

GOLD and SILVER

Statistics for 1970, 1971 (Preliminary), and Other Years

ARIZONA, THE UNITED STATES AND THE WORLD

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GOLD AND SILVER 1970, 1971 AND OTHER YEARS

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GOLD and SILVER 1970-1971

ARIZONA

Gold

Arizona's gold production in the years 1968-1971 has ranked fourth in value, after copper, molybdenum and silver, among the metals produced by the State. Well over 90 percent of the gold was a by-product of the copper industry and production increased along with that of copper in 1968 and 1969. However, in 1970, the output of gold decreased one percent while that of copper rose 15 percent, and in 1971, gold production dropped 18 percent while copper dropped 12. The 110,878 Troy ounces of gold produced in 1969 were valued at \$4,603,000; the 109,853 ounces in 1970 at \$3,998,000; and the 89,930 ounces in 1971 at \$3,687,000 (1971 figures are preliminary). Average prices for the three years were \$41.51, \$36.41 and \$41.25, respectively. The quantities and values of Arizona's annual production of gold in the period 1956-1971 are given in Table I.

Arizona has ranked fourth among the states in gold production since 1964. In 1965, Nevada replaced her in third place and then in 1967 replaced Utah in second, Utah dropping to third. South Dakota, producer of one-third of the nation's total in 1969 and 1970, has stayed in the lead, with the other three states retaining their 1967 positions.

Seven of the twenty-five leading gold mines in the United States in 1969 were in Arizona. The seven are as follows:

<u>Mine</u>	<u>Operator</u>	<u>Source of Gold</u>	<u>Rank</u>		
			1968	1969	1970
Copper Queen - Lavender Pit	Phelps Dodge Corp.	Copper Ore	7	8	7
New Cornelia	Phelps Dodge Corp.	Copper Ore	6	9	9
San Manuel	Magma Copper Co.	Copper Ore	10	10	15
Morenci	Phelps Dodge Corp.	Copper Ore	13	14	16
Magma	Magma Copper Co.	Copper Ore	16	16	17
Iron King	McFarland & Hullinger 1968	Lead-Zinc Ore	18	--	--
Christmas	Inspiration Cons. Copper Co.	Copper Ore	20	22	24
Ray Pit	Kennecott Copper Corp.	Copper Ore	--	25	--

U.S. Bureau of Mines

In 1969 and 1970, 98 percent of Arizona's gold production came from copper ores. The other 2 percent came chiefly from ores and tailings from gold and silver mines. The 1971 percentage from copper ores probably was higher. Comparative figures for 1968 were 93 percent from copper ores, 6 from lead-zinc ores, and 1 percent from other ores.

Table II shows the ore sources and amounts of both gold and silver produced in Arizona in 1970. It shows only one lode gold mine, which produced 144 tons of dry gold ore yielding 65 ounces of gold in the year. In 1969, 7 gold mines produced 500 ounces and in 1937 a total of 431 lode gold mines produced 616,000 tons of dry gold ore yielding 117,464 ounces--more than all Arizona mines have produced in any year since 1966 when the Iron King, a lead-zinc mine near Humboldt, now idle, was operating and ranked 15th among the gold producing mines of the United States.

Silver

In 1966, Utah displaced Arizona as the second largest silver producing state, but since 1968 Arizona has again held second place, Idaho having retained first as it has for 3 or 4 decades.

Arizona's silver production for the years 1955-1971 is shown in Table I. Nearly all of it has been a by-product of ores other than silver, mainly copper. The production in 1969 increased 19 percent in quantity from 1968 but was 3 percent below 1966, the highest year since 1942. However, the value of production was 55 percent above that of 1966 and only 3 percent above 1968, the average Handy & Harman price of silver having increased from \$1.293 per fine Troy ounce in 1966 to \$2.145 in 1968, then dropped to \$1.791 in 1969. In 1970, Arizona production increased to 7,330,000 ounces, 14 percent above 1969 and 10 percent above the 1966 record, and its value increased 16 percent to \$12,981,000. Preliminary figures for 1971 show a 13 percent decrease in Arizona production to 6,388,000 ounces, and a much larger decrease of 29 percent in value to \$9,818,000, because of lower prices for the reduced output.

In recent years silver has ranked third, following copper and molybdenum, among the metals produced in Arizona, but has accounted for less than 2 percent of the total value of all minerals (see Table III).

Nine of the twenty-five leading silver mines in the United States in 1970 are in Arizona. They are as follows:

Mine	Operator	Source of Silver	Rank		
			1968	1969	1970
Twin Buttes	The Anaconda Co.	Copper Ore	--	--	9
Copper Queen - Lavender Pit	Phelps Dodge Corp.	Copper Ore	13	11	12
Pima	Pima Mining Co.	Copper Ore	10	13	15
Morenci	Phelps Dodge Corp.	Copper Ore	15	17	16
Mission	American Smelting & Refining Co.	Copper Ore	16	15	17
Magma	Magma Copper Co.	Copper Ore	23	20	21
Mineral Park	Duval Corp.	Copper Ore	12	18	23
Sierrita	Duval Sierrita Corp.	Copper-Moly Ore	--	--	24
Ray	Kennecott Copper Corp.	Copper Ore	--	--	25
New Cornelia	Phelps Dodge Corp.	Copper Ore	22	22	--

U.S. Bureau of Mines

In 1970, 97 percent of Arizona's silver production came from ores of 53 copper mines, as shown by Table II; 8 dry silver and 6 dry silver-gold mines produced 1.3 percent; and other mines 1.4 percent. In 1969, copper mines produced 96 percent; 18 dry silver and 8 dry silver-gold lode ore mines accounted for 3 percent; and other ores 1 percent of the total. Corresponding percentages in 1968 were 95, 1 and 4.

