,277	56,646	82,892	<sup>1</sup> 87,092
China, mainland <sup>e</sup>	<sup>1</sup> 45,000	<sup>1</sup> 50,000	70,000	75,000
Canada	<sup>1</sup> 56,933	55,397	43,601	<sup>1</sup> 61,273
India	<sup>1</sup> 43,868	42,598	38,155	45,700
France	45,181	36,630	33,458	<sup>1</sup> 31,668
South Africa, Republic of	15,663	26,481	24,206	<sup>1</sup> 31,565
Sweden	29,862	24,839	21,486	<sup>1</sup> 26,616
Liberia	18,814	18,136	<sup>e</sup> 18,800	20,300
Venezuela	18,685	13,683	13,600	16,300
Korea, North <sup>e</sup>	9,500	<sup>1</sup> 9,700	10,000	10,000
Spain	8,227	8,327	8,935	9,220
Chile	10,055	7,896	9,666	8,600
Mauritania	9,664	9,794	6,934	8,000
Total	<sup>1</sup> 819,150	777,767	794,083	849,734
All others	<sup>1</sup> 63,795	63,080	60,435	59,895
Grand total	<sup>1</sup> 882,945	840,847	854,508	909,629

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Reported figure.

Table 20.—Leading world producers of crude steel<sup>1</sup>

(Thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
U.S.S.R. -----	<sup>r</sup> 144,825	146,678	151,436	<sup>2</sup> 149,000
United States -----	116,120	113,700	124,312	<sup>2</sup> 123,687
Japan -----	107,399	102,405	102,105	<sup>2</sup> 111,748
Germany, Federal Republic of -----	42,415	38,985	41,253	<sup>2</sup> 46,044
China, mainland -----	<sup>r</sup> 20,000	23,740	31,780	<sup>2</sup> 34,430
Italy -----	23,447	23,334	24,283	<sup>2</sup> 24,250
France -----	23,221	22,094	22,841	<sup>2</sup> 23,264
United Kingdom -----	<sup>r</sup> 22,274	20,411	20,311	<sup>2</sup> 21,408
Poland -----	<sup>r</sup> 15,639	17,841	19,251	<sup>2</sup> 19,224
Canada -----	<sup>r</sup> 13,290	13,631	14,898	<sup>2</sup> 16,078
Czechoslovakia -----	14,693	15,064	15,294	<sup>2</sup> 14,800
Brazil -----	9,169	11,164	12,107	<sup>2</sup> 13,893
Belgium -----	<sup>r</sup> 12,145	11,256	12,601	<sup>2</sup> 13,442
Romania -----	10,733	11,457	11,779	<sup>2</sup> 12,500
Spain -----	<sup>r</sup> 11,002	11,102	11,645	<sup>2</sup> 12,248
India -----	9,255	9,918	9,987	9,465
South Africa, Republic of -----	7,156	7,379	7,800	<sup>2</sup> 8,816
Australia -----	7,774	7,313	7,589	<sup>2</sup> 8,126
Total -----	<sup>r</sup> 610,557	607,472	641,272	662,423
All others -----	<sup>r</sup> 52,752	62,999	69,376	75,984
Grand total -----	<sup>r</sup> 663,309	670,471	710,648	738,407

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>r</sup>Revised.<sup>1</sup>Steel ingots and castings.<sup>2</sup>Reported figure.

Table 21.—Leading world producers of mine lead

(Pb content of ore, thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
United States <sup>1</sup> -----	553	537	530	<sup>2</sup> 526
U.S.S.R. <sup>e</sup> -----	500	510	520	525
Australia -----	<sup>r</sup> 397	432	400	<sup>2</sup> 416
Canada -----	256	281	320	<sup>2</sup> 316
Peru <sup>1</sup> -----	160	166	183	<sup>2</sup> 185
Mexico <sup>1</sup> -----	200	163	171	180
Yugoslavia -----	122	130	124	<sup>2</sup> 128
China, mainland <sup>e</sup> -----	<sup>r</sup> 90	100	120	120
Bulgaria <sup>e</sup> -----	<sup>r</sup> 110	117	<sup>e</sup> 117	117
Morocco -----	60	93	100	110
Korea, North <sup>e</sup> -----	<sup>r</sup> 110	110	105	105
Total -----	<sup>r</sup> 2,558	2,639	2,690	2,728
All others -----	<sup>r</sup> 745	767	755	785
Grand total -----	<sup>r</sup> 3,303	3,406	3,445	3,513

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>r</sup>Revised.<sup>1</sup>Recoverable.<sup>2</sup>Reported figure.



