THE GOLD AND SILVER INDUSTRIES IN THE WORLD, UNITED STATES AND ARIZONA

SALIENT STATISTICS

YEAR 1964

Compiled By

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SOURCES

U. S. BUREAU OF MINES REPORTS
ENGINEERING & MINING JOURNAL ANNUAL REVIEWS, Feb. 1964
PAY DIRT, November, 1965

NOVEMBER, 1965

THE GOLD INDUSTRY

GOLD IN 1964

By J. Patrick Ryan, Commodity Specialist, Division of Minerals, U.S.B.M.

Mine production of recoverable gold in the United States rose slightly after declining for 3 consecutive years. World gold production increased for the 11th consecutive year, again establishing an alltime record.

In the United States the increased output of gold ore, chiefly from the Homestake mine, largely offset the falloff in production from placer mining; gold recovered as a byproduct of base metal ores increased. The gain in world output again was attributed almost entirely to the increased production from South African mines which contributed about 63 percent of the estimated world gold production.

Consumption of gold in domestic arts and industries increased 65 percent reaching an alltime record, more than 3 times domestic mine production. The deficit was supplied from the Treasury stock.

The outflow of gold from U.S. stocks dropped to about one-third of that in 1963, reflecting a reduction in the balance-of-payments deficit and conversion of U.S. dollars to gold. The U.S. gold stock at yearend was $15,471 million, the lowest level since March 1939. Free world gold reserves totaled $43,035 million at yearend, a gain of $725 million for the year.

The London market price of gold fluctuated in a narrow range near the official price of $35 per ounce. Sales of gold by the U.S.S.R. totaled about $500 million, about half of which was sold in the London market.

LEGISLATION AND GOVERNMENT PROGRAMS

A bill (H.R. 9756) to revitalize the American gold-mining industry was introduced in the 88th Congress, 2d Session, in January and referred to the Committee on Interior and Insular Affairs without further action. This bill was practically identical to S.2125 on which hearings were held by the Subcommittee on Minerals, Materials, and Fuels in October 1963. Essentially, the bill proposed to compensate eligible primary gold producers for the difference between production costs in the fourth quarter of 1939 and current costs.

Ten contracts aggregating $681,123 were executed during the year for gold and gold-silver exploration under the Government program of financial assistance, administered by the Office of Minerals Exploration. The Government share of the exploration cost was 50 percent or $340,561.

DOMESTIC PRODUCTION

Increased gold output in South Dakota, Arizona, Montana, and Utah offset losses resulting from the continuing decline of placer mining operations in Alaska and California and lower output from lode mining in Nevada and Washington. The gold-mining industry continued to be adversely affected by rising costs in relation to the fixed price of gold. Increased efficiency and improved technology offset rising costs to some extent, thereby maintaining production and reserves at a few mines, but depletion of minable reserves forced some placer mines to close.

The continuing sharp drop in Alaska's gold production again reflected the curtailment of placer mining by the United States Smelting, Refining & Mining Co. which closed its major dredging operations in the Fairbanks district. The company operated three dredges during 1964, one at Hogatza, one at Chicken Creek, and one at Fairbanks (part time).

The Homestake mine at Lead, S. Dak., the leading gold producer, recorded new highs in the quantity of ore milled and bullion produced. Value of recovered bullion increased 7 percent to $21.7 million. Ore milled increased to 2.03 million tons with an average recovered grade of $10.68 per ton, compared with 1.91 million tons yielding $10.62 in 1963. Metallurgical recovery was 96.2 percent. Measured ore reserves at yearend totaled 16.8 million tons with an estimated average grade of 0.315 ounces ($11.01) of gold per ton an increase of 1.6 million tons, but a decrease of 31 cents in grade. About 1,900 persons were employed at the mine.

Carlin Gold Mining Co., a subsidiary of Newmont Mining Corp., began construction of a 2,000-ton-per-day all-slime cyanide plant at its Carlin mine near Elka, Nev. The estimated ore reserve was 7 million tons. About 2 million tons of overburden was stripped in preparation for open-pit mining. Overall cost of the project was estimated at $7 million.

Approximately 2,700 persons were employed in the gold-mining industry at 355 lode and placer mining operations.

Output of gold in California chiefly from placer mines, again dropped sharply. Most of the 10-percent increase in the Arizona production reflected increased output of copper ore yielding byproduct gold. Similarly, a 57-percent gain in Montana production was largely due to the sharp rise in copper output from which gold was recovered as a byproduct.

South Dakota and Utah, the two leading gold-producing States, furnished 62 percent of the total domestic gold output. The Homestake mine in South Dakota contributed 42 percent of the U.S. gold output. Most of the gold output from Utah was recovered as a byproduct of copper ore from the Utah Copper mine.

The 25 leading U.S. gold producers contributing 90 percent of the total domestic output included 5 lode mines, 6 placer mines, 9 copper mines, 2 copper-lead-zinc mines, and 3 lead-zinc mines.

