# GOLD

### By Earle B. Amey

Total world gold mine production increased slightly and was well within 1% of the all-time high reached in 1993. Despite a third successive decline in production, South Africa remained the world's largest of more than 80 gold-producing nations, followed by the United States, Australia, Canada, and China. The United States has been the second largest producer since 1991 when its production surpassed that of the former Soviet Union, for the first time in nearly five decades. Nevada produced two-thirds of domestic production; the other one-third came from 12 other States. Although most domestic gold mines were open-pit mines, interest in underground methods continued to increase as more near-surface deposits reached depletion. Some of the deeper deposits, accessible only by underground methods, contain higher grade sulfide ores that require more extensive processing than the oxidized ores encountered in most near-surface operations. Along with this shift in ore types and the related maturing of the U.S. gold mining industry, there has also been a trend toward a smaller total number of operating gold mines but with an associated shift to larger capacity mining operations; that is, fewer but larger gold mines. Although the majority of the Nation's gold mines were in the Western States, several were in operation in two States, South Carolina and Wisconsin, east of the Mississippi River. Gold was also produced at about 120 lode mines (of which about 75 were major), a dozen or more large placer mines, nearly all in Alaska, and numerous small placer mines, mostly in Alaska and the Western States. A minor amount of domestic gold also was produced as a byproduct of processing the ores of base metals, principally copper. Of the gold produced in the United States, 23 mines yielded 83%. The value of U.S. gold mine production was about \$4 billion.

Domestic gold exploration activity, which peaked during the late 1980's, continued a trend of expanding on a total dollar basis while shrinking on a percentage basis as mining companies pursued opportunities overseas (D. Wilburn, Materials and Minerals Specialists, U.S. Geological Survey, written commun., Mar. 3, 1997). Many countries have revised their mining laws, offering incentives for foreign investment, and in some cases, have opened up areas previously not available for exploration. This focus on overseas exploration and development targets by U.S. companies was directed toward various areas in the southwestern Pacific, Western Africa, and the newly independent republics of the former Soviet Union.

Approximately two dozen domestic producers produced commercial-grade refined gold. Of several thousand companies and artisans, a few dozen companies dominated the fabrication of gold into marketable products. U.S. jewelry manufacturing was heavily concentrated in the New York, NY, and Providence, RI, areas; other areas of concentration were in California, Florida, and Texas.

According to the World Gold Council, 1996 marked the fifth consecutive year of sales increases for gold jewelry in the United States. Total U.S. gold jewelry sales reached \$12.3 billion, up 5% from sales in 1995. Dollar and unit sales reportedly had increased through 21 consecutive quarters (World Gold Council, 1996).

Trade in refined bullion comprised 90% of U.S. gold imports and 86% of exports; net exports of bullion rose to 263,000 tons, up about 60% from that of 1995. Canada provided more than one-half of the bullion imported, and Switzerland was the destination for nearly one-half of the bullion exported. Most imports of unwrought gold, including bullion and doré, enter the U.S. duty free.

The dollar price for gold remained listless throughout the year. The Engelhard Industries' daily price of gold ranged from a low of about \$369 per troy ounce<sup>1</sup> on December 3 to a high of nearly \$391 on August 5. The average for the year was, to the nearest dollar, \$389. The previous year's prices ranged from about \$373 to \$397 and averaged \$386.

In June, gold leasing rates reached their lowest level for 1996, suggesting, in the absence of significant additional supply of liquidity to the market, low levels of demand for borrowed gold (Murray and others, 1997, p. 31).

Identified world gold resources at yearend 1996 were estimated at 86,000 tons, of which 15% to 20% was byproduct resource; the world reserve base was estimated (R. Ashley, Gold Resource Specialist, U. S. Geological Survey oral commun., Oct. 6, 1996) to be 71,000 tons and reserves at 46,000 tons. South Africa had about one-half of the resources and reserve base and 41% of the reserves. The United States had about 10% of world resources, 8% of the reserve base, and 12% of the reserves.

Of an estimated 121,000 tons of gold mined in historical times through 1996 (Thomas and Boyle, 1986), about 15% is thought to have been lost, used in dissipative industrial uses, or otherwise unaccounted for or unrecoverable. Of the remaining 103,000 tons, about 35,000 tons is official stocks held by central banks and about 68,000 tons is privately held as bullion, coin, and jewelry.

#### **Production**

Domestic mine production data for gold were derived by the USGS from two separate voluntary surveys of U.S. operations. One of these surveys is the production survey of copper, gold,

lead, silver, and zinc lode mines. Of the lode gold producers in operation to which a survey request was sent, 115 responded, representing 97% of the total gold shown in tables 1 and 2. The individual company production and performance data cited in this report were obtained from published sources, such as company annual reports.

Of the total gold produced during 1996, 91% was extracted from gold ore, and the remainder was derived from base-metal ores, other precious-metal ores, and placer deposits. By comparison, similar data assembled for 1980 indicated that gold ores provided 63% of the total gold produced and the remainder, 37%, was derived from base-metal ores, other precious-metal ores, and placers. In both years, the contribution from placer mines amounted to less than 2% of the total gold produced.

Alaska.—The State's Division of Geology and Geophysical Surveys reported that gold output increased slightly from an estimated 4.4 tons (142,000 ounces) worth \$56.0 million in 1995 to 4.5 tons (145,000 ounces) worth \$56.4 million in 1996, or an approximate increase in production of 2% and a increase in associated value of 1% (Swainbank and others, 1997). An estimated 144 placer mines were operating in 1996, about the same as in 1995. A big drop in placer production, from 4,220 to 3,090 kilograms of gold, was due to the permanent closure of Cambior Alaska Inc.'s Valdez Creek Mine, the State's largest gold mine for 12 years, in September 1995. The new underground Nixon Fork copper-gold mine near McGrath that began to produce gold during the fourth quarter of 1995 became Alaska's largest gold mine in 1996. Nixon Fork Mining Co., the operating subsidiary for Consolidated Nevada Goldfields Co., reported that the project mined and milled about 1,200 kilograms of gold (Consolidated Nevada Goldfields Corp., 1996).

USMX, Inc. (1996e), Lakewood, CO, announced that significant progress had been made toward the completion of a feasibility study to evaluate the economics of its Illinois Creek gold and silver property in west-central Alaska. USMX reported that results to that point had been positive and, on a preliminary basis, indicated that the property contained about 4.5 million tons of drill-defined mineralization at a grade of 2.5 grams (0.074 ounce per short ton) of gold per ton, amounting to about 10,900 kilograms of contained gold. The company plans to mine the property over a 5-year period and heap-leach run-of-mine ore to recover more than 1,560 kilograms of gold per year. By early June, USMX, Inc. (1996a), Lakewood, CO had received the key permits from the State of Alaska necessary to begin construction at Illinois Creek; the package of approved permits included all permits necessary to begin development of gold mining and leaching facilities at the site. However, on November 14th, USMX, Inc. (1996c), Lakewood, CO, announced that it had decided to defer commencement of gold production until the spring of 1997.