**Table 22.—Leading world producers of manganese ore**

(Gross weight, thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
U.S.S.R.-----	8,636	8,595	9,057	<sup>1</sup> 9,500
South Africa, Republic of-----	5,452	5,048	4,317	<sup>1</sup> 5,182
Gabon-----	2,217	1,851	1,661	1,800
Brazil-----	1,696	1,516	<sup>e</sup> 1,650	1,700
Australia-----	2,154	1,389	1,290	<sup>1</sup> 1,666
India-----	<sup>1</sup> 1,835	1,865	1,587	1,630
China, mainland <sup>e</sup> -----	1,000	1,000	1,300	1,500
Mexico-----	453	487	523	544
Ghana-----	312	292	316	272
Hungary-----	<sup>1</sup> 125	120	114	105
Total-----	<sup>1</sup> 23,880	22,163	21,795	23,899
All others-----	<sup>1</sup> 772	662	587	519
Grand total-----	<sup>1</sup> 24,652	22,825	22,382	24,418

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Reported figure.**Table 23.—Leading world producers of mine nickel**

(Thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
U.S.S.R. <sup>e</sup> -----	<sup>1</sup> 135	142	148	152
Canada-----	241	233	128	<sup>1</sup> 132
New Caledonia-----	<sup>1</sup> 110	105	66	<sup>1</sup> 81
Australia-----	83	86	82	<sup>1</sup> 74
Cuba <sup>e</sup> -----	37	37	37	37
Philippines-----	<sup>e</sup> 16	37	31	36
Indonesia-----	29	33	32	36
Dominican Republic-----	24	25	14	<sup>1</sup> 25
Total-----	<sup>1</sup> 675	698	538	573
All others-----	<sup>1</sup> 125	123	126	129
Grand total-----	<sup>1</sup> 800	821	664	702

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Reported figure.**Table 24.—Leading world producers of mine tin**

(Sn content of ore, metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
Malaysia-----	63,401	58,703	62,650	64,000
Thailand-----	20,452	24,205	31,423	<sup>1</sup> 35,353
U.S.S.R. <sup>e</sup> -----	31,000	33,000	34,000	35,000
Bolivia-----	<sup>1</sup> 30,315	32,616	30,883	<sup>1</sup> 27,648
Indonesia-----	<sup>1</sup> 24,456	25,926	27,487	26,000
China, mainland <sup>e</sup> -----	20,000	20,000	22,000	25,000
Australia-----	<sup>1</sup> 10,611	10,634	11,864	<sup>1</sup> 11,400
Brazil-----	5,388	6,450	6,980	8,000
Zaire-----	<sup>1</sup> 3,776	5,073	4,390	4,500
Nigeria-----	3,710	3,267	2,751	3,000
Total-----	<sup>1</sup> 213,109	219,874	234,378	239,901
All others-----	<sup>1</sup> 15,255	16,035	16,805	16,101
Grand total-----	<sup>1</sup> 228,364	235,909	251,183	256,002

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Reported figure.