TABLE I

SALIENT GOLD STATISTICS

	1955-59 (average)	1960	1963	1964
United States:				
Mine production - thousand troy ozs.	1,769	1,667	1,454	1,456
Value - thousands	$ 61,902	$58,337	$ 50,889	$50,971
Ore (dry and siliceous) produced:				
Gold Ore - thousand short tons	2,310	2,267	2,459	2,631
Gold-silver ore " " "	145	347	223	224
Silver ore - " " "	641	641	556	542
Percentage derived from -				
Dry and siliceous ores	45	47	51	54
Base-metal ores	35	37	36	37
Placers	21	16	13	9
Refinery production- thousand troy ozs.	1,787	1,680	1,469	1,469
Imports, general 1/ " " "	6,193	9,322	1,281	1,169
Exports 1/ " " "	1,328	47	5,820	12,078
Stocks Dec. 31; Monetary 2/ millions	$ 21,317	$ 17,804	$ 15,596	$15,471
Consumption in industry and the arts thousand troy ounces	1,701	3,000	2,920	4,801
Price: Average per troy ounce 3/	$ 35.00	$ 35.00	$ 35.00	$ 35.00
World: Production - thousand troy ozs.	33,000	38,200	44,200	46,100

1/ Excludes coinage.
2/ Includes gold in Exchange Stabilization Fund.
3/ Price under authority of Gold Reserve Act of Jan. 31, 1934.

TABLE II

PRODUCTION OF GOLD IN 1962, 1963, 1964 IN THE UNITED STATES

Troy Ounces

STATE	MINE PRODUCTION 1962	1963	1964	Refinery Production 1964
Alaska	165,259	99,573	58,416	58,500
Arizona	137,207	140,030	153,676	157,000
California	106,272	86,867	71,028	71,770
Colorado	48,882	33,605	42,122	41,600
Idaho	5,845	5,477	5,677	5,500
Montana	24,387	18,520	29,115	27,850
Nevada	62,863	98,879	90,469	92,500
New Mexico	7,529	7,805	6,110	7,000
North Carolina	460	33	- -	2
Oregon	822	1,809	661	1,000
Pennsylvania		included with Washington		
South Dakota	577,232	576,726	616,913	619,650
Tennessee	158	137	133	122
Utah	311,924	285,907	287,674	290,000
Washington	93,671	98,638	94,308	96,500
Wyoming	- - -	4	6	6
Total	1,542,511	1,454,010	1,456,308	1,469,000

1964: Percent by type of mine production
- Placers 9%
- Dry Ore 54%
- Copper Ore 30%
- Lead & Zinc Ores - Less than 0.5%
- Complex Base Metal Ores 7%

Arizona Department of Mineral Resources November, 1965

CONSUMPTION AND USES

A chapter on consumption and uses in Industry and Arts may be found in the 1964 Minerals Yearbook to be published early in 1966.

Following is a Table showing number of troy ounces issued for industrial use, amount returned from industrial use, and the net industrial consumption for the years 1960-1964:

TABLE III

(Troy Ounces)

YEAR	Issued for Industrial Use	Returned from Industrial Use	Net Industrial Consumption
1955-59 (Average)	2,434,148	733,138	1,701,010
1960	3,700,000	700,000	3,000,000
1961	3,912,554	1,137,554	2,775,000
1962	4,485,670	909,670	3,576,000
1963	4,252,478	1,332,478	2,920,000
1964	5,887,400	1,086,400	4,801,000

MONETARY STOCKS

The total U.S. gold stock declined $125 million during the year and stood at $15,471 million on December 31, the lowest level since March 1939. The 1964 gold outflow was less than one-third that in 1963 and was the smallest since 1955. Acquisitions by the United States from the London gold pool and purchases from Italy largely offset U.S. sales to France, West Germany, and other European countries.

The rate of conversion of U.S. dollars to gold declined as a result of a reduction in the balance-of-payments deficit on regular transactions from $3,261 million to $3,006 million. The ratio of gold reserves to Federal Reserve note and deposit liabilities was 27.5 percent at yearend, compared with 29.7 at the end of 1963; 25 percent was required for legal cover.

Gold reserves of free world central banks and governments and international banking institutions at yearend were estimated at $43,060 million, $725 million more than at the end of 1963. The addition to monetary reserves was about $175 million less than in 1963. Most of the newly acquired gold went into reserves of the leading Western European countries. Of a total estimated new gold supply of $1,800 million, about $1,000 million was absorbed in private uses and holdings. The U.S. reserve of $15,471 million thus constituted about 36 percent of the total free world gold reserves.

Continued

Gold reserves of other principal free world countries, in million dollars, were as follows; West Germany, 4,300; France, 3,900; Switzerland, 2,700; United Kingdom, 2,100; Italy, 2,100; Netherlands, 1,700; Belgium, 1,500; and Canada, 1,000. The International Monetary Fund reported gold reserves of $2,200 million.

In connection with the U.S. gold reserve, Secretary of the Treasury Dillon stated on June 29, before the Senate Finance Committee:

. . . Paralleling this improvement (reduction in balance-of-payments deficit in fiscal year 1964) confidence has been restored in our ability to achieve a balance in our payments within a reasonable time. This in turn has staunched the drain on our gold stock. After declining by an average of 1.7 billion a year over the 1959-60 period, and by roughly half that rate during 1961 and 1962, our total period of stability during the past six years . . .

U.S. net short-term liabilities to foreign interests (liabilities less claims) payable in dollars, increased $1,100 million to $18,500 million at yearend. These liabilities constitute a potential claim on the U.S. gold reserve. About two-thirds of the net liabilities was payable to Western European countries and Canada.