In 1937, Arizona's year of maximum silver and gold production, 109 dry and siliceous silver ore producing mines and 29 dry gold-silver-lead mines combined, produced 1,495,736 ounces of silver, equal to 16 percent of the 1937 record total of 9,423,000 ounces. Copper ores yielded 68 percent, and zinc-lead and lead ores the rest.

Most of the dry gold and silver ores mined since 1942 have been either sorted, higher grade ores shipped in small amounts, or lower grade ores with high flux or slurry values desired by the smelters. Gold ores, without such smelting values and with a fixed gold price have had little if any promise of being profitably mined in Arizona in the face of multiplication of costs since the gold mine closing order of 1942. Costs also have increased since World War II much more rapidly than silver prices have, and very few mines which were mainly dependent upon dry silver ores have been operated in Arizona in the period.

The following table shows Cochise County in the lead as a producer of gold in 1970, but Pima County was well in the lead in silver and copper production and was third in gold. Pinal was second in all three metals.

ARIZONA PRODUCTION OF GOLD, SILVER AND COPPER BY COUNTIES IN 1970

County	<u>GOLD</u>		<u>SILVER</u>		<u>COPPER</u>	
	Thousands of Ounces	%	Thousands of Ounces	%	Thousands of Ounces	%
Pima	29.1	26.5	3,751	51.2	335.6	36.6
Pinal	30.6	27.8	1,223	16.7	235.1	25.6
Cochise	32.1	29.2	860	11.7	62.1	6.8
Greenlee	13.5	12.3	703	9.6	127.9	13.9
Mohave	0.4	0.4	451	6.1	29.2	3.2
Gila	3.8	3.4	233	3.2	104.9	11.4
Yavapai	0.3	0.3	104	1.4	22.7	2.5
Others	0.1	0.1	5	0.1	0.4	-----
TOTAL	109.9	100.0	7,330	100.0	917.9	100.0

U.S. Bureau of Mines

Activity in gold and silver mining was quiet in Arizona in 1970 and 1971.

THE UNITED STATES

Gold

United States production of recoverable gold in 1970 was 1,743,322 Troy ounces, up only 0.6 percent from 1969. Table VI shows that the increase was due mainly to a 5.2 percent increase in Nevada, the second ranking state. Production in South Dakota, the No. 1 state, dropped 2.4 percent, and 3rd place Utah and 4th place Arizona showed declines of 6 and 1 percent respectively. These four states produced over 90 percent of the 1970 domestic gold mine output. By-product gold from base metal ores accounted for 38 percent of the domestic production compared to 40 percent in 1969. Copper ores themselves produced 32 percent of the Nation's gold output in 1970.

Nevada was the only one of the four major producing states which increased gold production in 1970, but preliminary figures show that its output was off over 20 percent in 1971 when the output of all of the four states declined and the total domestic output was down 14 percent.

As mentioned under Arizona, the average domestic price of gold recovered from \$36.41 for 1970 to \$41.25 for 1971. After hanging close to the \$35 monetary level in the first three quarters of 1970, it rose some in the last quarter and the average for January 1971 was \$38.32. The rise continued and after the government, in July, announced suspension of conversion of dollars to gold to become effective August 15th, the price jumped to above \$44 by early August. The average for December 1971 was \$43.93 but at the end of January 1972, it was \$47.60 and the January average was \$46.20.

Salient gold statistics are presented in Table V.

Domestic industrial consumption of gold in 1970 decreased 16 percent to 5,973,000 ounces, but for the first half of 1971 it was 10 percent above the first half of 1970, due largely to a 38 percent increase of use in jewelry and arts. Also in the first half of 1971, consumption of gold in dentistry rose 8 percent but in industries other than jewelry, arts and dentistry it declined 24 percent from the level of the first half of 1970. Jewelry and arts continued to take over half of the gold purchased by domestic industry, its percentages ranging from about 70 in 1960 to 54 in 1969, 56 in 1970 and 61 in the first half of 1971. Use in electrical industry about doubled in the decade ending in 1970.

United States imports and exports of gold in recent years are shown in Table IX. Exports exceeded imports in the period after 1960 and through 1968. Imports in 1969 were about the same as in 1968, but exports were only 338,000 ounces compared with 23,962,000 in 1968. Imports were 7,201,000 and exports 1,339,000 ounces in 1971.

The United States stocks of monetary gold at the end of years 1952 to 1971 are given in Table VIII. Free World official reserves of gold and U.S. percentages thereof also are tabulated. At the end of 1971, U.S. monetary stocks, including its gold in the Exchange Stabilization Fund, were \$10.206 billion, down from \$11.072 billion in 1970. The 1970 reserve was 27 percent of Free World reserves of \$41 billion.

However, the short term liabilities of the United States to foreigners as of the end of December 1970 were \$41.668 billion, and as of the end of November 1971 they had increased to \$54.060 billion. This increase, coupled with continued U.S. inflation and balance of payments deficit, aggravated the loss of confidence in the dollar and in the U.S. economy. President Nixon's August 15th suspension of the convertibility of dollars to gold created disturbing fluctuations in values of world currencies which demanded early correction.

Talk of dollar devaluation grew as foreign pressure for it increased, and in December 1971, at a meeting with President Pompidou of France, President Nixon agreed to raising the U.S. price of gold. As the U.S. subsequently moved towards increasing the official price from \$35 to \$38, which would require approval by the Congress, the price of free market gold soared to new levels. On February 2, 1972, the average Engelhard selling price was \$49.70, and most investors were reported to be convinced that devaluation would exceed the proposed amount of approximately 8 percent.

Silver

Salient silver statistics for 1965-1971 are given in Table XI.