Table 25.—Leading world producers of mine zinc

(Zn content of ore, thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
Canada	<sup>r</sup> 982	1,070	1,067	<sup>1</sup> 1,149
U.S.S.R. <sup>e</sup>	720	735	770	770
Australia	468	492	473	<sup>1</sup> 530
Peru	<sup>r</sup> 421	405	458	<sup>1</sup> 490
United States	440	408	303	267
Japan	260	276	275	<sup>1</sup> 243
Mexico	259	265	245	240
Ireland	63	116	176	212
Poland <sup>e</sup>	180	188	194	190
Sweden	128	140	163	<sup>1</sup> 164
Korea, North <sup>e</sup>	150	150	140	140
Spain	<sup>r</sup> 84	98	144	<sup>1</sup> 136
China, mainland <sup>e</sup>	100	100	120	120
Yugoslavia	107	112	97	<sup>1</sup> 112
Germany, Federal Republic of	<sup>r</sup> 111	111	97	<sup>1</sup> 97
Bulgaria	86	87	88	89
Greenland	81	77	82	87
Total	<sup>r</sup> 4,640	4,830	4,892	5,036
All others	<sup>r</sup> 1,050	1,076	986	962
Grand total	<sup>r</sup> 5,690	5,906	5,878	5,998

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>r</sup>Revised.<sup>1</sup>Reported figure.

Table 26.—Leading world producers of hydraulic cement

(Thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
U.S.S.R.	124,246	127,056	126,956	<sup>1</sup> 123,012
Japan	68,712	73,138	84,868	<sup>1</sup> 87,804
United States	<sup>r</sup> 67,580	72,627	77,546	<sup>1</sup> 77,931
China, mainland	<sup>r</sup> 40,000	53,750	65,240	<sup>1</sup> 73,900
Italy	36,327	37,721	37,758	40,140
Germany, Federal Republic of	<sup>r</sup> 33,281	32,163	33,959	<sup>1</sup> 35,472
France	29,394	28,830	28,025	<sup>1</sup> 28,824
Spain (including Canary Islands)	25,202	27,995	30,233	<sup>1</sup> 27,912
Brazil	19,147	21,123	22,100	<sup>1</sup> 24,300
Poland	19,800	21,300	21,700	<sup>1</sup> 19,176
India	<sup>r</sup> 18,640	19,060	19,560	<sup>1</sup> 18,264
Korea, Republic of	11,873	14,196	15,133	<sup>1</sup> 16,423
United Kingdom	15,780	15,456	15,916	<sup>1</sup> 16,140
Romania	<sup>r</sup> 13,088	13,875	14,688	<sup>1</sup> 15,600
Mexico	12,584	13,227	14,056	<sup>1</sup> 15,050
Turkey	<sup>r</sup> 12,342	13,833	15,129	<sup>1</sup> 13,788
German Democratic Republic	11,344	12,102	12,521	13,000
Total	<sup>r</sup> 559,340	597,452	635,388	646,736
All others	<sup>r</sup> 185,804	201,360	210,809	238,354
Grand total	<sup>r</sup> 745,144	798,812	846,197	885,090

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>r</sup>Revised.<sup>1</sup>Reported figure.Table 27.—Leading world producers of diamond<sup>1</sup>

(Thousand carats)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
Zaire	11,821	11,213	11,250	11,160
U.S.S.R. <sup>e</sup>	9,900	10,300	10,550	10,700
South Africa, Republic of	7,023	7,643	7,727	7,640
Botswana	2,384	2,691	2,785	3,340
South-West Africa, Territory of	1,694	2,001	1,898	1,950
Ghana	2,283	1,947	1,423	1,500
Total	35,105	35,795	35,633	36,290
All others	<sup>r</sup> 3,591	3,287	3,320	3,408
Grand total	<sup>r</sup> 38,696	39,082	38,953	39,698

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>r</sup>Revised.<sup>1</sup>Gem and industrial grades undifferentiated.