TABLE IV

GOLD MONETARY STOCKS

(In billions of dollars)

	U. S. Monetary Stocks	U. S. % of World	World Monetary Stocks 1/ Estimated By Federal Reserve 2/
End of 1950	$ 22.7	63.4%	$ 35.8
" " 1951	22.7	63.15%	35.95
" " 1952	23.2	64.1%	36.2
" " 1953	22.0	60.8%	36.2
" " 1954	21.7	58.1%	37.35
" " 1955	21.7	58.4%	37.15
" " 1956	21.9	58.1%	37.7
" " 1957	22.85	58.7%	38.9
" " 1958	20.6	51.6%	39.9
" " 1959	19.5	48.0%	40.6
" " 1960	17.8	44.0%	40.5
" " 1961	16.9	41.1%	41.1
" " 1962	16.1	38.7%	41.4
" " 1963	15.6	36.9%	42.3
" " 1964	15.5	35.9%	43.1

1/ Excluding Russia; but includes International Monetary Fund.
2/ Total World gold reserves are not positively known, since some countries do not report.

P R I C E S

Adequate supplies of gold were available to meet demand in the London market and prices were relatively stable. The range of prices in dollars was between a low of \$35.05-\$35.07 and a high of \$35.12-\$35.14. The sterling price fluctuations were appreciably greater, reflecting variations in the sterling-dollar exchange rate London market supplies came chiefly from South Africa, augmented by sales by the U.S.S.R. which aggregated about 7.7 million ounces, valued at \$269.4 million. A supply deficiency in the last one-third of the year was balanced by withdrawals from the International Gold Pool.

In gold markets outside of London, prices of gold bars averaged \$0.24 to \$3.18 higher than the London quotation, except in the Bombay market where trading was in local currencies, not readily convertible, which reflected local political conditions and monetary habits. Average prices per ounce in U.S. dollars were as follows:

Market:	Price	Market:	Price
Manila	\$35.47	Beirut	\$ 35.33
Hong Kong	38.27	Paris	35.33
Bombay	53.04	Buenos Aires . . .	37.62

Gold sales by the U.S.S.R. in markets other than London were estimated to total \$230 million, bringing the total sales by the U.S.S.R. in world markets to about \$500 million, nearly as much as in 1963.

Demand for gold coins in the London market continued strong. Net export of gold coins from the United Kingdom, was valued at nearly \$81 million. More than half of the gold coin exported went to Greece. The premium on the U.S. \$20 gold-piece ranged from 21 to 24 percent; the premium was 17 to 18 percent on new sovereigns; 30 to 32 percent on napoleons; 39 to 42 percent on the Swiss 20-franc coin; and 71 to 73 percent on German 20-mark coins.

Appreciable speculation concerning a revaluation of gold was evident, especially in the latter part of the year when the British pound had to be supported by short-term credits from the International Monetary Fund, the Federal Reserve, and the Export-Import Bank. In connection with the U.S. official price of gold, Secretary of the Treasury Dillon stated before the National Industrial Conference Board on September 17:

. . .

. . . Having returned only a few days ago from the annual meetings of the International Monetary Fund and the World Bank in Tokyo, I can certify that today, unlike four years ago, there is everywhere the firmest confidence in our ability to maintain the fixed relationship between gold and the dollar that anchors the entire international financial system . . .

The Treasury Department through the Bureau of the Mint and licensed refiners and dealers, continued to buy virtually all newly mined gold from domestic mines and gold offered by foreign central banks and agencies at the official price of \$35 per fine troy ounce (less 0.25 percent) plus mint charges for melting and refining. Similarly, gold was sold to licensed buyers by the Treasury at \$35 (plus 0.25 percent) per ounce plus regular mint charges.

FOREIGN TRADE

A chapter on Foreign Trade will be found in the 1964 Mineral Yearbook to be published early in 1966.

TABLE V

WORLD PRODUCTION OF GOLD

1940, 1963 and 1964

Source: U.S.B.M. Unit: Troy Ounces

	1940	1963 2/	1964 P
Union of South Africa . . .	14,037,741	27,431,973	29,136,542
Canada	5,311,145	3,972,047	3,810,738
United States	* 4,862,979	1,468,750	1,469,000
Australia	1,191,481	1,022,965	963,300
Ghana	- - - -	921,255	864,917
Southern Rhodesia	826,485	566,277	575,386
Philippines	1,140,126	376,006	425,770
Colombia	631,927	324,514	364,991
Belgian Congo	618,565	214,574	125,742
Mexico	883,117	237,948	209,976
Japan	1/	262,142	252,094
Brazil	318,935	131,979	134,326
India	289,357	138,280	147,958
Other Free Countries. . . .	6,983,142	1,727,634	1,705,573
TOTAL FREE WORLD (Estimated)	37,095,000	38,796,344	40,186,313
U.S.S.R. (Estimated) . . .	5,100,000 2/	5,100,000	5,600,000
North Korea & China . . .	- - - -	220,000	220,000
Yugoslavia . . .	75,000	83,656	93,687
TOTAL COMMUNIST CONTROLLED	5,175,000 2/	5,403,656	5,913,687
TOTAL WORLD (Estimated)	42,270,000	44,200,000	46,100,000

* Refined production

1/ Data not available. Estimate included in total.

2/ Data revised in U.S.B.M.'s 1964 Preprint.

Attached to this gold report, is a copy of an address by Kenneth C. Kellar, V. P. and Chief Counsel, Homestake Mining Company of Lead, South Dakota, to National Western Mining Conference, in Denver, Colorado, February 6, 1965. This address was considered well worth reading by all interested in the situation of gold mining, because the author, with his connection with the largest gold producer in the United States, is probably the best known authority on the present gold situation. The opportunity of providing a copy of the address was a privilege appreciated by this Department.

Ladies and Gentlemen, Honored Guests, perennial optimists of the mining fraternity:

Gold Mine in the Sky is a beautiful song with which we in the West are familiar, and apparently this refrain is not unknown to Treasury officialdom since by their adamant attitude opposing any type of remedial gold legislation they would consign future domestic gold mines to celestial rather than terrestial sites. I believe Treasury has been viewing the gold problem which confronts the domestic operator from the lofty altitude of economic cloud 9 rather than from a close look at the realities with respect to increasing our gold reserves.