USMX, Inc. (1996d), Lakewood, CO, announced that it had received an exclusive exploration permit covering 5,420 hectares (13,380 acres) in the Ophir mining district in west-central Alaska.

Hecla Mining Co. (1996), Coeur d'Alene, ID, announced on

July 29 that operations at the Greens Creek Mine on Admiralty Island, off Juneau, AK, had been restarted ahead of schedule. Grinding and flotation circuits at the silver/zinc/lead/gold mine were started the week of July 22, well ahead of the original schedule, which had called for the mine to restart operations in the first quarter of 1997. Greens Creek is a joint venture between Kennecott Greens Creek Mining Co. (70.3%) and Hecla (29.7%).

California.—Gold production in California reportedly dropped about 7% drop from that of 1995 as shown in table 2. This was apparently due, in part, to the June 1996 closure of Homestake Mining Co.'s McLaughlin Mine in Napa County and MK Gold Co.'s and Hecla Mining Co.'s American Girl Mine in Imperial County. Before the closures, the McLaughlin Mine, which had been California's largest gold mine, produced 5.8 tons (186,000 ounces) of gold from processed oxide and sulfide ore mined by open pit methods, and the American Girl Mine produced 1.4 tons (45,000 ounces) of gold. With the shutdown of the McLaughlin Mine, Santa Fe Pacific Gold Corp.'s Mesquite Mine near Brawley became California's largest gold mine, processing oxide and sulfide ore mined by open pit methods, recovering more than 5.8 tons (187,000 ounces) of gold from both surface and underground mines. In eastern Imperial County, Glamis Gold Ltd. continued to produce gold by using heap-leaching methods at its Picacho Mine and continued exploration at its nearby Imperial Project. The Picacho Mine produced a record 1.1 tons (34,600 ounces) during 1996 and is expected to produce more than of 0.9 ton (28,000 ounces) in 1997, at which time all known reserves on the property will have been depleted. Glamis, through its wholly owned Rand Mining Co., also produced 2.7 tons of gold (86,000 ounces) at its Rand Mine near Randsburg. Almost all mining has been carried out at the Yellow Aster Pit of the Rand Mine. Another major mine producing gold in Kern Counties during the year was the Cactus Mine.

In eastern San Bernardino County near the Nevada-California State line, about 95 kilometers southwest of Las Vegas, NV, the Castle Mountain Mine of Viceroy Resource Corp. and MK Gold produced an estimated 4.6 tons (147,000 ounces) of gold.

Siskon Gold Corp. reported (diGesu and others, 1997) that construction and development of its new San Juan Mine, north of Grass Valley was completed in mid-May 1996. Blasted gold-bearing gravels were transported by means of mechanized ladders from this new underground placer mine to an underground processing plant that produced gold concentrate. In the first 9 months of 1996, 0.3 ton (9,200 ounces) of gold was recovered from the raw concentrate by gravity concentration methods at the new surface-level processing plant.

Colorado.—The more than 60% increase in gold production was due, in no small part, to a full year of production from Pikes Peak Mining Co.'s Cresson Mine in the Cripple Creek District of Teller County. Golden Cycle Gold Corp. (1997) reported that this new open pit mining operation produced 5.4 tons (175,000 ounces) of gold in 1996. The closure of Battle Mountain Gold Co.'s San Luis Mine in Costilla County in late

1996 will, however, result in a decline of gold production in 1997. Battle Mountain (1997) reported that the mine produced about 1.7 tons (54,000 ounces) of gold in 1996. Most of the site reclamation is expected to be completed during 1997.

Sunnyside Gold Corp., a subsidiary of Echo Bay Mines, Englewood, CO, filed a final consent decree in Denver's District Court to resolve its 1994 lawsuit against the State of Colorado's Department of Public Health and Environment. The dispute focused on the company's plan for complete closure of the Sunnyside polymetallic gold/silver mine near Silverton, CO. According to the agreement, the water quality in the Upper Animas River Basin in southwest Colorado will be maintained and improved by the removal of historic waste/tailings from abandoned mine sites outside the Sunnyside property, as well as, remediating long-abandoned mine sites that are the source of leached metals (Engineering & Mining Journal, 1996a).

*Idaho*.—With a full year production of 3.4 tons (109,000 ounces) from Meridan Gold Co.'s Beartrack Mine, near Salmon, the total gold production for Idaho rose about 27%.

Dakota Mining Corp.'s wholly owned Stibnite Mine in Valley County decreased its gold production from 1.5 tons (49,000 ounces) in 1995 to 0.9 ton (29,000 ounces) in 1996. Dakota Mining Corp. and Hecla Mining Co. announced plans to combine their gold mining interests in the Stibnite/Yellow Pine areas of Valley County. By this action, the companies plan to streamline the future development of the sulfide gold ore resources in the region, sharing these assets equally. Under the agreement, Dakota Mining will continue to mine its wholly-owned oxide gold reserves at the Stibnite site (Engineering & Mining Journal, 1996b).

Pegasus Gold Inc.'s Black Pine Mine in Cassia County also produced less gold; 2.7 tons (88,000 ounces) in 1996 versus 3.4 tons (109,000 ounces) in 1995. Black Pine reportedly (diGesu and others, 1997) will be mined out by mid-1997; residual production is scheduled to continue through 1997.

Gold production at the Grouse Creek gold mine near Challis declined about 8% from 2.6 tons (84,000 ounces) in 1995 to 2.4 tons (77,000 ounces) in 1996.

*Montana.*—According to the annual review of mining and mineral developments, prepared by the Montana Bureau of Mines and Geology, exploration budgets have been reduced to lobby against an initiative campaign, I-122, that addressees new-water quality standards (McCulloch, 1997).

Gold output slipped from 12.4 tons (400,000 ounces) in 1995 to 9.1 tons (293,000 ounces) in 1996 owing to the closure of TVX Gold Inc.'s Mineral Hill Mine in early September 1996 and the decline in residual production from the Kendall and the Zortman Mines (McCulloch, 1997).

Of the mines producing gold in Montana during the year, three were owned and operated by Pegasus Gold Inc.— the Beal Mountain Mine in Silver Bow County; the Montana Tunnels Mine, a gold, lead, silver, and zinc mine in Jefferson County that was the State's second largest gold mine in 1996; and the Zortman Mine in Phillips County. Their total gold production during the year amounted to about 5.1 tons (160,000 ounces).