**Table 28.—Leading world producers of nitrogen fertilizer compounds**

(N content, thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
United States	12,570	13,347	12,911	<sup>1</sup> 13,546
U.S.S.R.	10,090	10,744	11,300	12,200
China, mainland <sup>e</sup>	4,070	5,620	6,750	7,170
India <sup>2</sup>	1,910	2,037	2,220	2,900
Romania	1,659	1,792	2,257	2,360
Netherlands	1,980	2,140	2,166	2,200
Japan	2,236	2,292	2,454	2,190
Germany, Federal Republic of	1,863	1,989	1,955	2,090
France	1,781	2,034	2,016	2,090
Canada	1,258	1,764	1,926	<sup>1</sup> 1,981
United Kingdom	1,348	1,631	1,600	1,630
Poland	1,726	1,665	1,610	1,630
Italy	1,219	1,168	1,444	1,465
Mexico	716	780	1,304	1,360
German Democratic Republic	1,119	1,130	1,137	1,200
Total	45,545	50,133	53,050	56,012
All others	11,346	12,023	13,010	14,479
Grand total	56,891	62,156	66,060	70,491

<sup>e</sup>Estimate. <sup>P</sup>Preliminary.<sup>1</sup>Reported figure.<sup>2</sup>Data given are for years beginning April 1 of that stated.**Table 29.—Leading world producers of phosphate rock<sup>1</sup>**

(Thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
United States	<sup>1</sup> 44,671	47,256	50,037	51,000
U.S.S.R. <sup>e 2</sup>	<sup>1</sup> 23,900	24,250	23,800	23,800
Morocco <sup>3</sup>	15,829	17,984	19,713	20,000
China, mainland <sup>e</sup>	<sup>1</sup> 4,000	4,000	4,500	5,000
Tunisia	<sup>1</sup> 3,301	3,615	3,712	3,800
South Africa, Republic of	1,731	2,403	2,699	3,100
Togo	2,008	2,857	2,827	2,900
Jordan	1,717	1,782	2,303	2,560
Total	<sup>1</sup> 97,157	104,147	109,591	112,160
All others	<sup>1</sup> 10,357	12,421	15,473	14,669
Grand total	<sup>1</sup> 107,514	116,568	125,064	126,829

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Includes output of all major crude mineral sources of phosphate.<sup>2</sup>Includes material described as sedimentary rock in Soviet sources.<sup>3</sup>Includes output from Western Sahara.**Table 30.—Leading world producers of marketable potash**(K<sub>2</sub>O equivalent, thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
U.S.S.R.	8,310	8,347	8,193	7,500
Canada	4,996	6,089	6,124	6,600
German Democratic Republic	3,161	3,229	3,323	3,400
Germany, Federal Republic of	2,036	2,341	2,470	2,600
United States	2,177	2,229	2,253	<sup>1</sup> 2,225
France	<sup>1</sup> 1,603	1,580	1,795	1,850
Total	<sup>1</sup> 22,283	23,815	24,158	24,175
All others	<sup>1</sup> 2,103	1,986	1,842	2,170
Grand total	<sup>1</sup> 24,386	25,801	26,000	26,345

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Reported figure.

Table 31.—Leading world producers of salt

(Thousand metric tons)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
United States (including Puerto Rico) -----	40,114	39,407	38,915	<sup>1</sup> 39,124
China, mainland <sup>e</sup> -----	<sup>r</sup> 20,000	<sup>r</sup> 17,000	19,537	20,000
U.S.S.R. <sup>e</sup> -----	<sup>r</sup> 14,200	<sup>r</sup> 14,300	14,500	14,700
Germany, Federal Republic of -----	<sup>r</sup> 11,317	12,322	12,658	12,700
United Kingdom -----	8,006	8,202	7,310	7,350
France -----	<sup>r</sup> 6,078	5,350	6,525	6,880
Canada -----	5,994	6,039	6,452	<sup>1</sup> 6,672
Mexico -----	4,591	4,900	5,635	5,600
Italy -----	4,013	5,030	4,932	5,100
Romania -----	4,210	4,536	4,739	4,800
India -----	<sup>r</sup> 4,438	3,759	4,380	4,540
Poland -----	3,818	4,357	4,393	4,500
Australia -----	5,489	4,715	4,665	4,500
Netherlands -----	3,026	3,111	2,939	2,900
Brazil -----	2,473	2,481	2,727	2,800
German Democratic Republic -----	2,560	2,643	2,741	2,753
Spain -----	3,158	2,434	2,500	2,660
Bahamas -----	1,353	1,670	1,633	1,360
Japan -----	1,021	1,056	1,073	1,100
Argentina -----	<sup>r</sup> 660	1,147	961	999
Turkey -----	579	777	929	900
Egypt -----	480	597	755	760
Colombia -----	<sup>r</sup> 1,112	922	751	744
Total -----	<sup>r</sup> 148,690	146,755	151,650	153,442
All others -----	<sup>r</sup> 11,407	11,627	6,250	12,301
Grand total -----	<sup>r</sup> 160,097	158,382	157,900	165,743

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>r</sup>Revised.<sup>1</sup>Reported figure.