My good friend, Doctor Leland Howard, and I have discussed the plight of the gold miner on many occasions over a long period of years involving several Administrations. I will say that Treasury statements have been consistent on this subject since several successive Secretaries, and Doctor Howard, have stated that they are sympathetic with the ailing domestic gold operators, but they have with equal consistency opposed numerous legislative relief proposals running the gamut from bills to provide tax relief, to allow sales at a higher fixed price per ounce to the industrial trade while still requiring Treasury to purchase gold at $35 per ounce, to direct subsidies to domestic gold producers on the basis quite obviously that any measure which mentions the word gold is suspect and will demoralize the confidence of European Central bankers in the stability of the dollar.

Just how domestic payments to domestic producers to stimulate domestic gold production,in recognition of a domestic economic imbalance between a fixed gold price and production costs of a segment of our overall domestic industry, should be particularly demoralizing to the financial equanimity of a Swiss banker has always been most difficult for us to understand. Rather it would appear that in the light of Treasury opposition to such relief measures, foreign circles might have cause for concern that the dollar is indeed weak by the very nature of Treasury's illogical and determined resistance to such innocuous domestic legislation.

One year ago, when I appeared before you on this platform, the gold miners had managed to break through Treasury's unsound barrier for the first time on the Legislative front when the Senate Committee of Interior and Insular Affairs unanimously approved the gold subsidy bill, S. 2125, introduced by Senator Gruening, Democrat of Alaska. Despite bipartisan committee support, S. 2125 expired peacefully on the Senate consent calendar, its demise hastened and assured because of adverse reports filed by Interior, Treasury and the Executive Office of the President, Bureau of the Budget. The coup de grace, the language "not in the national interest" being set forth in the last mentioned report. The reasons assigned raised the same shibboleth that foreign holders of dollar credits might hit the panic button and cause a dollar crisis if such legislation were to be enacted, despite the fact no mention whatsoever is made in S. 2125 of the price per ounce for gold and the formula for payment to domestic producers was strictly within the confines of domestic economic equitable adjustments which should certainly not cause apprehension on the part of foreign interests over the integrity of the dollar.

In my humble opinion, foreign Central bankers are much too astute and financially sophisticated to be alarmed over legislation in this country involving temporary relief to U. S. gold producers in recognition of the impact of inflation on costs of production, but these foreign monetary experts are undoubtedly gravely concerned over the tremendous implications to the free world arising from possible devaluation of the faltering pound sterling and in its wake, the dollar.

Is it not reasonable to assume that foreign bankers would be favorably impressed by any action of the United States operating within our own internal sphere which would result in increased gold production to add to this nation's gold reserves even though the increase be not of great magnitude

I believe the views of gold miners and the divergent views of the Treasury converge at one common point, however, in that there is mutual recognition that gold is necessary to the monetary system, that an adequate and strong gold reserve is essential to the national welfare, that strain on the gold reserve endangers the nation's economic wellbeing, and increasing our gold reserves is a desirable objective. However, encompassed in this rather broad statement of common thinking, there is a very wide divergence, I fear, because a respectable number of monetary experts, economists, bankers and gold operators would not agree with Treasury's opinion as to what constitutes an adequate gold reserve for this country, and while Treasury recognizes the necessity of gold in international monetary transactions, as do we, Treasury still hews to the line of reasoning that gold is more or less non-essential in support of the dollar internally, and further, that while Treasury might profess to wish to see our gold supply augmented they are unduly apprehensive over any federal legislation which will result in an immediate revival of gold mining in this country with greater production.

In the interim of the past year significant and ominous events have occurred. While the outflow of gold was momentarily checked, the close of 1964 witnessed with dramatic suddenness action by DeGaulle to gild the fleur-de-lis by withdrawing 150 million in gold from the United States to strengthen the franc at the expense of the dollar, and no doubt the thought occurred to Treasury officials that while 50 million Frenchmen couldn't be wrong, one could be. Certainly there is no assurance merely because France still owes 700 million dollars to this country that President DeGaulle will not continue to make further severe drains on our dwindling gold reserves in view of the dollar credits still available to him.

Following this ominous event, the Administration has called for the passage of legislation to withdraw the 25 % gold reserve backing for Federal Reserve deposits to provide 5 billion dollars of free gold.

Advocates of removing the 25 % gold backing of Federal Reserve deposits argue that removal of the restriction would dissipate uncertainty with respect to the availability of U. S. gold to satisfy foreign claims thus relieving a great source of the gold drain and thereby would extend the period for long-range solutions of our balance of payments problem. Likewise, such advocates argue that the normal growth of the country's monetary needs in the years ahead will require an increase in Federal

Reserve note and deposit liabilities which will require additional gold backing. Therefore, arguendo, maintenance of the 25 % reserve could hinder such expansion with detrimental effect to domestic economic expansion.

Proponents of maintaining the gold reserve requirement take the position, and I think properly so, that this nation should not exhaust its entire free gold stock before taking action to correct domestic monetary policy and that the discipline of gold will hasten and impel the government to solve the problem of international deficits and they point to the fact that the almost complete exhaustion of free gold is the very factor which may accelerate the government to correct the balance of payments deficit. By removing the 25 % reserve restriction the pressure will be off, and we believe a grave danger will then exist of already overdue remedial action will be further postponed.