Placer Dome (U.S.) Inc.'s wholly owned Golden Sunlight

Mine near Whitehall is Montana's largest gold-producing mine with 3.7 tons (117,900 ounces) in 1996; production in 1995 had amounted to nearly 2.8 tons (89,800 ounces) of gold. The company indicated that it is working with the Montana Department of Environmental Quality to complete an Environmental Impact Statement for an expanded Stage 5 pit that will extend the main pit life by 3 years.

TVX Gold Inc. suspended production at its underground Mineral Hill Mine near Jardine and exploration work at its nearby Crevice Mountain Project. The facilities were placed under care and maintenance owing to continuing losses as a result of decreased ore grades. The Mineral Hill Mine reportedly (TVX Gold Inc., 1997) produced nearly 0.5 ton (17,300 ounces) of gold in 1996 compared with 1.1 tons (34,900 ounces) of gold in 1995.

Near Cooke City, the New World project was on hold as Federal officials and environmental groups negotiated the exchange of private landholdings and unpatented mineral rights currently owned by Crown Butte Mines Inc. for Federal property totaling \$64 million (McCulloch, 1997). Federal plans for the gold, silver, and copper project call for underground mining and ore processing without the use of controversial heap-leaching or cyanide recovery methods.

**Nevada.**—Nevada maintained in its longstanding position as the Nation's dominant gold-producing State. Of the Nation's top 23 gold-producing mines, 13 were in the Silver State. Primary gold production increased slightly to 213 tons (6.8 million ounces) and is expected to rise to almost 220 tons (7 million ounces) in 1997 with several new mines on the horizon.

Barrick Gold Corp. was once again the Nation's largest gold mining company and reportedly recovered 60.2 tons (1.93 million ounces) of gold at its Betze-Post Mine in Eureka County. Nearby in Elko County, Barrick continued development of its Meikle Mine, a new underground operation that produced 2.4 tons (78,400 ounces) of gold. These Barrick operations on the Carlin Trend are developed within a 2,800-hectare landholding known as the Goldstrike property. In addition, Barrick's wholly owned Bullfrog Mine near Beatty produced nearly 6.4 tons (205,300 ounces) of gold.

In 1996, Newmont Gold Co. produced 52.9 tons (1.7 million ounces) of gold from its operations centered in Eureka and Elko Counties. It was the seventh consecutive year that Newmont had produced 1.5 million ounces (46.7 tons) or more from the Carlin Trend in northeastern Nevada. In May, Newmont marked 31 years of production on the Carlin Trend, which it discovered in the mid-1960's, with the pouring of its 551st ton (18 millionth ounce of gold). The company's extensive operations along the Carlin Trend include 11 open pit mines from which nearly 242 million tons of ore and waste was mined during the year, accounting for the bulk of Newmont's Carlin Trend production. The Gold Quarry Mine generated 54% of Newmont's Carlin area production, down from 67% in 1995. Mining reportedly (Newmont Gold Co., 1997) began at four new open pit mines in 1996-Bootstrap, Beast, Lantern, and Sold. Full-scale operations were achieved at Deep Star, the company's highest grade underground mine. In addition, gold from three other underground mines nearly tripled from an output of just 3.8 tons (123,000 ounces) in 1995 to 9.5 tons (307,000 ounces) of gold in 1996. To recover gold from the widely varying grades and many types of ore it is currently mining along the Carlin Trend, Newmont uses several processing methods. The company's \$350 million refractory (sulfidic and carbonaceous) ore treatment plant, or roaster, which is reported to be the largest facility of its kind in the world, produced almost one-third of the company's Nevada production—16.8 tons (540,000 ounces) of gold during the year, an increase of 11.0 tons (354,000 ounces) from in 1995. All refractory ore from Newmont's underground operations was processed by the new roaster, which was originally designed to process 8,000 tons of ore per day but has consistently operated above that level, and at times, has produced more than 10,000 tons per day.

Northwest of Elko, Independence Mining Co. and FMC Gold Co. produced about 9.6 tons (309,000 ounces) of gold at their Jerritt Canyon Mine. Santa Fe Pacific Gold Corp. recovered 14.3 tons (459,000 ounces) of gold at its Twin Creeks Mine in Humboldt County, and about 6.4 tons (206,000 ounces) at its Lone Tree Mine to the south near Valmy. Both operations are open pit mines where gold was recovered by milling and heap-leaching methods. At the nearby Getchell Mine, FirstMiss Gold Inc. produced 5.5 tons (178,000 ounces) of gold from its underground operations. Other gold mines in Humboldt County include the Hycroft (formerly the Crofoot/Lewis), the Marigold, the Pinson, and the Sleeper Mines; although mining ended at the Sleeper Mine in the third quarter, residual leaching continued.

South of and parallel to the Carlin Trend, the Battle Mountain/Eureka Trend runs from southeastern Humboldt County southeast through Eureka. Gold mining operations along this trend include the Battle Mountain Complex of Battle Mountain Gold Co. in Lander County: the McCoy and Cove gold and silver property of Echo Bay Mines Ltd., the Cortez Gold Mine Joint Venture's Cortez Mine, and Alta Gold Co.'s Easy Junior Mine in White Pine County. Gold production is winding down at Easy Junior.

At Round Mountain, about 95 kilometers north of Tonopah, the Smokey Valley Common Operation at the Round Mountain Mine produced about 12.8 tons (411,000 ounces) of gold during the year.

Considerable exploration activity continued to be focused on Mineral Ridge, the Pipeline, Ruby Hill, and several other recent discoveries along the Battle Mountain/Eureka Trend in Lander and Eureka Counties.

South Dakota.—Gold production remained largely unchanged. Homestake Mining Co.'s 120-year-old Homestake Mine at Lead was again the Nation's largest underground gold mine, the largest gold-producing mine in South Dakota, and the sixth largest gold-producing mine in the country. During the year, the mine, a nearly 2.5-kilometer-deep operation with associated surface mining, yielded about 12.7 tons (407,000 ounces) of gold at a reported cash production cost of \$293 per ounce.

Wharf Resources Ltd. continued to operate two open pit gold mines near Lead (the wholly-owned Wharf Mine and the 60%-owned Golden Reward Mine) in 1996. The Wharf Mine produced about 3.2 tons (105,000 ounces) of gold, and the Golden Reward Mine, about 0.7 ton (21,000 ounces). In September, the Golden Reward Mine was placed on care and maintenance following depletion of permitted reserves. Developing the unpermitted reserves of 3.9 tons at a grade of 0.035 ounces of gold per ton of ore would disrupt the surface of a local cemetery and could affect the operation of a nearby ski hill. As of yearend, a solution to the permitting had yet to be resolved.

In January, Dakota Mining Corp. successfully completed permitting work at its Anchor Hill oxide deposit on the Gilt Edge property, near Deadwood (Platt's Metals Week, 1996); this deposit is an oxidized sulfide deposit. Unlike unoxidized sulfide deposits, gold can be extracted from sulfide material in the oxide deposit through the use of cyanide heap-leaching solutions. More than 0.8 ton (26,000 ounces) of gold was recovered from sulfide material.