The United States mine production of silver increased 7.4 percent in 1970 to 45,005,605 ounces, then declined 10 percent in 1971 to a preliminary figure of 40,537,559 ounces. Montana's production increased 26 percent in 1970, then fell 63 percent in 1971 as production of the Berkeley copper pit increased, then fell in 1971 due to a copper strike. Also, because of copper strikes, production of Arizona, Utah and Nevada fell substantially in 1971, although less than in Montana. The silver from these four states is largely by-product of its copper mines.

Six states: Idaho, Arizona, Utah, Montana, Colorado and Missouri, in order of rank, produced 92 percent of the nation's new silver output in 1970 and 88 percent in 1971. Idaho alone accounted for 42 and 47 percent in the respective years and was the only one of the larger silver producing states to increase output in 1971. State by state silver production for the years 1965 to 1971 is given in Table XII.

Silver ores accounted for 35 and copper ores 32 percent of the 1969 production, but in 1970 copper ores took the lead with 36 percent, silver dropping to 32. Zinc and complex copper-lead-zinc ores in 1970 accounted for 25 percent; lead ores, 6 percent and gold ores and gold tailings, etc., 1 percent each. The Sunshine mine of Sunshine Mining Company and ASARCO's Galena mine, both in Idaho, were the No. 1 and No. 2 producers, followed by Anaconda's Berkeley Pit (copper) in Montana and Hecla's Lucky Friday mine in Idaho.

Half of the U.S. refinery production of 161,424,000 ounces of silver in 1970 was from domestic and foreign ores and half from old and new scrap. The ratio of silver from domestic ores to that from foreign was slightly above $1\frac{1}{2}$ to 1; and of that from old to that from new scrap was a little below $2\frac{1}{2}$ to 1, that from old scrap amounting to 56,044,000 and new scrap 23,999,000 ounces.

Silver prices in 1970 continued to be influenced by speculators and by sales of Treasury silver until the sales were stopped on November 10, 1970. The average price for the year, \$1.77 per ounce, was 2 cents below the average for 1969, and the daily figures price ranged from a high of \$1.93 on January 9th to a low of \$1.57 on December 10th. The surprise of the year was the failure of the expected increase in price and the disappointing drop to the year's low after cessation of Treasury sales. The disappointment continued through 1971, the average of the year being \$1.55, with a range from a high of \$1.75 for April 8th and a low of \$1.288 for November 3rd, the lowest price since August 22, 1963. The price recovered to above \$1.40 in December and averaged \$1.39 for the month.

Opinions continue to vary considerably as to how much higher silver prices are likely to go, and when.

United States consumption of silver in the years 1968 to 1971 is tabulated according to end use in Table XIII. The U.S. Bureau of Mines figures show a 20 percent decrease in total U.S. consumption in 1970 and an increase of 1.5 percent to 131.1 million ounces in 1971. The net industrial consumption declined 9 percent in 1970 and increased 0.2 percent in 1971 from 128.4 to 128.6 million ounces. 1971 use in coinage more than tripled that in 1970, due largely, if not entirely, to the minting of new Eisenhower dollars of 40 percent silver. Uses in jewelry and batteries increased greatly in 1970 then declined in 1971. The largest use, in photographic materials, fell 8 percent in 1970 and 5 percent in 1971. The second largest, in electrical conductors, fell 27 percent in 1970 and rose 11 percent in 1971. Use in sterling ware, third largest, fell 5 percent in 1970 and increased 19 percent in 1971. The fourth largest, in brazing alloys and solders, declined 15 and 17 percent in the two years.

The small 1971 increase in industrial use reported by the Bureau of Mines reversed its earlier estimate of a small decrease. Handy & Harman (H & H) in its 56th Annual Review of the Silver Market 1971 likewise estimated a small decrease. Metals Week (February 14, 1972, page 7), in an article headed, "Puzzling through 1971 silver statistics," reports: "Widespread interest has been given to a recent study conducted by Chender Associates (CAI), which hypothesizes via a series of unique calculations that U.S. silver consumption has actually risen from 1964 to 1971 from an estimated 155.3 million ounces to about 184.9 million rather than declining 34 million ounces, as reported by the U.S. Bureau of Mines." The following tabulation of U.S. consumption from Metals Week, issue of January 24th, illustrates the puzzle:

	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
USBM	162.3	170.5	183.7	171.0	145.3	141.6	128.4
H & H	123.0	137.0	150.0	145.0	145.0	142.0	135.0
CAI	155.3	173.6	198.1	195.9	191.2	202.8	184.9

United States imports and exports of silver in ores, concentrates, waste and bullion, are given in Table XV for 1961 through 1971. The 1969 imports of 72 million ounces were the highest since 1962 but the 1971 figure of 56 million was about at the 1967 level, over half of the drop occurring in 1970. Exports in 1968 were 126 million ounces, high for the 11 year period. They dropped drastically thereafter, by 30 percent in 1969, 69 in 1970 and 56 percent in 1971 to 12,224,000 ounces, or only 10 percent of the 1968 exports. The United States was a net exporter in the years 1966 to 1969, but since has been a net importer by a wide margin nearly 5 to 1 in 1971. Silver in ore and concentrates constituted 56 percent of the 1971 imports, but made up only 1 percent of the 1971 exports. Like percentages of silver in waste and scrap are 1 and 29; and of silver in bullion, 43 and 70. Switzerland, West Germany, Belgium-Luxembourg, United Kingdom, France and Japan, in order of amounts, together received 90 percent of the exports. The largest amount, to Switzerland, was 23 percent of the total and the lowest of the six, to Japan, was 11 percent. Canada supplied 58 percent of the imports; Peru 23; Mexico and Honduras a scant 6 percent each; and Australia and United Kingdom 2 percent each; combined imports from the six countries being 96 percent of the total.