Certainly the Bill to remove the gold cover even partially by releasing 5 billion gold backing of Federal Reserve deposits is at best a stopgap measure unless there is correction in the balance of payment deficit which seems most unlikely in view of our experience of the past few years. The enactment of this legislation may well cause even greater concern over the stability of the dollar and when the 5 billion in free gold leaves the country to meet foreign short term credit demands the dollar will be in ever increasing jeopardy.

Now, I don't profess to be a monetary expert and other than these few brief comments, I will leave a dissertation on these very complex problems to the monetary experts who are on this program this afternoon so they can express their views.

However, I would remind them that while they discuss the highly complex problems of international monetary policies and problems, that they do not overlook the fact that gold is essential to the national security, that virtually all the gold mines of the United States have been shut down, that there is no inducement to search for new gold ore reserves, that the few remaining gold producers (including Homestake) are losing the battle between constant inflation and the fixed price of the metal, and that gold relief legislation is urgently needed else the gold miner will become, in the near future, as extinct as the buffalo or the passenger pigeon. You can still see the buffalo in state parks but I would hate to contemplate the day when you might have to view gold only in the Smithsonian.

When the security of the nation demanded the production of uranium, the government made it possible to mine at a profit, and the greatest mining boom in decades hit the western states with consequent investment of millions in capital and employment for thousands of miners. I submit, Gentlemen, that special legislation requested by the special gold interests coincides with the national interest since this government needs more gold, therefore, it is essential immediate steps should be taken to revitalize the gold mining industry to the end that existing properties shall be kept in operation, that dormant mines be reopened and that an aggressive search be made for new gold ore reserves; all to the end that by a positive forward looking program a new mining boom will be created which will produce badly needed increased gold production for the United States Treasury, will result in increased employment in stagnant mining camps, and will give hope and courage to the people of the western mining states by assuring them that the federal government is not unmindful of the fact that a mine cannot be whistled up over night like a pickle factory and a recognition of the fact that a domestic industry should not be permitted to disappear because of ghosts which haunt the Potomac rather than the dead and dying mining camps of our western mountains.

Presented to:
The National Western Mining Conference
and Exhibition
February 6, 1965, in Denver, Colorado
By:

Kenneth C. Kellar
Vice President and Chief Counsel
Homestake Mining Company
Lead, South Dakota

Three pages from last year's report have been reprinted and are added to this report as they are of interest in that they show the effect of the gold mine closing order (L-208), in 1942, upon the production of gold and silver lode mines.

Discussion of Effect of Gold Mine Closing Order, and Loss of Silver Production due to Shut-down of Many Lead-Zinc Mines

A study of the U. S. Bureau of Mines records of United States gold and silver production in the year 1941 and the annual averages for the period 1943-1960, gives an indication of the effect of the gold mine closing order (L-208) in 1942, upon the production of gold and silver lode mines. The annual rate of production of gold dropped from 4,070,378 ounces in 1941 to 1,133,844 ounces in the period 1943-1960. This means a annual loss of 2,936,534 ounces, or a possible total loss of 52,857,612 ounces for the 18 year period. Assuming a normal growth-rate of 2.5 percent per year during the 18-year period, the loss in production would have amounted to 76,643,537 ounces of gold (52,857,612 x 145%), worth $2,682,523,795.

The recovery of this gold would have helped to offset partly the recent decline in monetary gold stocks, which has been causing so much concern. Although the gold mines were permitted to re-open after World War II, most of them had deteriorated during the shut-down, and rapidly increasing costs had prevented others from re-opening.

Also, in many of the lode mines, both gold and silver occurred together, and there was a resultant loss in silver production. The annual rate of production of silver had been 27,803,661 ounces in 1941, and this rate dropped to 10,918,700 ounces in the 18-year period 1943-1960. This meant a possible annual loss of 16,884,961 ounces, or a possible total loss of 303,929,298 ounces of silver that might have been produced, during the 18-year period, from gold-silver lode mines and placers.

Since 1952, the U. S. lead-zinc industry has been affected by large imports of lead and zinc, and lower prices have caused the shut-down of many mines which had by-products of gold and silver, and the silver was being paid for at only 70 percent of its monetary value of $1.29 per ounce. Production of silver from these lead-zinc ores amounted to 20,664,369 ounces in 1941, and dropped to an annual average of 15,609,760 ounces in the 18-year period (1943-1960). The possible loss in silver production was therefore 5,054,609 ounces per year, or 90,982,962 ounces in 18 years. Thus there was a total possible loss of 394 million ounces in silver, even without calculating a normal growth-rate in the industry.

TABLE VI

U. S. GOLD AND SILVER PRODUCTION IN 1941 COMPARED WITH AVERAGE ANNUAL PRODUCTION FOR 1943-1960 INCLUSIVE

Source: U.S.B.M.