Table 32.—Leading world producers of elemental sulfur<sup>a</sup>  
(Thousand metric tons)

Country	1976				1977				1978 <sup>b</sup>				1979 <sup>c</sup>			
	Native	From pyrite	Byproduct	Total	Native	From pyrite	Byproduct	Total	Native	From pyrite	Byproduct	Total	Native	From pyrite	Byproduct	Total
United States	26,365	290	4,223	10,878	25,916	169	4,642	10,727	25,648	301	5,226	11,175	26,357	400	5,344	12,101
U.S.S.R. <sup>e</sup>	29,700	3,300	3,140	9,140	29,900	3,500	3,340	9,740	33,500	3,500	3,550	10,550	33,500	3,500	3,550	10,550
Canada	3,489	15	7,246	7,261	3,765	12	7,501	7,513	34,771	5	7,242	7,247	35,051	16	6,953	6,969
Poland	—	—	319	5,210	—	—	325	5,090	—	—	379	5,150	—	—	370	5,421
Japan	—	471	2,177	2,648	—	389	2,436	2,825	—	327	2,400	2,727	—	330	2,450	2,780
Mexico	29,054	—	1,711	2,225	21,723	—	213	1,936	21,818	—	235	2,053	21,960	—	230	2,280
France	—	—	1,968	1,968	—	—	2,160	2,160	—	—	2,220	2,220	—	—	2,250	2,250
China, mainland <sup>e</sup>	150	900	300	1,350	170	1,000	300	1,470	200	1,100	350	1,650	200	1,200	400	1,800
Germany, Federal	—	—	1,130	1,363	—	—	1,367	1,602	—	221	1,380	1,601	—	260	1,380	1,640
Republic of	—	—	1,052	1,180	—	—	1,102	1,238	—	1,071	130	1,201	—	1,160	133	1,293
Spain	—	—	233	1,363	—	—	235	1,367	—	221	1,380	1,601	—	260	1,380	1,640
Iraq	2,582	—	140	1,622	2,620	—	1,102	1,238	2,600	—	40	640	2,660	—	40	700
Italy	—	—	396	1,612	—	—	371	1,606	—	—	259	596	—	330	250	596
Romania	—	—	375	1,412	—	—	382	1,405	16	330	250	596	16	330	250	596
South Africa, Republic of	—	—	284	1,182	—	—	305	1,332	—	400	120	520	—	425	130	555
Bulgaria	—	—	280	1,182	—	—	305	1,332	—	310	175	485	—	340	125	465
Sweden	—	—	205	1,163	—	—	204	1,165	—	233	148	381	—	240	150	390
Finland	—	—	234	1,308	—	—	130	305	—	87	262	349	—	85	300	385
German Democratic Republic	—	—	10	329	—	—	10	340	—	10	350	360	—	10	350	360
Yugoslavia	—	—	185	390	—	—	166	205	—	120	207	327	—	120	207	327
Iran	188	—	399	587	188	—	400	588	150	—	300	450	75	—	200	275
Belgium	—	—	218	218	—	—	257	257	—	—	267	267	—	—	270	270
Korea, North	—	—	245	245	—	—	250	257	—	255	10	265	—	255	10	265
Australia	—	—	108	1,137	—	—	108	132	—	67	151	218	—	70	151	221
Total	16,965	8,563	23,113	48,641	16,318	8,678	24,843	49,839	16,703	8,677	25,412	50,792	17,819	9,056	25,518	52,393

See footnotes at end of table.