U.S. silver stocks of the Treasury and industry at the ends of the years 1965 to 1971, are given in Table XI. Figures for Treasury stocks exclude silver in silver dollars and those for industry include silver in Comex warehouses and stocks in the hands of the Chicago Board of Trade. Large stocks of silver are held by speculators and investors and there is a wide range of studied opinion and conjecture both as to the amounts so held, here and abroad, and as to what the holders might do with them.

THE WORLD

Gold

World production of gold in 1967-70, including amounts from the principal producing countries, is given in Table X. A little over two-thirds of the total has been produced in each of the years by the Republic of South Africa. The Soviet Republic has been a poor second, followed by Canada and the United States. A few years ago, a decrease in the South African production was feared, but small increases occurred in 1968 and 1969, and there was only a slight drop in 1970. The output has been expected to rise slowly for several years, but with U.S. devaluation of the dollar in sight, and prospects of industrial use of gold growing faster than new production, the South African gold outlook has become brighter, as has that of gold producers elsewhere.

Silver

World production of silver is given for the years 1967 to 1970 in Table XVI. The 1970 total of 301,745,000 ounces is a preliminary figure 4 percent higher than the 1969 production. Amounts from the most important producing companies are also tabulated. The Free World continued to produce over 80 percent of the world's newly mined silver. Western hemisphere countries supplied 62 percent in 1970 and 61 percent in 1969. The United States, Canada, Mexico, Peru, U.S.S.R. and Australia were the six largest producers; the U.S. first with 45 million and Australia sixth with 26 million ounces. Together, the six accounted for 78 percent of the world total in 1970 and 77 percent in 1969.

Free world consumption of silver is shown in Table XI. Use in industry and the arts increased 15 million ounces in 1969 to a total of 364 million then decreased 7 million in 1970 to about the 1966 level, where it remained in 1971. The variation in use in industry and the arts in the years 1967 to 1971 is less than 3 percent from the 1968 level. Free World consumption in coinage has declined from 381 million in 1965 to 19 million ounces in 1971. The total Free World consumption in 1971 was 377 million ounces, of which 240 million came from new production. According to the H & H review of 1971, the balance of 137 ounces came from the following sources, the amounts being in millions of ounces: U.S. Treasury coinage, 3; stocks of foreign governments, 5; demonitized coin, 25; India and Pakistan, 20; liquidation of speculative holdings and inventory reductions, 60; salvage and other miscellaneous sources, 24.

G O L D

Physical Properties - Uses

Gold is a heavy, soft, yellow, ductile, malleable metallic element in group I of the periodic system; symbol, Au; valences, 1 and 3; atomic number, 79; atomic weight, 196.967; specific gravity, 19.32 (at 20°C); melting point, 1063°C; boiling point, 2,966°C; specific electrical resistivity, 2.42 microhms per cubic centimeter; soluble in aqua regia, in potassium cyanide solutions, and in hot sulfuric acid. It occurs as native gold and in tellurides.

Gold was one of the first metals used by man. Its workability, beauty, resistance to tarnish and corrosion, and scarcity, accounted for its early use in jewelry, ornaments, and money. It has been sought throughout most of man's existence over most of the world, and has influenced the course of history.

Most of the world's gold is retained in monetary reserves of the individual countries but much is hoarded or is used in the arts or in industry. It is commonly alloyed with varying percentages of copper and silver. White gold is usually an alloy with nickel. Gold used in dentistry is alloyed with platinum or palladium.

The use of gold in jewelry and other arts such as gold plating, gilding and decorating of china is familiar. Less known are its important industrial uses. Substantial amounts are going into the aircraft and aerospace industries in brazing alloys and on thermal control surfaces. Some parts for the communications industry are made of alloys containing gold or of metals clad with it, and such use is growing. Its functional reliability more than offsets its relative high price. Other long established uses are in amalgams, anodes and laboratory ware.

S I L V E R

Physical Properties - Uses

Symbol Ag; atomic weight 107.88; specific gravity 10.5; melting point 960.6°C; valence 1; hardness (Mohs' scale) 2.5-3; cleavage none; color silver white, gray to black when tarnished; brilliant when polished; highest reflectivity known; highly malleable, ductile and resistant to corrosion; highest electrical and thermal conductivity, resistivity 1.62×10^{-6} ohm-cm.

Silver has been used by primitive man and his descendants in jewelry and other art objects, because of its beauty; by the Romans and other nations since as a basis for or a part of their monetary system, because of its beauty and scarcity; and in industrial uses, because of its unique properties.

Due to the sensitivity of certain silver salts to light, they are used in photographic materials. This is the greatest industrial use for silver in the United States. Silver's use in electrical and electronic equipment is next, followed by sterling ware, brazing alloys, electroplated ware, jewelry and miscellaneous industrial purposes.

The use of silver in coinage of the United States has been greatly reduced in recent years.

Table I - ARIZONA'S PRODUCTION OF RECOVERABLE GOLD AND SILVER ^{1/}
for Years 1956-1971

GOLD			SILVER		
Year	Troy Ozs.	Value	Year	Troy Ozs.	Value
1956	146,110	5,114,000	1956	5,179,185	4,687,000
57	152,449	5,336,000	57	5,279,323	4,778,000
58	142,979	5,004,000	58	4,684,580	4,240,000
59	124,627	4,362,000	59	3,898,336	3,528,000
60	143,064	5,007,000	60	4,774,992	4,322,000
61	145,959	5,109,000	61	5,120,007	4,733,000
62	137,207	4,802,000	62	5,453,585	5,917,000
63	140,030	4,901,000	63	5,373,058	6,873,000
64	153,676	5,379,000	64	5,810,510	7,513,000
65	150,566	5,270,000	65	6,095,285	7,881,000
66	142,528	4,988,000	66	6,338,696	8,196,000
67	80,844	2,830,000	67	4,588,081	7,112,000
68	95,999	3,769,000	68	4,958,162	10,633,000
69	110,878	4,603,000	69	6,141,022	10,997,000
70	109,853	3,998,000	70	7,330,417	12,981,000
71p	89,930	3,687,000	71p	6,388,000	9,818,000

p Preliminary ^{1/} Source: U.S. Bureau of Mines

TABLE II - MINE PRODUCTION OF GOLD AND SILVER IN ARIZONA IN 1970 ^{1/}
By Class of Ore, In Terms of Recoverable Metals