	GOLD ORES	GOLD-SILVER ORES	SILVER ORES	DRY & SILICEOUS ORES		PLACERS	
	Tons	Tons	Tons	Ozs. Gold	Ozs. Silver	Ozs. Gold	Ozs. Silver
1941	15,117,117	1,447,371	1,074,543	2,582,743	27,609,533	1,487,635	194,128
Avg.1943-1960	2,580,240	287,360	521,230	727,100	10,868,480	406,724	50,267

	COPPER ORE	Pb-Zn-Cu ORES	ALL BASE METAL ORES	COPPER ORES		Pb-Zn-Cu ORES	
	Tons	Tons	Tons	Ozs.Gold	Ozs.Silver	Ozs.Gold	Ozs.Silver
1941	74,170,056	8,265,580	82,435,636	561,257	18,790,967	119,230	20,664,369
Avg.1943-1960	94,867,500	10,286,500	105,145,250	489,915	9,218,155	131,062	15,609,760

	TOTAL DRY & SILICEOUS ORES & PLACERS		TOTAL BASE METAL ORES		GRAND TOTAL GOLD-SILVER	
	Ozs. Gold	Ozs. Silver	Ozs.Gold	Ozs.Silver	Ozs.Gold	Ozs.Silver
1941	4,070,378	27,803,661	680,487	39,455,336	4,750,865	67,258,997
Avg.1943-1960	1,133,824	10,918,700	620,977	24,827,900	1,754,801	35,719,440

Arizona Department of Mineral Resources

November, 1965

TABLE VII

COMPARATIVE ARIZONA & U. S. GOLD AND SILVER PRODUCTION

FROM GOLD, GOLD-SILVER, SILVER LODE MINES, GOLD-SILVER PLACERS, AND BASE METAL LODE MINES

Years 1941 and 1963 Source: U.S.B.M.

	GOLD, GOLD-SILVER, SILVER LODE MINES			GOLD-SILVER PLACERS		TOTAL Au, Ag LODES & PLACERS	
1941	Tons Ore	Ozs. Gold	Ozs.Silver	Ozs.Gold	Ozs.Silver	Ozs. Gold	Ozs. Silver
Arizona	975,790	144,198	1,195,814	11,931	2,205	156,129	1,198,019
Per Ton		0.148	1.225				
United States	17,639,031	2,582,743	27,609,533	1,487,635	194,128	4,070,378	27,803,661
Per Ton		0.1464	1.565				

1941	BASE METAL LODE MINES		
Arizona	24,516,004	159,263	6,300,241
Per Ton		0.0065	0.257
United States	82,435,636	680,487	39,455,336
Per Ton		0.0083	0.479

GRAND TOTAL - ALL MINES			
1941	Tons Ore	Ozs. Gold	Ozs. Silver
Arizona	25,491,794	315,392	7,498,260
U. S.	100,074,667	4,750,865	67,258,997

	GOLD, GOLD-SILVER, SILVER LODE MINES			GOLD-SILVER PLACERS		TOTAL Au, Ag. LODES & PLACERS	
1963	Tons Ore	Ozs. Gold	Ozs.Silver	Ozs. Gold	Ozs. Silver	Ozs. Gold	Ozs. Silver
Arizona	147,236	1,077	34,793	53	5	1,130	34,798
Per Ton		.0073	0.236				
United States	3,237,856	748,200	11,725,093	184,563	18,039	932,763	11,743,132
Per Ton		0.231	3.62				

1963	BASE METAL LODE MINES		
Arizona	78,351,623	138,900	5,325,205
Per Ton		0.0018	0.068
United States	134,591,519	521,081	23,373,234
Per Ton		0.0038	0.176

GRAND TOTAL ALL MINES			
1963	Tons Ore	Ozs. Gold	Ozs. Silver
Arizona	78,498,859	140,030	5,373,368
U. S.	142,163,676	1,453,844	35,245,501

Arizona Department of Mineral Resources

November, 1965

FROM THE AMERICAN MINING CONGRESS

RESOLUTION ON GOLD, OCTOBER 11-14, 1965

We urge that immediate steps be taken to stimulate domestic gold production. While our complex monetary problems will not be solved by any probable increase in U. S. gold production, nevertheless, since any increment in our gold reserve is in the national interest, we recommend:

Enactment of legislation by the Congress of the United States to provide tax incentives or financial assistance payments, or both, to present and potential domestic gold producers to stabilize and insure greater life of existing properties, to reopen closed mines, and to stimulate aggressive search for new gold ore reserves.

A federal financial incentive program activated exploration which led eventually to the creation of a vigorous domestic uranium mining industry. By the same token, federal financial assistance payments will lead to revitalization of the gold mining industry in the mining camps of the West.

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ARIZONA PRODUCTION OF GOLD AND SILVER IN 1964

By Class of Ore   In Terms of Recoverable Metal

Source	Number of Mines 1/	Material sold or treated (short tons)	Gold (troy Ozs.)	Silver (troy Ozs.)
LODE ORE:				
Dry Gold	6	199	138	272
Dry Gold-Silver . . .	5	105,687	279	5,673
Dry Silver.	11	8,744	4	5,499
TOTAL	22	114,630	421	11,444
Copper	39	86,132,039	133,983	4,915,362
Cu-Pb-Zn & Cu-Zn . .	3	114,314	229	47,707
Lead	7	3,157	29	23,814
Lead-Zinc	3	314,187	18,413	769,397
Zinc	4	15,714	2	3,426
TOTAL	56	86,579,411	152,656	5,759,706
OTHER "LODE" MATERIAL:				
Gold Mill Clean-up	(3/)	4/ 139	4/ 32	4/ 23,690
Gold Tailings . .	1	4	6	2
Gold-Silver and Silver Tailings 2/	3	46,143	514	13,743
Silver Clean-up . . .	(3/)	(4/)	(4/)	(4/)
Copper Clean-up . . .	(3/)	1,908	37	1,824
Copper Precipitates .	16	65,414	-	-
Lead Clean-up . . .	(3/)	27	-	100
Uranium Ore . . .	-	-	-	(4/)
TOTAL	20	113,635	589	39,359
TOTAL LODE MATERIAL	85	86,807,676	153,666	5,810,509
PLACER	1	- -	10	1
TOTAL ALL SOURCES	86	86,807,676	153,676	5,810,510

1/ Detail will not necessarily add to totals because some mines produce more than one class of material.
2/ Combined to avoid disclosing individual company confidential data.
3/ From properties not classed as mines.
4/ Gold mill cleanup, silver cleanup, uranium ore combined to avoid disclosing individual company confidential data.