*Utah.*—Kennecott-Utah Copper Corp.'s Bingham Canyon Mine produced gold as a byproduct of its copper mining operations near Salt Lake City. Long ranked as one of the Nation's principal gold-producing mines, Bingham Canyon was the third largest gold producer in 1996. Kennecott also operated the nearby Barney's Canyon Mine, an open pit and heap-leaching operation.

Barrick Gold Corp.'s open pit Mercur Mine in Tooele County, Utah's largest primary gold producer, recovered about 2.6 tons (83,000 ounces) of gold. Mercur is expected to began closure activities in early 1997. Mill processing of tailings from earlier mining operations is expected to continue into late 1998, when the mill will close.

USMX Inc. (1996b) reported that reclamation at its Goldstrike Mine in Washington County was going smoothly; actual mining had been terminated in late 1994. A pilot bioreactor was constructed to treat heap effluent and to produce a "clean" discharge. Closure was set for 1997.

#### **World Review**

After 2 consecutive years of decline, world gold mine production rose slightly in 1996. Increasing production from mines in North America, South America and Australia has been enough to help offset a continuing sharp decline in gold output from South Africa. According to its annual review of world gold supply and demand, Gold Fields Mineral Services Ltd. calculated that the total global supply of gold in 1996 was 3,490 tons (112 million ounces) compared with the previous year's total supply of 3,330 tons (107 million ounces) in 1995 (Murray and others, 1997, p. 5). The two principal components of gold supply, mine production and old gold scrap, recorded only minor changes in 1996. Beyond these areas of slight change, however, were several significant developments within individual components of the supply-demand balance for the year. The most consequential of these developments was the

first appearance of producer forward sales on the demand side as a result of a net year-on-year decline in forward selling. Other significant changes were a decline in investment interest and a switch to substantial disinvestments.

On the supply side, Gold Fields reported that a series of official transactions and statements ensured that any positive sentiment in the global gold market would be short-lived. First, in March, the Central Bank of Belgium sold part of their gold stocks, which historically had backed up their paper currency (Murray and others, 1997, p. 5). This was followed by protracted discussions within the International Monetary Fund about the possibility of selling 5% of its gold reserves to aid some of the most heavily indebted countries. Next came the announcement by the Swiss National Bank of a radical change in its previously passive policy on gold (Murray and others, 1997, p. 6). Finally, the Dutch Central Bank announced in a fourth quarter sale of 300 tons of gold from its reserves (World Gold Council, 1997).

On the demand side, Gold Fields reported that the total amount of gold used in the fabrication of marketable products rose by 1% to a record 3,290 tons (106 million ounces) (Murray and others, 1997, p. 5). Demand reportedly increased modestly in most fabrication markets; the main increases came from jewelry. The total worldwide demand for gold used in the fabrication of jewelry products rose by 1.4%, to 2,800 tons (90 million ounces). Demand in the second largest fabrication market, other industrial applications, rose 1.5%, to 213 tons (about 7 million ounces). Worldwide fabrication in the industrial countries had shown virtually no growth since 1990. Over the same period, however, led by the jewelry sector, fabrication in developing countries increased by 40%, and the use of gold in other demand sectors, such as dentistry and electronic products, also reported gains. Medals and imitation coins did not (Murray and others, 1997, p. 45).

With regard to gold exploration, the Metals Economics Group of Halifax, Canada, determined from its annual survey of worldwide exploration budgets for 223 companies that the percentage of overall exploration expenditures directed to gold targets rose to 60.9% in 1996, the highest level devoted to gold since 1989 (Beamish and others, 1996).

Australia.—Australian gold mine production increased by 14% in 1996, to reach its highest level ever, helping Australia retain its position as the world's third largest gold-producing nation. Of the 289 tons (9.3 million ounces) of gold mined in 1996, Western Australia, Queensland, and the Northern Territory accounted for about 76%, 10%, and 6%, respectively; Western Australia's production was derived principally from mining operations near Kalgoorlie. Other Australian gold-producing States were in descending order of output, New South Wales, Victoria, Tasmania, and South Australia.

A number of gold mines were under development or expanding capacity, and several new mines, such as Henry, Brocks Creek, and White Devil began production. In addition, 15 tons of gold were added to the national output by the Jundee, the Nimary, and the Tanami Mines, which had started up in 1995 but had their first full year of production in 1996.

Exploration for gold deposits continued with renewed vigor. Much of the exploration was directed at deeper lying deposits. This vigor further confirmed the opinion that the Native Title Act of 1993 had not and would not force the mining industry to abandon. There was, however, a further cause for ongoing concern with the matter of the native title. The Supreme Court's December ruling in the Wik decision that native title could coexist with pastoral leases, which account for about 40% of the land in Australia, created great uncertainty regarding hierarchy of title and security of tenure of holders of mining leases (Murray and others, 1997, p. 24).

Canada.—In 1996, gold production continued to rebound, reversing the downward trend from 1992 through 1994. New mines and expansions should result in a continuation of increased gold production until the end of the decade, according to a review of Canadian gold developments (G. Couturier, Natural Resources Canada, 1997, written commun./unpub. data). Canada retained its position as the world's fourth largest gold producer. Gold was produced at about 50 lode gold mines, accounting for 89.5% of the total gold output. Base metal mines and placer mines accounted for 8.4% and 2.1%, respectively, of the remainder. During the year, five gold mines began operation and three mines shut down. Canada's principal gold-producing regions were, in descending order of output, Ontario, Quebec, British Columbia, and the Northwest Territories. Gold was also produced in Alberta, Manitoba, New Brunswick, Newfoundland, Saskatchewan, and Yukon Territory.

Latin America.—Gold production in this part of the world rose by 7%, to about 277 tons (8.90 million ounces). For the third year in a row, Latin America spent the most on exploration (\$963 million in 1996) primarily because of continued mining law and tax reforms and favorable geology. The most active exploration activities were focused in Chile and Peru (D.R. Wilburn, U.S. Geological Survey, written commun., 1996).

For the first time since the 1960's, production in Peru exceeded that in Brazil, making it the largest gold producer in Latin America at just under 65 tons (2.1 million ounces) of gold. The growth of the Peruvian mining industry has been quite phenomenal, with gold production increasing 500% in the last 10 years. Much of this success is attributable to Newmont Gold Co.'s and Cia. de Minas Buenaventura's low-cost heap-leach Yanacocha Mine in northern Peru, which produced more than 25 tons (800,000 million ounces) of gold. Yanacocha's continued expansion, has made it the largest gold mining operation in Latin America for the second consecutive year. The production from Peru's informal sector, which includes the gold-producing areas of Madre de Dios and Juliaca-Puno, however, remained about the same as that of 1995.