Source	Number of Mines	Material Sold or Treated (Short Tons)	Gold (Troy Ounces)	Silver (Troy Ounces)
Lode ore:				
Dry gold	1	144	65	85
Dry gold-silver	6	60,682	451	12,753
Dry silver	8	22,917	55	82,109
Total	<u>15</u>	<u>89,743</u>	<u>571</u>	<u>94,947</u>
Copper	53	150,240,842	107,292	7,130,261
Copper-zinc	3	130,953	249	58,408
Lead	5	360	1	2,277
Lead-zinc and zinc ^{2/}	3	2,460	2	1,025
Total	<u>64</u>	<u>150,374,615</u>	<u>107,544</u>	<u>7,191,971</u>
Other "lode" material:				
Gold-silver & silver tailings	2	62,646	839	31,503
Copper cleanup ^{3/}		701	-----	1,964
Copper & lead tailings	2	20,700	899	10,032
Total	<u>4</u>	<u>84,047</u>	<u>1,738</u>	<u>43,499</u>
Total all sources	<u>4/ 82</u>	<u>150,548,405</u>	<u>109,853</u>	<u>7,330,417</u>

^{1/} Source: U.S. Bureau of Mines.

^{2/} Combined to avoid disclosing individual company confidential data.

^{3/} From properties not classed as mines.

^{4/} Total does not check because a mine produced two classes of material.

TABLE III - VALUES OF ARIZONA'S MINERAL PRODUCTS

Values in Millions

Commodity	1960		1966		1968		1969		1970		1971p	
COPPER	\$346	83.2%	\$535	86.0%	\$526	85.1%	\$762	88.7%	\$1,059	90.8%	\$843	87.1
MOLYBDENUM	5	1.2	18	2.9	19	3.1	21	2.4	27	2.3	41	4.3
SAND & GRAVEL	14	3.4	20	3.2	14	2.2	18	2.1	20	1.7	20	2.1
SILVER	4	1.0	8	1.3	11	1.8	11	1.3	13	1.1	10	1.0
PETROLEUM	W	-	(b)	0.1	10	1.6	7	0.8	5	0.4	4	0.4
STONE	5	1.2	4	0.7	6	1.0	6	0.7	7	0.6	7	0.7
LIME	2	0.5	4	0.6	5	0.8	5	0.6	5	0.4	4	0.4
GOLD	5	1.2	5	0.8	4	0.6	5	0.5	4	0.3	4	0.4
URANIUM	6	1.4	(c)3	0.5	(d)2	0.3						
ZINC	9	2.1	5	0.8	1	0.2	3	0.3	3	0.3	3	0.3
LEAD	2	0.5	2	0.3	(b)	0.1	(e)		(e)		(f)	
OTHER (g)	18	4.3	18	2.8	20	3.2	22	2.6	24	2.1	32	3.3
ALL MINERALS	\$416	100.0%	\$622	100.0%	\$618	100.0%	\$860	100.0%	\$1,167	100.0%	\$968	100.0%

p Preliminary W Withheld to avoid individual disclosure.

(a) Source: U.S. Bureau of Mines. (b) Less than $\frac{1}{2}$ million. (c) Method of reporting changed.

(d) Estimate based on \$8.00 per pound for A.E.C. sales and assumed price of \$6.50 per pound, commercial sales.

(e) Less than \$100,000. (f) Less than \$50,000. (g) Includes values marked W, (b), (e) and (f)

TABLE IV

COMPARISON OF ARIZONA'S MINE PRODUCTION OF RECOVERABLE GOLD AND SILVER,
AND TOTAL MINERAL PRODUCTION VALUES 1955 - 1970, WITH 1937,
YEAR OF MAXIMUM GOLD AND SILVER PRODUCTION 1/

<u>Year</u>	<u>Gold Value</u>	<u>Silver Value</u>	<u>All Minerals Total Value</u>	<u>Gold % of Total</u>	<u>Silver % of Total</u>
(Thousands of dollars)					
1937 2/	\$11,644	\$ 7,288	\$ 94,564	12.3	7.7
1955	4,467	4,194	378,277	1.2	1.1
56	5,114	4,687	485,751	1.1	1.0
57	5,336	4,778	372,641	1.4	1.3
58	5,004	4,240	314,520	1.6	1.3
59	4,362	3,528	326,862	1.3	1.1
1960	5,007	4,322	415,512	1.2	1.0
61	5,109	4,733	432,614	1.2	1.1
62	4,802	5,917	474,131	1.0	1.2
63	4,901	6,873	481,392	1.0	1.4
64	5,379	7,513	534,353	1.0	1.4
1965	5,270	7,881	580,092	0.9	1.4
66	4,988	8,196	622,079	0.8	1.3
67	2,830	7,112	465,255	0.6	1.5
68	3,769	10,633	617,543	0.6	1.7
69	4,603	10,997	859,303	0.5	1.3
1970	3,998	12,981	1,166,767	0.3	1.1
71 p	3,687	9,818	967,699	0.4	1.0

p Preliminary

1/ Source: U.S. Bureau of Mines

TABLE V - SALIENT GOLD STATISTICS 1/

Thousands of Troy ounces (oz.T), short tons (s.t.), or \$'s (except 3/ & 6/)