Arizona Department of Mineral Resources   November, 1965

THE SILVER INDUSTRY

SILVER IN 1964

Source: U.S.B.M., J. P. Ryan, Commodity Specialist, Division of Minerals.

Features of silver in 1964 were a strong demand for silver coins and a sharp rise in the quantity of silver used in coinage, extraordinary stability in the prompt-delivery price, a sharp reduction in Treasury silver stocks, and a significant increase in industrial consumption of silver. The worldwide imbalance between new production and consumption of silver created much concern about the future supply and prompted much buying for speculation and inventory. The resulting high level of trading on the Commodity Exchange brought new highs in prices for future delivery. Several bills to solve the coinage problem and alleviate the shortage in new supply were introduced, and hearings were held by congressional committees.

Mine output increased slightly, owing chiefly to increased production of silver-bearing copper ores. Exports of silver exceeded imports for the first time since World War II. The use of silver increased in all major industrial categories. About 36 percent of the silver used in coinage went into minting Kennedy half dollars, virtually all of which were withdrawn by collectors and speculators.

World production of silver decreased slightly, but consumption in the arts and industries and for coinage increased sharply over the 1963 figures.

LEGISLATION AND GOVERNMENT PROGRAMS

Several bills relating to silver were introduced in the 2d Session of the 88th Congress. Hearings were held on April 1 and 2, 1964, by the Senate Banking and Currency Committee and on August 13 by the House of Representatives Committee on Banking and Currency on bills dealing with the silver content of coins, Treasury stocks of silver, and the monetary value of silver. The following bills were considered at the hearings: To redefine the silver content in silver coins (H.R. 10534, S. 2671); to prohibit the sale of silver bullion by the Secretary of the Treasury (H.R. 10561, S. 2716); to increase the monetary value of silver to $2.5858 per ounce (H.R. 10560, S 2717); and to provide for a study and report to Congress by the Secretary of the Treasury concerning the silver policy of the United States (H.J. Res. 1140, S.J. Res. 190). Further action on the proposed legislation was deferred.

The following bills also were introduced: To provide for the sale of silver dollars (S. 2715, S. 2743, S.2749, H.R. 11551); to build a new mint (H.R. 11145, S. 2735); to let private industry mint coins (H.R. 11217); to inscribe 1964 on all coins (H.R. 11912, S. 2950); and to revitalize the San Francisco mint (H.R. 12236, S. 3072). These bills were referred to the respective Committees on Banking and Currency of the House of Representatives and the Senate, but no further action was taken. A bill to prohibit profiteering in initial distribution of coins (H.R. 11918) was referred to the Committee on the Judiciary.

Seven contracts totaling $520,486 were executed during the year under the Government program of financial assistance administered by the Office of Minerals Exploration (OME). The Government share of the exploration cost was 50 percent. OME announced that Federal financial assistance for silver exploration would be increased to 75 percent for contracts executed on or after September 30, 1964.

DOMESTIC PRODUCTION

Mine output of recoverable silver in the United States increased 3 percent. Production gains in Arizona, Colorado, and Montana, more than offset losses in Idaho, Missouri, Nevada, New Mexico, and Utah. An 8-percent gain in the Arizona silver production resulted largely from greater output of silver-bearing copper ore. About 75 percent of the State's silver production was derived as a byproduct from copper refining; 25 percent was produced from lead-zinc and miscellaneous ores. In Colorado, the 14-percent production gain reflected increased output of copper and miscellaneous copper-zinc-lead ores yielding byproduct or coproduct silver. An increase of nearly 25 percent in the Montana silver output was due chiefly to the sharp gain in copper production of Butte mines from which nearly two-thirds of the total silver output was recovered as a byproduct; zinc ores in the Butte district yielded most of the remainder. Similarly, in New Mexico a 6-percent decrease in silver output came chiefly from copper ores at the Chino and Bonney-Misers Chest mines and from zinc ores at the Kearney mine.

Silver production dropped slightly in Idaho owing to losses at the Sunshine mine which was idled by a labor dispute which began in November 1963 and ended in March 1964. The Nevada silver production dropped 20 percent to an alltime low, owing chiefly to inactivity at the Copper Canyon mine where silver was recovered as a byproduct, the closing of a tailings treatment plant, and curtailed production at the Bristol silver and Tempiute mines. A 5-percent falloff in Utah silver production was attributed largely to decreased production of silver ore and to a lesser extent to the decline in output of silver -bearing copper ore owing to a shutdown at the Utah Copper mine because of a labor strike.

Idaho, the leading silver-producing State, contributed 45 percent of the total domestic silver output. The four leading silver-producing States, Idaho, Arizona, Montana, and Utah, supplied 88 percent of the total output.

Two-thirds of the total domestic silver output was recovered as a byproduct of ores mined chiefly for copper, lead, zinc, and gold; virtually all of the remainder came from ores in which silver was the principal product. Of the 25 leading silver-producing mines, only 4 in Idaho depended chiefly on the value of silver in the ore. Nine mines produced over 1 million ounces each and supplied 60 percent of the total domestic output; the 25 leading mines furnished 84 percent. Domestic mines supplied nearly 30 percent of the silver used in the Nation's arts and industries.