Table 32.—Leading world producers of elemental sulfur<sup>1</sup>—Continued  
(Thousand metric tons)

Country	1976			1977			1978 <sup>p</sup>			1979 <sup>q</sup>		
	Native	From pyrite	Byproduct	Total	Native	From pyrite	Byproduct	Total	Native	From pyrite	Byproduct	Total
All others.....	<sup>r</sup> 121	<sup>r</sup> 863	<sup>r</sup> 1,263	<sup>r</sup> 2,247	131	735	1,388	2,254	421	792	1,394	2,607
Grand total.....	<sup>r</sup> 17,086	<sup>r</sup> 9,426	<sup>r</sup> 24,376	<sup>r</sup> 50,888	16,449	9,413	26,231	52,093	17,124	9,469	26,806	53,399
									17,913	9,862	27,059	54,834

<sup>q</sup>Estimate. <sup>p</sup>Preliminary. <sup>r</sup>Revised.

<sup>1</sup>Includes all recorded production of sulfur, regardless of the form in which it is recovered. Thus, it includes elemental sulfur, whether mined by conventional methods or by the Frasch process, as well as (1) elemental sulfur and the S content of compounds such as H<sub>2</sub>S, SO<sub>2</sub>, and H<sub>2</sub>SO<sub>4</sub> recovered as a principal product of pyrite mining and as a byproduct of the recovery of crude oil and natural gas and as a byproduct of petroleum refining, coal treatment, and metal smelting and/or refining; and (2) sulfur recovered from tar sands, spent oxides, and other miscellaneous sources.

<sup>2</sup>Entirely Frasch-process sulfur.

<sup>3</sup>Includes Frasch-process sulfur as follows, in thousand metric tons: Poland: 1976—4,341; 1977—4,321; 1978—4,546; and 1979—4,500; the U.S.S.R. (estimated): 1976—500; 1977—500; 1978—800; and 1979—800; and total of individually listed countries and grand total: 1976—13,842; 1977—13,080; 1978—13,412; and 1979—14,277. The balance is mined elemental sulfur.

Table 33.—Leading world producers of coal (all grades)

(Million metric tons)

Country	1976			1977			1978 <sup>p</sup>			1979 <sup>e</sup>		
	Lignite	Bituminous and anthracite	Total	Lignite	Bituminous and anthracite	Total	Lignite	Bituminous and anthracite	Total	Lignite	Bituminous and anthracite	Total
U.S.S.R.	164	548	712	167	555	722	167	557	724	167	552	719
United States	23	598	621	27	604	631	33	564	597	198	1671	1709
China, mainland	( <sup>1</sup> )	480	480	( <sup>2</sup> )	550	550	( <sup>3</sup> )	618	618	( <sup>3</sup> )	1663	1663
German Democratic Republic	247	( <sup>3</sup> )	247	254	( <sup>3</sup> )	254	253	( <sup>3</sup> )	253	255	1201	1201
Poland	39	179	218	41	186	227	41	193	234	138	1201	1201
Germany, Federal Republic of	134	89	223	123	85	208	124	84	208	131	186	186
Czechoslovakia	190	28	218	94	27	121	96	28	124	96	124	124
United Kingdom	31	122	153	1	121	122	2	122	124	2	121	121
Australia	4	101	105	29	78	107	33	80	113	133	183	183
India	77	77	154	4	100	104	4	102	106	13	1103	1103
South Africa	( <sup>2</sup> )	41	41	—	85	85	( <sup>3</sup> )	44	44	( <sup>3</sup> )	1104	1104
Korea, North	36	41	77	39	43	82	39	44	83	142	44	44
Yugoslavia	5	21	26	5	23	28	5	25	30	15	128	128
Canada	19	7	26	20	7	27	22	7	29	18	131	131
Romania	25	( <sup>3</sup> )	25	25	( <sup>3</sup> )	25	26	( <sup>3</sup> )	26	28	( <sup>3</sup> )	28
Bulgaria	22	3	25	23	3	26	23	3	26	23	3	26
Hungary	22	22	44	24	24	48	22	22	44	22	22	22
Greece	3	22	25	3	21	24	3	20	23	2	19	21
France	—	—	—	—	—	—	—	—	—	—	—	—
Total	1866	12,392	14,258	879	2,489	3,368	893	2,537	3,430	908	2,714	3,622
All others	23	107	130	33	122	155	26	125	151	33	122	155
Grand total	1889	12,499	14,388	912	2,611	3,523	919	2,662	3,581	941	2,836	3,777