		<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
UNITED STATES:									
Mine Production		1,456	1,705	1,803	1,584	1,478	1,733	1,743	1,494 ^p
Value		\$50,971	\$59,682	\$63,119	\$55,447	\$58,038	\$71,944	\$63,439	
Ore (dry and siliceous) produced:									
Gold ore	s.t.	2,631	3,113	3,447	3,076	2,780	3,393	3,692	
Gold-Silver ore	s.t.	224	206	248	157	199	208	W	
Silver ore	s.t.	542	752	669	617	655	655	673	
Percentage derived from:									
Dry and siliceous ores		54	54	58	69	63	59	60	
Base-metal ores		37	40	37	27	34	40	38	
Placers		9	6	5	4	3	1	2	
Refinery production 2/	oz.T	1,469	1,675	1,802	1,526	1,539	1,717	NA	
Imports, general	oz.T	1,169	2,905	1,200	930	5,944	5,861	6,652	7,201
Exports 4/	oz.T	12,078	36,717	13,067	28,720	23,962	338	1,074	1,339
Stocks Dec. 31: Monetary 3/		\$15,471	\$13,806	\$13,235	\$12,065	\$10,892	\$11,859	\$11,072	\$10,206
7/ Industrial	oz.T	2,329	2,656	2,734	3,086	3,617	4,158	3,984	
Consumption in Industry and the arts	oz.T	4,203	5,276	6,062	6,294	6,604	7,109	5,973	
Price: Average per oz.T 5/		\$35.00	\$35.00	\$35.00	\$35.00	\$39.26	\$41.51	\$36.41	\$41.25
WORLD:									
Production	oz.T	44,841	46,225	46,580	45,737	46,165	46,526	47,356	
Official Reserves 6/		\$43,015	\$43,230	\$43,185	\$41,600	\$40,905	\$41,010	\$41,280	

p Preliminary NA Not available e Estimate

W Withheld to avoid individual disclosure. Included in gold, silver and lead-zinc ores.

1/ Source: U.S. Bureau of Mines 2/ From domestic ores.

3/ Figures for monetary stocks represent millions. They include gold in the Exchange Stabilization Fund.

4/ Excludes coinage.

5/ U.S. Treasury price through March 15, 1968, and Englehard selling quotations March 20, 1968, through 1971.

6/ Millions of dollars. Held by Free World central banks and governments.

7/ Refiners' and fabricators'

TABLE VI - MINE PRODUCTION OF RECOVERABLE GOLD

IN THE UNITED STATES, BY STATES

(Troy ounces)

State	1965	1966	1967	1968	1969	1970	1971p
Alaska	42,249	27,325	22,948	21,262	21,227	34,776	8,335
Arizona	150,566	142,528	80,844	95,999	110,878	109,853	92,595
California	62,885	64,764	40,570	15,682	7,904	4,999	1,584
Colorado	37,228	31,915	21,181	22,638	25,777	37,114	47,654
Idaho	5,078	5,056	4,838	3,227	3,403	3,128	2,181
Montana	22,772	25,009	9,786	13,385	24,189	22,456	15,236
Nevada	229,050	366,903	434,993	317,382	456,294	480,144	379,459
New Mexico	9,506	9,295	5,188	6,630	8,952	8,719	10,041
Oregon	499	281	186	23	875	256	2/
Pennsylvania 1/	90,674	85,000	73,337	54,453	47,020	55,008	2/
South Dakota	628,259	606,467	601,785	593,052	593,146	578,716	513,423
Tennessee	122	141	181	140	126	124	187
Utah	426,299	438,736	288,350	334,419	433,385	408,029	368,290
Washington 1/	-----	-----	-----	-----	-----	-----	2/
Wyoming	3	-----	-----	-----	1/	-----	2/
Other States	-----	-----	-----	-----	-----	-----	55,187
Total	1,705,190	1,803,420	1,584,187	1,478,292	1,733,176	1,743,322	1,494,172

Source: U.S. Bureau of Mines

p Preliminary

1/ Production of Pennsylvania, Washington and Wyoming (1969) combined to avoid disclosing individual company confidential data.

2/ Included in "Other States."

TABLE VII

ESTIMATED INDUSTRIAL USE OF GOLD IN THE UNITED STATES CALENDAR YEARS 1965 - 1970
AND FIRST HALF 1970 AND 1971

	(Thousands of Fine Troy Ounces)						First Half	First Half
	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1970</u>	<u>1971</u>
<u>Estimated Total Purchases of Gold</u> <u>by U.S. Industry</u>	<u>5276</u>	<u>6062</u>	<u>6294</u>	<u>6604</u>	<u>7109</u>	<u>5973</u>	<u>2940</u>	<u>3225</u>
Converted into Fabricated Products	4949	5984	5942	6073	6568	6148	3249	3393
Increase in Inventories	327	78	352	531	541	-175	-309	-168
<u>Allocation of Purchases by Industry</u> <u>Group</u>	<u>5276</u>	<u>6062</u>	<u>6294</u>	<u>6604</u>	<u>7109</u>	<u>5973</u>	<u>2940</u>	<u>3225</u>
Jewelry and Arts	3429	3758	3840	3908	3839	3340	1436	1979
Dental	369	424	566	771	710	658	330	357
Industrial, Including Space and Defense	1478	1880	1888	1925	2560	1975	1174	889

Office of Domestic Gold and Silver Operations
October 20, 1971

TABLE VIII - GOLD MONETARY STOCKS 1/

(In Billions of Dollars)

End of Year	U.S. Monetary Stocks <u>2/</u>	U.S. % of Free World	Free World Official Reserves <u>3/</u>
1952	\$23.2	64.1	\$36.2
53	22.0	60.3	36.2
54	21.7	58.1	37.35
1955	21.7	58.4	37.15
56	21.9	58.1	37.7
57	22.85	58.7	38.9
58	20.6	51.6	39.9
59	19.5	48.0	40.6
1960	17.8	44.0	40.5
61	16.9	41.1	41.1
62	16.1	38.7	41.4
63	15.6	36.9	42.3
64	15.5	36.0	43.0
1965	13.806	32.0	43.2
66	13.235	30.6	43.2
67	12.065	29.0	41.6
68	10.892	26.6	40.9
69	11.859	29.0	41.0
1970	11.072	26.8	41.3
1971	10.206		

1/ Source: U.S. Bureau of Mines.2/ After 1967 gold in the Exchange Stabilization Fund is included.3/ Held by Free World Banks & Governments Dec. 31.