During 1996, Brazil produced about the same amount of gold, 62.5 tons (2.0 million ounces), as it did last year. The formal mining sector stabilized at about 41 tons (1.3 million ounces) of gold. The mines of the State-owned Cia. Vale do Rio Doce (CVRD), still Brazil's largest gold producer, yielded 18.0 tons (579,000 ounces) of gold. CVRD opened two new mines, Almas (Tocantins State) and Caeté (Minas Gerais State) and ceased operations at two other mines. Presently, the Igarapé

Bahia Mine, in the Carajás Mineral District, State of Pará, is the company's largest gold mine, with an annual production rate of more than 10 tons (322,000 ounces) of gold. Output from the informal mining sector drastically fell (almost 60%) because of depletion of accessible near-surface reserves, lower local prices, and increasing environmental control (Murray and others, 1997, p. 25).

Gold production in Chile registered the third consecutive annual increase, rising 1% to 40 tons (1.3 million ounces). Most of this gold was generated by Amax Gold Inc.'s and Bema Gold's Refugio Mine in Maricunga, Dayton Mining's Andacollo gold mine, the gold-silver Fachinal mining operation managed by Coeur d'Alene Mines Corp., the Pimenton gold mine, and the Escondida copper mine (Murray and others, 1997, p. 25).

Gold production in Mexico rose to more than 24 tons (775,000 ounces) in 1996 compared with 20 tons (643,000 ounces) in 1995. During the year, production began at Newmex's Lluvia de Oro Mine and Eldorado Corp.'s La Trinidad Mine. The country's mining sector has been revitalized by the introduction of new legislation that encourages investment and exploration (Murray and others, 1997, p. 26).

Total gold output recovered in Guyana following the temporary closure of Cambior's Omai gold mine in August 1995; a tailings pond wall had failed, which had resulted in the release of several million cubic meters of cyanide-bearing effluent into the nearby Omai and Essequibo Rivers. The mine remained closed throughout the entire second half of 1995, then reopened in February 1996 and produced about 8 tons (255,000 ounces) of gold.

Oceania.—Gold production in Papua New Guinea declined for the fourth consecutive year, although at a slower rate than that of 1995. Output at Placer Pacific Ltd.'s Porgera Mine recovered after 3 years of decline, and reserves were significantly expanded during 1996, but this increase was not sufficient to offset falling output at Placer Pacific Ltd.'s Misima Mine. At the Ok Tedi Mine, the legal battle over compensation claims flowing from a spillage accident in 1994 was finally settled during 1996, but production had not returned to former levels. Nonetheless, the country's gold industry was beginning to recover, as shown by renewed interest in projects at Wau and in Hidden Valley; in the Porgera Mine, in which Placer Dome secured a much larger interest in the mine; and in the Lihir Gold Ltd.'s successful effort to raise capital (Murray and others, 1997, p. 27).

In Indonesia, gold output was estimated to have risen by 3.5% in 1996 and to have nearly quadrupled since 1991. Freeport Indonesia Inc. recovered slightly more than 52 tons (1.67 million ounces) of byproduct gold at its Grasberg/Ertsberg copper-gold mine in West Irian, and PT Kelian Equatorial Mining significantly increased its production of gold at the Kelian Mine in East Kalimantan. Gold exploration activities continued to increase, especially in Kalimantan, where Canada's Bre-X Minerals Ltd. of Calgary reported a major discovery at its Busang Project, which, it claimed, could possibly host several hundred metric tons of gold. Analysis of seven core holes

drilled within the Busang Project area in an attempt to confirm these results, however, indicated insignificant amounts of gold. Additional analyses by an independent mining consultant gave further indication that Busang was unlikely to be proven an economic gold deposit (Wall Street Journal, 1997).

Gold output in New Zealand rose as a result of production increases from the Martha Hill and the Macraes gold mines.

Fiji now boasts two operating gold mines— Pacific Island Gold's Mount Kasi Mine, which began gold production on the island of Viti Levu in 1995, and the Emperor gold mine located at Vatukoula (Murray and others, 1997, p. 28).

Russia and the former Soviet Union.—Of the independent gold-producing countries resulting from the dissolution of the U.S.S.R. in late 1991, Russia is by far the largest producer in terms of output and number of operations, as well as areal distribution. The majority of Russia's production derives from formerly State-owned enterprises and worker's cooperatives, known as artels, which principally exploit placer deposits scattered throughout Siberia and the Russian Far East.

Production in Russia fell 9% to 120 tons (3.8 million ounces) of gold. This decline reflects the continued financial crisis prevailing in the country, which affected 28 of the 30 gold-producing regions; in Krasnoyarsk and the Altai territory output improved marginally. In contrast to the poor performance in Russia, production in Uzbekistan increased by almost 3%. This modest increase was largely as a result of Newmont Gold Co.'s efforts at Zarafshan, where about 218 million tons of low-grade stockpiled material had accumulated over 27 years of mining at the Muruntau Mine, the largest open-pit gold mine in the world (Murray and others, 1997, p. 25).

South Africa.— In 1970, the continent of Africa was the source of 81.8% of the world's gold output, but with the increase in production in North America and Australia, Africa's share had declined to only 26.6% in 1996. Gold production in South Africa, the world's largest gold-producing nation, declined for the third consecutive year to 498 tons (18.6 million ounces) of gold, more than 5% lower than that of 1995. Problems related to repeated labor disruptions, escalating costs, and declining ore grades continued to plague South Africa's gold-mining industry and combined to drive gold output down, bringing the cumulative decline in production from South African mines since 1993 to more than 20%.

The tonnage and grade of ore milled during 1996 by the nearly three dozen mines composing the membership of the Chamber of Mines of South Africa amounted to nearly 94 million tons at a grade of 4.91 grams per ton of gold; this compares with a similar total tonnage of 99 million tons, which was at the lower grade of 4.87 grams per ton, milled by Chamber members in 1995.

Of the top 15 gold-producing companies in the world in 1996, 6 were South African. Anglo American Corp. of South Africa Ltd. (AAC) remained the leading gold-producing company in the world. AAC owns the Freegold and the Vaal Reefs Mines. Gold Fields of South Africa Ltd. (GFSA) dropped from second in the world to third. GFSA owns the Driefontein and Kloof Mines. The other four companies were Gencor Ltd.

(8th); Randgold and Exploration Co. Ltd. (10th); Johannesburg Consolidated Investment Co. Ltd. (11th); and Anglovaal Ltd. (13th) (Murray and others, 1997, p. 18).