<sup>e</sup> Estimate. <sup>p</sup> Preliminary. <sup>r</sup> Revised.<sup>1</sup> Reported figure.<sup>2</sup> Output small, included under "Bituminous and anthracite."<sup>3</sup> Less than 1/2 unit.

Table 34.—Leading world producers of marketed natural gas<sup>1</sup>

(Billion cubic feet)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
United States	19,952	20,025	19,974	<sup>2</sup> 20,373
U.S.S.R.	11,334	12,219	13,137	13,600
Netherlands	3,436	3,422	3,133	<sup>2</sup> 3,292
Canada	3,097	3,231	3,128	3,271
United Kingdom	1,316	1,416	1,382	<sup>2</sup> 1,410
Romania	1,136	1,104	1,112	1,034
Mexico	578	600	745	<sup>2</sup> 915
Algeria	351	305	490	725
Germany, Federal Republic of	658	638	707	<sup>2</sup> 719
Venezuela	<sup>1</sup> 480	524	520	<sup>2</sup> 576
Libya	<sup>1</sup> 487	556	562	570
China, mainland	<sup>1</sup> 350	<sup>1</sup> 425	486	<sup>2</sup> 512
Iran	794	795	687	500
Italy	<sup>1</sup> 552	485	485	<sup>2</sup> 476
Saudi Arabia	138	159	335	400
Brunei	299	314	308	310
German Democratic Republic	305	300	302	302
Australia	209	217	258	<sup>2</sup> 300
Argentina	<sup>1</sup> 272	275	260	<sup>2</sup> 284
Total	<sup>1</sup> 45,744	47,010	48,011	49,569
All others	<sup>1</sup> 2,492	2,938	3,778	3,640
Grand total	<sup>1</sup> 48,236	49,948	51,789	53,209

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Comprises all gas collected and utilized as a fuel or as a chemical industry raw material as well as that used for gas lift in fields, including gas used in oilfields and/or gasfields as a fuel by producers, even though it is not actually sold.

Excludes gas produced and subsequently vented, flared, or reinjected to reservoirs.

<sup>2</sup>Reported figure.Table 35.—Leading world producers of natural gas liquids<sup>1</sup>

(Million 42-gallon barrels)

Country <sup>2</sup>	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
United States	587	590	572	<sup>3</sup> 611
U.S.S.R. <sup>e</sup>	100	110	110	120
Canada	<sup>1</sup> 106	106	98	<sup>3</sup> 102
Saudi Arabia	66	70	91	100
Algeria	24	<sup>e</sup> 25	<sup>e</sup> 32	55
Mexico	34	38	44	52
Venezuela	<sup>1</sup> 29	29	22	25
Total	<sup>1</sup> 946	968	969	1,065
All others	<sup>1</sup> 97	114	111	112
Grand total	<sup>1</sup> 1,043	1,082	1,080	1,177

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Every effort has been made to include only those natural gas liquids produced by natural gas processing plants and to exclude natural gas liquids obtained from field treatment facilities including wellhead separators, because the latter are normally blended with crude oil and thus are included in crude oil output statistics. In some cases, however, sources do not clearly specify whether data presented represent only output of natural gas processing plants or if they include field output. Thus, some of the figures may include field condensate.<sup>2</sup>In addition to the countries listed, mainland China may also produce natural gas liquids, but available information is inadequate to make reliable estimates of output levels.<sup>3</sup>Reported figure.