TABLE IX

U.S. IMPORTS AND EXPORTS OF GOLD 1/
For 1965-1971

<u>Year</u>	<u>(Troy Ounces)</u>	
	<u>Imports</u>	<u>Exports</u>
1965	2,905,328	36,717,043
1966	1,200,045	13,066,666
1967	929,869	28,719,982
1968	5,944,515	23,962,391
1969	5,861,387	338,301
1970	6,652,368	1,074,225
1971	7,200,711	1,338,804

1/ Source: U.S. Bureau of Mines. Coinage excluded.

TABLE X - WORLD PRODUCTION OF GOLD 1/

	<u>Thousands of Troy Ounces</u>			
	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970p</u>
World Totals	<u>45,737</u>	<u>46,165</u>	<u>46,526</u>	<u>47,356</u>
<u>Most Important Producing Countries:</u>				
S. Africa, Rep. of	30,535	31,169	31,276	32,164
USSR <u>e/</u> Asia included	5,700	5,900	6,250	6,500
Canada	2,962	2,688	2,545	2,338
U.S.	1,584	1,478	1,733	1,743
Ghana	763	740	707	704
Australia	805	782	699	617
Philippines	491	527	571	603
Rhodesia, Southern	520	500	480	500 <u>e/</u>
Japan	253	239	246	256
Columbia	258	240	219	202

e/ Estimate p Preliminary

1/ Source: U.S. Bureau of Mines

TABLE XI - SALIENT SILVER STATISTICS 1/

(Thousands of troy ounces (oz.T), short tons (s.t.), or \$'s)

		1965	1966	1967	1968	1969	1970	1971p
UNITED STATES:								
Mine Production	oz.T	39,806	43,669	32,345	32,729	41,906	45,006	40,538
Value		\$51,469	\$56,464	\$50,135	\$70,191	\$75,040	79,696	
Ore (dry and siliceous) produced:								
Gold ore	s.t.	3,113	2,580	2,315	2,003	2,002	2,092	
Gold-silver ore	s.t.	205	248	157	199	216	104	
Silver ore	s.t.	902	1,069	904	701	755	674	
Percentage derived from:								
Dry & siliceous ores		35	33	39	39	36	33	
Base-metal ores		65	67	61	61	64	67	
Imports, General 2/	oz.T	54,709	63,032	55,520	70,709	71,876	62,300	55,717
Refinery Production 3/	oz.T	39,000	48,358	30,268	34,052	51,676	49,451	37,242
Exports 2/	oz.T	39,665	85,538	70,769	125,761	88,909	27,614	12,224
Stocks Dec. 31: Treasury 4/	oz.T	804,000	594,000	351,000	256,000	104,000	25,000	47,990
Industry 5/	oz.T	-----	57,244	83,358	166,356	193,790	210,150	184,690
Consumption								
Industry and Arts	oz.T	137,000	183,696	171,031	145,293	141,544	128,404	128,628
Coinage	oz.T	320,321	53,852	43,851	36,833	19,407	709	2,474
Price per oz.T 6/		\$1.293	\$1.293	\$1.550	\$2.145	\$1.791	\$1.771	\$1.546 7/
WORLD:								
Production	oz.T	257,415	266,731	258,203	275,264	290,469	301,745	290,000 9/
Consumption 8/								
Industry & the arts	oz.T	336,600	355,100	346,800	349,600	364,400	357,600	357,700 7/
Coinage	oz.T	381,100	129,500	105,300	89,300	55,700	40,300	19,000 7/

p Preliminary e Estimate

1/ Source: U.S. Bureau of Mines and others.

2/ Excludes coinage.

3/ From domestic ores.

4/ Excludes silver in silver dollars.

5/

5/ Includes silver in Comex warehouses and stocks of the Chicago Board of Trade.

6/ Average New York price.

7/ Handy and Harman (H & H) for year 1971.

8/ Free World only: Source H & H as per U.S. Bureau of Mines.

9/ Free World 240 million, (Source: H & H) plus 50 million estimated for communist dominated countries at same level as in 1970.

TABLE XII - MINE PRODUCTION OF RECOVERABLE SILVER

IN THE UNITED STATES, BY STATES

(In Troy Ounces)