#### Outlook

Gold remains an internationally traded metal, but unlike most commodities bound by the traditional laws of market supply and demand, it also serves as a trusted repository of wealth, a storehouse of value, held by investors and Governments alike. In recent years, average annual gold prices have remained in a rather tight range, but for the short term, the price is expected to drop. The main reason for the decrease is the threat of central bank gold sales. The Dutch government was a key catalyst last year, selling one-third of its reserves (300 tons of gold). Although the sales of reserve gold are not expected to be excessive, central banks continuing to be net sellers of gold bullion could set a limit to any price rallies that may develop over the next year.

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<sup>&</sup>lt;sup>1</sup>Where used by itself elsewhere in this report, ounce refers to troy ounce; 1 kilogram of gold is equivalent to 32.1507 troy ounces.

<sup>&</sup>lt;sup>2</sup>Prior to January 1996, published by the U.S. Bureau of Mines.

## TABLE 1 SALIENT GOLD STATISTICS 1/

		1992	1993	1994	1995	1996
United States:						
Mine production	kilograms	330,000	331,000	327,000	317,000 r/	321,000
Value	thousands	\$3,660,000	\$3,840,000	\$4,050,000	\$3,950,000 r/	\$4,027,000
Gold recovered by cyanidation:						
Extracted in vats, tanks, and closed containers 2/	kilograms	178,000	177,000	169,000	155,000	158,000
Leached in open heaps or dumps 3/	do.	120,000	128,000	119,000	124,000	131,000
Refinery production:						
Ores, concentrates and dore	do.	284,000	243,000	241,000 4/	(4/)	(4/)
Recycled materials (new and old scrap)	do.	163,000	152,000	148,000 4/	(4/)	(4/)
Imports for consumption:						
Refined	do.	141,000	130,000	96,400	111,000	143,000
Exports:						
Refined	do.	257,000	658,000	334,000	277,000	406,000
Net deliveries from foreign stocks in						
Federal Reserve Bank of New York	do.	136,000	582,000	217,000	244,000	373,000
Stocks, Dec. 31:						
Industry 5/	do.	36,700	34,400	32,700 4/	(4/)	(4/)
Commodity Exchange (Comex) 6/	do.	46,500	78,500	49,100	45,400	20,700
Department of the Treasury 7/	metric tons	8,150	8,140	8,140	8,140	8,140
Volume of U.S. Gold Futures Trading 8/	do.	18,700	25,500	26,400	24,200	14,300
Department of the Treasury: 9/						
American Eagle gold coin	kilograms	11,100	21,800	10,900	13,900	10,700
Other Numismatic gold coins	do.	965	2,250	852	1,150	1,190
Consumption in industry and the arts	do.	110,000	91,400	76,100 4/	(4/)	(4/)
Apparent demand, refined 10/	do.	357,000	363,000	294,000 4/	(4/)	(4/)
Price: Average per troy ounce 11/		\$345.00	\$361.00	\$385.00	\$386.00	\$389.00
Employment, mine and mill only 12/		14,800	14,700	14,100	14,700	16,900
World:						
Production, mine	kilograms	2,260,000 r/	2,260,000 r/	2,240,000 r/	2,220,000 r/	2,250,000 e/
Official bullion reserves 13/	metric tons	35,100	34,900	34,800	34,600	34,400

e/ Estimated. r/ Revised.

- 1/ Data are rounded to three significant digits, except prices.
- 2/ May include small quantities recovered by gravity methods.
- 3/ May include tailings, waste-ore dumps, and previously mined ore at some inactive mines.
- 4/ Data under review.
- 5/ Unfabricated refined gold held by refiners, fabricators, dealers, and the U.S. Department of Defense.
- 6/ Comex Division of the New York Mercantile Exchange.
- 7/ Includes gold in Exchange Stabilization Fund.
- 8/ Comex only.
- 9/ Sales to market in fiscal year 1990; thereafter, bullion disbursements to U.S. Mint coin programs. Fiscal year begins Oct. 1, of year prior to year indicated.
- 10/ Defined as refinery production from primary materials + refinery production from old scrap + net bullion flow to market from foreign stocks at the New York Federal Reserve Bank + net imports of bullion. Assumed to include gold held for investment purposes. Excludes gold contained in fabricated items, imported coins, and official monetary gold.
- 11/ Engelhard Industries quotation.
- 12/ Data from Mine Safety and Health Administration.
- 13/ Held by central banks and governments and international monetary organizations. Data from International Monetary Fund.

TABLE 2 MINE PRODUCTION OF GOLD IN THE UNITED STATES, BY STATE  $\ 1/\$ 

#### (Kilograms)

State	1995	1996
Alaska 2/	4,410	5,020
Arizona	1,920	1,740
California	25,600 r/	23,800
Idaho	8,850	10,800
Montana	12,400	9,110
Nevada	210,000 r/	213,000
Other States 3/	53,700	57,500
Total	317,000 r/	321,000

r/ Revised.

TABLE 3 TWENTY-FIVE LEADING GOLD-PRODUCING MINES IN THE UNITED STATES IN 1996, IN ORDER OF OUTPUT

Rank	Mine	Mine County and State Operator		Source of gold
1	Goldstrike	Eureka, NV	Barrick Gold Corp.	Gold ore.
2	Carlin Mines Complex	do.	Newmont Gold Co.	Do.
3	Bingham Canyon	Salt Lake, UT	Kennecott-Utah Copper Corp.	Copper ore.
4	Twin Creeks	Humboldt, NV	Santa Fe Pacific Gold Corp.	Gold ore.
5	Smokey Valley Common Operation	Nye, NV	Round Mountain Gold Corp.	Do.
6	Homestake	Lawrence, SD	Homestake Mining Co.	Do.
7	Jerritt Canyon (Enfield Bell)	Elko, NV	Independence Mining Co.	Do.
8	McCoy/Cove	Lander, NV	Echo Bay Mines	Do.
9	Lone Tree	Humboldt, NV	Santa Fe Pacific Gold Corp.	Do.
10	Bullfrog	Nye, NV	Barrick Gold Corp.	Do.
11	Mesquite	Imperial, CA	do.	Do.
12	McLaughlin	Napa, CA	Homestake Mining Co.	Do.
13	Florida Canyon	Lander, NV	Pegasus Gold Inc.	Do.
14	Cresson	Teller, CO	Cripple Creek & Victor	Do.
15	Getchell	Humboldt, NV	FirstMiss Gold Inc.	Do.
16	Cortez	Lander, NV	Placer Dome (U.S.) Inc.	Do.
17	Castle Mountain	San Bernardino, CA	Viceroy Gold Corp.	Do.
18	Ridgeway	Fairfield, SC	Kennecott Ridgeway Mining Co.	Do.
19	Denton-Rawhide	Mineral, NV	Kennecott Rawhide Mining Co.	Do.
20	Kettle River	Ferry, WA	Echo Bay Mines Ltd.	Do.
21	Golden Sunlight	Jefferson, MT	Placer Dome (U.S.) Inc.	Do.
22	Beartrack	Lehmi, ID	Meridan Gold Co.	Do.
23	Bald Mountain	White Pine, NV	Placer Dome Inc.	Do.
24	Hayden Hill	Lassen, CA	Amax Gold Inc.	Do.
25	Wharf	Lawrence, SD	Wharf Resources Ltd.	Do.