Table 36.—Leading world producers of crude oil

(Million 42-gallon barrels)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
U.S.S.R.	<sup>1</sup> 3,820	4,011	4,201	<sup>1</sup> 4,307
Saudi Arabia <sup>2</sup>	<sup>1</sup> 3,140	3,358	3,080	3,350
United States	2,976	3,009	3,178	<sup>1</sup> 3,114
Iraq	<sup>1</sup> 882	857	935	1,250
Iran	<sup>1</sup> 2,147	2,067	1,913	1,110
Kuwait <sup>2</sup>	<sup>1</sup> 786	719	777	<sup>1</sup> 913
Venezuela	840	817	790	<sup>1</sup> 859
Nigeria	756	761	697	<sup>1</sup> 841
China, mainland <sup>e</sup>	<sup>1</sup> 657	684	760	775
Libya	<sup>1</sup> 707	753	721	751
United Arab Emirates	<sup>1</sup> 709	730	768	741
Indonesia	550	615	597	<sup>1</sup> 601
United Kingdom	<sup>1</sup> 85	279	389	<sup>1</sup> 561
Canada	489	482	478	<sup>1</sup> 545
Mexico	<sup>1</sup> 267	358	441	<sup>1</sup> 533
Algeria	384	410	424	425
Norway	102	102	127	280
Egypt	120	151	176	190
Qatar	182	162	177	<sup>1</sup> 185
Argentina	146	158	165	<sup>1</sup> 173
Australia	153	157	158	<sup>1</sup> 161
Oman	134	124	115	106
Malaysia	61	67	79	103
India	65	76	93	99
Romania	110	109	103	92
Ecuador	68	67	74	84
Brunei	74	77	77	75
Trinidad and Tobago	78	84	84	<sup>1</sup> 71
Gabon	82	81	76	70
Peru	28	33	55	
Total	<sup>1</sup> 20,598	21,358	21,658	22,451
All others	<sup>1</sup> 510	524	509	542
Grand total	<sup>1</sup> 21,108	21,882	22,167	22,993

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Reported figure.<sup>2</sup>Includes the country's share of production from the Kuwait-Saudi Arabia Partitioned Zone.

Table 37.—Leading world producers of refined oil

(Million 42-gallon barrels)

Country	1976	1977	1978 <sup>P</sup>	1979 <sup>e</sup>
United States (including Puerto Rico and Virgin Islands)	5,479	5,923	5,957	15,839
U.S.S.R.	3,087	3,325	3,412	3,513
Japan	1,681	1,701	1,688	1,696
France	902	892	920	978
Germany, Federal Republic of	821	772	778	953
Italy	<sup>1</sup> 833	856	865	885
United Kingdom	723	638	729	725
Canada	625	659	664	711
China, mainland <sup>e</sup>	<sup>1</sup> 548	650	600	620
Netherlands	<sup>1</sup> 490	448	427	463
Brazil	348	358	385	402
Venezuela	<sup>1</sup> 361	356	362	367
Mexico	<sup>1</sup> 277	309	327	358
Spain (including Canary Islands)	376	355	351	355
Saudi Arabia <sup>3</sup>	<sup>1</sup> 267	277	295	295
Singapore	173	217	249	252
Belgium	213	269	250	250
Australia	215	226	226	236
Iran	255	274	249	224
Netherlands Antilles	226	198	215	222
India	168	181	196	215
Korea, Republic of	132	158	174	189
Argentina	166	177	177	182
Romania	<sup>1</sup> 157	157	175	178
Indonesia	83	113	121	160
Kuwait <sup>3</sup>	<sup>1</sup> 134	126	133	156
Total	<sup>1</sup> 18,690	19,615	19,925	20,424
All others	<sup>1</sup> 2,668	2,814	2,910	3,087
Grand total	<sup>1</sup> 21,358	22,429	22,835	23,461

<sup>e</sup>Estimate. <sup>P</sup>Preliminary. <sup>1</sup>Revised.<sup>1</sup>Data comprises reported figures for the United States and Puerto Rico and an estimate for the Virgin Islands.<sup>2</sup>Reported figure.<sup>3</sup>Includes the country's share of production from the Kuwait-Saudi Arabia Partitioned Zone.