	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971^p</u>
Alaska	7,673	7,193	5,787	3,900	2,030	2,189	835
Arizona	6,095,285	6,338,696	4,588,081	4,958,162	6,141,022	7,330,417	6,510,042
California	196,787	189,989	144,515	597,961	491,927	451,150	378,000
Colorado	2,051,105	2,085,534	1,817,699	1,646,283	2,598,563	2,933,363	2,734,723
Idaho	18,456,809	19,776,785	17,033,330	15,958,715	18,929,697	19,114,829	19,158,600
Kentucky	1,931	1,086	568	-----	-----	-----	3/
Maine	-----	-----	-----	371,745 ^{1/}	319,718 ^{1/}	63,227	41,201
Michigan	457,851	483,000	301,992	472,813	1,009,022	891,579	3/
Missouri	299,522	-----	226,168	340,856	1,442,090	1,816,978	669,062
Montana	5,207,031	5,319,785	2,066,464	2,132,571	3,429,314	4,304,326	1,576,824
Nevada	507,113	867,567	565,755	645,192	884,155	718,011	487,636
New Mexico	287,472	242,620	157,495	224,866	465,591	781,952	762,655
New York	11,441	21,590	31,103	27,615	31,755	23,830	18,343
Oklahoma	358,477	368,788 ^{2/}	279,898 ^{2/}	1/	1/	325,887 ^{2/}	3/
Oregon	8,801	343	31	335	4,749	3,594	3/
Pennsylvania	2/	2/	2/	1/	1/	2/	106,788
South Dakota	128,971	109,885	121,258	137,668	124,497	119,706	3/
Tennessee	94,142	100,716	130,078	89,525	78,614	94,770	131,353
Utah	5,635,570	7,755,411	4,874,640	5,120,772	5,953,567	6,029,737	5,112,272
Washington	2/	2/	2/	1/	1/	2/	3/
Wyoming	52	-----	-----	-----	1/	-----	3/
Other States	-----	-----	-----	-----	-----	-----	340,824
Total	39,806,033	43,668,988	32,344,862	32,728,979	41,906,311	45,005,605	40,537,559

p Preliminary

^{1/} Production of Maine, Oklahoma, Pennsylvania, Washington and Wyoming (1969) combined to avoid disclosing individual company confidential data.^{2/} Production of Oklahoma, Pennsylvania and Washington combined to avoid disclosing individual company confidential data.^{3/} Included in "Other States."

TABLE XIII - U.S. CONSUMPTION OF SILVER, BY END USE ^{1/}

<u>End Use</u>	<u>Thousands of Troy Ounces</u>			
	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971p</u>
Electroplated ware	15,279	12,706	11,437	10,909
Sterling ware	28,349	20,291	19,116	22,729
Jewelry	4,538	3,011	5,119	3,439
Photographic Materials	41,607	41,380	38,044	36,072
Dental and Medical Supplies	3,094	1,591	1,804	1,484
Mirrors	1,744	1,510	1,386	1,111
Brazing, Alloys and Solders	15,124	16,549	14,035	11,643
Electrical and Electronic Products:				
Batteries	5,764	3,799	6,342	5,631
Contacts and Conductors	25,805	34,555	25,183	27,919
Catalysts	2,310	4,081	1,999	1,615
Bearings	451	481	383	355
Miscellaneous ^{2/}	<u>1,228</u>	<u>1,590</u>	<u>3,556</u>	<u>5,721</u>
Total Net Industrial Consumption	145,293	141,544	128,404	128,628
Coinage	<u>36,833</u>	<u>19,407</u>	<u>709</u>	<u>2,474</u>
TOTAL CONSUMPTION	182,126	160,951	129,113	131,102

p Preliminary

^{1/} Source: U.S. Bureau of Mines

^{2/} Includes silver-bearing copper, silver-bearing lead anodes, ceramic paints, etc.

TABLE XIV - AVERAGE NEW YORK PRICES OF SILVER 0.999 FINE

In cents per Troy ounce

<u>Year</u>	<u>Average Price</u> <u>2/</u>	<u>Month</u>	<u>1969</u> <u>1/</u>	<u>1970</u> <u>2/</u>	<u>1971</u> <u>2/</u>
1955	89.099	January	197.886	187.650	163.955
56	90.826	February	183.972	189.579	160.032
57	90.820	March	182.571	188.848	166.904
58	89.044	April	177.810	185.286	172.595
59	91.202	May	176.095	167.000	166.670
		June	164.548	163.936	160.809
1960	91.375	July	161.833	168.659	157.568
61	92.449	August	165.262	183.000	158.660
62	108.521	September	178.548	180.162	142.143
63	127.912	October	187.250	174.581	133.579
64	129.300	November	192.313	176.035	131.989
		December	180.174	163.477	139.352
1965	129.300				
66	129.300				
67	154.968	Average <u>3/</u>	179.067	177.082	154.564
68	214.460				
69	179.067				
1970	177.082				
71	154.564 <u>3/</u>				

1/ Year Book of the American Bureau of Metal Statistics for 1969

2/ E/MJ

3/ Handy & Harman

TABLE XV - UNITED STATES IMPORTS AND EXPORTS OF SILVER 1/

(In Thousands of Troy Ounces)

<u>Year</u>	<u>Imports</u>	<u>Exports</u>
1961	50,256	39,828
62	76,359	13,057
63	59,062	31,485
64	51,674	109,395
65	54,709	39,665
66	63,032	85,538
67	55,520	70,769
68	70,709	125,761
69	71,876	88,908
70	62,300	27,614
1971	55,717	12,224

1/ Source: U.S. Bureau of Mines.TABLE XVI - WORLD PRODUCTION OF SILVER 1/

(In Thousands of Troy Ounces)

	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970p</u>
World Totals	<u>258,203</u>	<u>275,264</u>	<u>290,469</u>	<u>301,745</u>
<u>Most Important Producing Countries:</u>				
U.S.	32,119	32,729	41,906	45,006
Canada	37,206	45,013	43,531	44,615
Mexico	38,273	40,031	42,904	42,889
U.S.S.R. <u>e/</u>	35,000	35,000	37,000	38,000
Peru	32,107	36,362	34,147	38,078
Australia	19,842	21,394	24,457	26,126
Japan	10,800	10,693	10,804	10,795
Bolivia	4,515	5,180	6,013	6,816
Sweden	3,455	3,524	3,683	6,109
Germany, East <u>3/</u>	4,800	4,800	4,800	4,800
Honduras	4,009	4,397	3,905	3,816
So. Africa, Rep. of	3,064	3,337	3,335	3,527
Yugoslavia	3,075	3,023	3,818	3,417
Chile	3,156	3,739	3,133	2,393

e/ Estimate p Preliminary
1/ Source: U.S. Bureau of Mines