 $<sup>1/\,\</sup>mbox{Data}$  are rounded to three significant digits; may not add to totals shown.

<sup>2/</sup> Production data collected by the State.

<sup>3/</sup> Includes Colorado, New Mexico, South Carolina, South Dakota, Utah, Washington, and Wisconsin.

TABLE 4 U.S. EXPORTS OF GOLD, BY COUNTRY 1/2/

	Ores and co	ncentrates 3/	Dore and	precipitates	Refine	d bullion	T	otal	Waste a	Waste and scrap	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
Year and country	(kilograms)	(thousands)	(kilograms)	(thousands)	(kilograms)	(thousands)	(kilograms)	(thousands)	(kilograms)	(thousands)	
1995	352	\$3,480	69,700	\$841,000	277,000	\$3,360,000	347,000	\$4,210,000	82,400	\$762,000	
1996:											
Belgium					3,300	41,100	3,300	41,100	1,870	26,500	
Canada	264	2,470	17,500	193,000	5,610	64,600	23,400	260,000	44,000	265,000	
France	3	28	16	180	1	8	20	216	30,000	374,000	
Germany	80	1,080			3,430	42,300	3,510	43,400	3,090	44,300	
Hong Kong					8,180	100,000	8,180	100,000			
Israel			59	368			59	368			
Italy	1	6			40	410	41	416	330	4,130	
Japan			505	6,190	5,080	63,200	5,580	69,400	58	691	
Korea, Republic of					27,300	343,000	27,300	343,000			
Mexico	1	13	353	4,460	4,300	46,100	4,660	50,600			
Netherlands			2	29	797	9,870	799	9,900			
Peru					420	4,990	420	4,990			
Singapore	2	10			10	91	12	101	3	15	
South Africa					1,990	24,600	1,990	24,600			
Sweden	20	111					20	111	1,760	25,300	
Switzerland			28,300	324,000	167,000	2,030,000	195,000	2,360,000	17	135	
Taiwan					5,660	70,300	5,660	70,300	179	633	
Turkey					227	2,770	227	2,770			
United Arab Emirates					8	90	8	90			
United Kingdom	3	12	18,200	168,000	172,000	2,160,000	191,000	2,330,000	8,620	112,000	
Other	1	1			186	1,980	187	1,980		7	
Total	375	3,730	65,100	696,000	406,000	5,010,000	471,000	5,710,000	89,900	853,000	

<sup>1/</sup> Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

<sup>2/</sup> Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold excluded.

<sup>3/</sup> Includes base metal ores, concentrates, and matte destined for refining.

TABLE 5 U.S. IMPORTS FOR CONSUMPTION OF GOLD, BY COUNTRY 1/2/

	Ores and co	ncentrates 3/	Dore and p	Dore and precipitates		Refined bullion		tal	Waste and scrap	
Year and country	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)	Quantity (kilograms)	Value (thousands)
1995	5,020	\$53,900	9,820	\$92,600	111,000	\$1,360,000	126,000	\$1,510,000	14,400	\$123,000
1996:										
Antigua and Barbuda									466	5,300
Argentina					170	2,090	170	2,090		
Australia					350	4,340	350	4,340		
Austria	(4/)	(4/)					(4/)	(4/)	1	12
Bolivia					398	5,040	398	5,040	123	925
Brazil					18,300	229,000	18,300	229,000		
Canada	151	1,190	1,770	16,900	77,500	972,000	79,400	990,000	1,420	11,000
Chile			2,460	15,100	7,360	92,200	9,810	107,000	419	6,480
China									58	640
Colombia					16,100	198,000	16,100	198,000	10	138
Costa Rica	7	92			100	1,040	107	1,130	784	7,190
Dominican Republic					690	5,540	690	5,540	4,380	29,600
Ecuador			263	3,240	444	5,480	707	8,720	183	1,080
Estonia									40	488
Germany					714	5,390	714	5,390	104	465
Guyana					53	625	53	625		
Korea,Republic of					100	1,220	100	1,220	20	223
Malaysia									530	2,900
Mexico	3,240	40,100	6,700	70,200	8,020	99,500	18,000	210,000	1,840	11,900
Netherlands Antilles					1,960	24,300	1,960	24,300		
Nicaragua					401	5,030	401	5,030	1	8
Panama			294	3,700	465	4,400	759	8,100	145	1,020
Peru			113	1,380	2,130	24,600	2,240	26,000	1,160	11,800
Philippines			7	175			7	175	299	2,470
Russia	62	775	2	20	70	576	134	1,370	44	396
South Africa					1,070	13,200	1,070	13,200		
Suriname					618	8,480	618	8,480		
Switzerland			60	901	3,500	44,400	3,560	45,300	2	29
Taiwan									193	1,730
Trinidad and Tobago									43	125
United Kingdom			267	5,890	803	10,000	1,070	15,900	14	103
Uruguay					1,040	12,300	1,040	12,300	159	3,080
Venezuela					873	10,300	873	10,300	44	514
Other					174	2,170	174	2,170	968	8,040
Total	3,460	42,200	11,900	117,000	143,000	1,780,000	159,000	1,940,000	13,000	102,000

<sup>1/</sup> Data are rounded to three significant digits; may not add to totals shown.

Source: Bureau of the Census.

<sup>2/</sup> Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold excluded.

<sup>3/</sup> Includes base metal ores, concentrates, and matte destined for refining.

<sup>4/</sup> Less than 1/2 unit.

 ${\bf TABLE~6}$  GOLD: WORLD MINE PRODUCTION, BY COUNTRY ~ 1/ 2/

#### (Kilograms)

Country	1992	1993	1994	1995	1996 e/
Argentina	1,300 r/	937	937 r/	837 r/	850
Armenia e/	500	200	100	300 r/	250
Australia	243,000 e/	247,196	256,188	253,504	289,000
Belize e/	5	2	5	5	5
Bolivia	4,688	10,423	12,838	14,405	12,500
Botswana	165	192	248	86	90
Brazil 3/	85,862 2,000	74,219 2,000	70,535 2,000	62,424 r/ 2,000	62,500 2,000
Bulgaria e/ Burkina Faso e/	5,400	5,000	2,000 4,000 r/	2,000 3,000 r/	4,000
Burundi e/	3,400	20	4,000 1/	10	10
Cameroon e/	10	10	560 4/	1.000 r/	1,000
Canada	161,402	152,929	146,428	150,967 r/	164,136 p/
Central African Republic	155	152,727 153 r/	138 r/	120 r/e/	90
Chile	33,774	33,638	38,786	39,180	39,600
China e/	125,000	130,000	132,000	140,000	145,000
Colombia	32,118	27,471 r/	20,762	21,160	22,064 4/
Congo e/	5 4/	5	5	5	5
Costa Rica e/	550	600	358 4/	500	500
Cote d'Ivoire	2,800	3,100	1,860 r/	1,983 r/	2,000
Dominican Republic	3,813	366	595	3,288	3,300
Ecuador e/ 5/	12,300	12,500	13,000	15,500	15,000
Eritrea	XX	XX	78	59	98 4/
Ethiopia 6/	2,224	3,387	2,370	4,500	5,000
Fiji	3,701	3,784	3,440	3,477 r/	4,790 4/
Finland	1,595	1,385	1,372	1,400 e/	2,100
France	2,910	2,155 r/	4,009	4,615 r/	4,500
French Guiana (Guyane) e/	2,140 4/	2,800 r/	2,270 r/	3,000 r/4/	3,000
Gabon e/ 7/	70	120	72	70	70
Georgia e/	1,500	1,000	600	500	500
Ghana	31,032	39,235	44,505	52,200 e/	50,100
Guatemala e/	32 4/	30	30	30	30
Guinea	2,113	1,500 r/	5,617	6,911 r/	7,000
Guyana	2,475	9,614	11,811	9,331 r/	12,441 4/
Honduras	163	111	106	110 e/	142 4/
India 8/	1,762	2,003	2,244	2,300 e/	2,500
Indonesia 9/	37,983	42,097	42,600	62,800 e/	65,000
Iran	500 e/	417	723	650	650
Japan	8,893	9,352	9,551	9,185	8,627 4/
Kazakstan e/ 10/	24,000	25,000	26,000	26,000	21,000
Kenya e/	20	154 4/	155	170	170
Korea, North e/	5,000	5,000	5,000	5,000	5,000
Korea, Republic of 8/	23,263	25,000 e/	12,332	13,418 r/	14,096 4/
Kyrgystan e/	1,000	1,000	3,000 r/	4,500 r/	5,000
Liberia e/	700	700	500	500	700
Madagascar e/	500	500	500	500	500
Malaysia	3,513	4,462	4,085	3,161	2,830 4/
Mali e/	5,700	5,500	5,500	7,800	8,000
Mexico	9,891	11,100	13,888	20,292	22,000
Mongolia e/	900	1,200	2,000	4,800	5,300
Mozambique	296	149	336	900 e/	1,000
Namibia	2,025	1,954	2,394	1,893 r/	2,015 4/
New Zealand	10,531	11,161	10,118 r/	12,132 r/	12,500
Nicaragua Nicara	1,322	1,240	1,073	1,600 e/	1,600
Niger e/ Panama e/	1 250 4/	1 255	1 245	1 1,100	1 200
	71,190	255 60,587	245 58,654 r/	1,100 51,701 r/	1,200 51,573 4/
Papua New Guinea	71,190 24,242 r/	30,318 r/		51,701 f/ 57,744 r/11/	64,786 4/11/
Peru Philippines	24,242 f/ 25,609	30,318 f/ 21,155	46,313 r/ 11/ 27,059	57,744 r/ 11/ 27,144	20,000
Portugal e/	25,609 89	21,133	41,039	41,144	20,000
Romania e/	3,700	4,000 4/	4,000	4,000	4,000
Russia	146,000	149,500	146,600	132,170	120,000
Rwanda e/	1,000	1,000	146,600	100	50
Saudi Arabia	6,150	7,519	7,630	8,080	8,200
Senegal e/	(12/)	(12/)	(12/)	(12/)	(12/)
Benegai E/	(12/)	(14/)	(14/)	(14/)	(14/)

Senegal e/
See footnotes at end of table.

## TABLE 6--Continued GOLD: WORLD MINE PRODUCTION, BY COUNTRY 1/2/

#### (Kilograms)

Country	1992	1993	1994	1995	1996 e/
Serbia and Montenegro	7,330	3,325	2,504 r/	3,040 r/	3,000
Sierra Leone 13/	92	157	125	4 r/	16 4/
Solomon Islands e/		20	5	1	1
South Africa	614,071	619,201	580,201	523,809 r/	497,583 4/
Spain	6,582	6,083	5,852	3,308 r/	3,000
Sudan e/	1,000	1,600	3,000 r/	3,700 r/	3,700
Suriname e/	300	300	300	300	300
Sweden	6,164	6,548	6,364	6,528 r/	6,500
Taiwan 8/		2	5	4 e/	4
Tajikistan e/	1,700	1,600	1,500	1,500	1,500
Tanzania	3,200	3,364	2,549	44	100
Turkey 14/	1,250	1,110	996 e/	1,000 e/	1,000
United States	330,000	331,000	327,000	317,000 r/	321,000
Uruguay e/	300	300	300	900	900
Uzbekistan e/	70,000	70,000	70,000	70,000 r/	72,000
Venezuela	7,553	8,899	10,094	7,259	12,000 p/
Zaire e/	9,000	1,500 r/	800 r/	600 r/	1,000
Zambia 15/	271	235	124	100 r/e/	130
Zimbabwe	18,278	18,916	20,512	23,959 r/	24,772 4/
Total	2,260,000 r/	2,260,000 r/	2,240,000 r/	2,220,000 r/	2,250,000

- e/ Estimated. p/ Preliminary. r/ Revised. XX Not applicable.
- 1/ World totals, U.S. data, and estimated data are rounded to three significant digits; may not add to totals shown.
- 2/ Table includes data available through July 15, 1997.
- 3/ Officially reported figures are as follows, in kilograms: Major companies: 1992--39,044; 1993--39,894; 1994--40,188; 1995--40,951 (revised); and 1996--41,000 (estimated). Garimpos 1992--37,000 (revised); 1993--30,000 (revised); 1994--30,347 (revised); 1995--21,473 (revised); and 1996--21,500 (estimated).
- 4/ Reported figure.
- 5/ Includes undocumented artisanal production.
- 6/ Year ending July 7 of that stated.
- 7/ Undocumented artisanal production.
- 8/ Refinery output.
- 9/ Excludes production from so-called people's mines, which may be as much as 18,000 kilograms per year, but includes gold recovered as byproduct of copper mining.
- 10/ Includes byproduct gold production. Primary gold production; in kilograms: 1994--14,483; 1995--18,200 (revised); and 1996--12,000.
- 11/ Includes documented production from small artisanal production.
- 12/ Less than 1/2 unit.
- 13/ Data are based on official exports and do not reflect gold moved through undocumented channels.
- 14/ Indicates byproduct of base metals.
- 15/ Year beginning Apr. 1 of that stated. Byproduct of copper production by Zambia Consolidated Ltd. only. Some additional artisanal production was reported, but data are insufficient to make reliable estimates.