The Sunshine mine, the Nation's leading silver producer, recovered 2.6 million ounces of silver, compared with 2.8 million ounces in 1963. The mine was closed for 2 1/3 months of the year because of a labor strike. Tons of ore milled declined slightly, and average grade of ore declined from 38.2 to 36.0 ounces per ton. Ore reserves at the four areas comprising the Sunshine operation totaled 424,900 tons at yearend, compared with 457,700 tons at the end of 1963.

CONSUMPTION AND USES

The consumption and uses of silver will be discussed in the Silver Chapter to be issued shortly in the 1964 Issue of the Minerals Yearbook.

TABLE I

SALIENT SILVER STATISTICS

Source: U.S.B.M.

	1955-59 (average)	1960	1963	1964
United States:				
Mine Production - thousand troy ozs.	35,878	30,766	35,243	36,334
Value - - - - thousands	$32,471	$27,846	$45,076	$46,980
Ore (dry & siliceous) produced:				
Gold Ore - - thousand short tons	2,310	2,267	2,460	2,631
Gold-silver ore - do -	145	347	223	224
Silver ore - do -	641	641	587	644
Percentage derived from				
Dry & siliceous ores - - -	35	37	33	32
Base-metal ores - - - - -	65	63	67	68
Imports, general - 1/ thousand troy ozs.	137,705	60,657	59,062	51,674
Refinery production - do -	34,746	36,800	35,000	37,000
Exports 1/ - do -	6,521	26,593	31,485	109,395
Stocks Dec.31: Treasury million troy ozs.	2,018	1,992	r/1,583	1,218
Consumption Industry & the arts thousand troy ounces	96,660	102,000	110,000	120,500
Coinage - do -	34,215	46,000	111,493	203,000
Price per troy ounce	2/ $0.905+	2/ $0.905+	3/ $1.279+	3/ $1.293
World:				
Production thousand troy ozs.	228,800	241,300	250,800	249,500
Consumption 4/ Industry & the arts thousand troy ozs.	204,900	224,600	252,200	285,900
Coinage - do -	73,860	103,900	167,000	264,500

r - Revised
1/ - Excludes Coinage
2/- Treasury buying price for newly mined silver.
3/- Average New York price.
4/- Free World only.

TABLE II

MINE PRODUCTION OF RECOVERABLE SILVER IN THE UNITED STATES

By States In Troy Ounces

State	1962	1963	1964
Alaska	22,199	14,010	7,336
Arizona	5,453,585	5,373,058	5,810,510
California	132,505	156,528	171,621
Colorado	2,087,813	2,307,305	2,626,431
Idaho	17,772,435	16,710,725	16,483,495
Illinois	- -	- -	- -
Kentucky	1,410	1,515	1,673
Michigan	401,491	338,997	349,195
Missouri	490,896	131,664	5,220
Nevada	245,164	214,976	172,447
Montana	4,560,714	4,241,620	5,289,959
New Mexico	301,549	256,475	242,405
New York	19,451	19,544	13,306
North Carolina . . .	100,439	26,754	- -
Oregon	6,047	58,234	14,372
Pennsylvania	(1)	(1)	(1)
South Dakota	113,052	117,301	132,981
Tennessee	112,251	107,913	90,539
Texas	- -	- -	- -
Utah	4,628,446	4,790,511	4,551,960
Vermont	- -	- -	- -
Virginia	- -	- -	- -
Washington	350,185	374,373	375,603
Wyoming	- -	- -	28
TOTAL 2/	36,800,000	35,242,000	36,333,861

1/ Combined with Washington.

2/ Data may not add to totals shown because of rounding.

Arizona Department of Mineral Resources November, 1965

TABLE III

WORLD PRODUCTION OF SILVER, BY COUNTRIES

In Thousand Troy Ounces

	1955-59 (Average)	1963	1964
Mexico	45,971	42,760	41,943
United States	34,746	35,000	37,000
Canada	29,665	29,840	30,316
Peru	24,782	36,800	37,043
Australia	15,263	19,581	18,275
Japan	6,372	8,812	8,625
Belgian Congo	3,895	1,097	1,480
Other Free Countries	38,231	43,631	41,295
Total Free World	198,925	217,521	215,977
Total Communist Controlled	29,875	33,004	33,523
TOTAL WORLD	228,800	250,800	249,500

TABLE IV

FREE WORLD SILVER CONSUMPTION FOR PAST FIVE YEARS

In Millions of Troy Ounces as Reported By U.S.B.M.

	UNITED STATES		REST OF FREE WORLD		TOTAL		GRAND
Year	Arts & Industry	Coinage	Arts & Industry	Coinage	Arts & Industry	Coinage	TOTAL
1960	102,000	46,000	122,600	57,900	224,600	103,900	328,500
1961	105,500	55,900	134,000	81,200	239,500	137,100	376,600
1962	110,400	77,368	137,400	50,232	247,800	127,600	375,400
1963	110,000	111,493	142,200	55,507	252,200	167,000	419,200
1964	120,500	203,000	165,400	61,500	285,900	264,500	550,400
5 Yr. Avg.	109,680	98,752	140,320	61,268	250,000	160,020	410,020

TABLE V

TREASURY SILVER

Compiled from Engineering & Mining Journal's Annual Review, February, 1965

Millions of Troy Ounces

	Dec. 31 1964	Dec. 31 1963	Dec.31 1962	Dec.31 1951
Held in Treasury:				
Securing Silver Certificates:				
Silver Bullion	1,190.3	1,532.5	1,654.5	1,603.7
Silver Dollars	2.3	22.1	73.6	232.8
Subsidiary Coin.	7.5	2.7	3.2	1.2
Free Silver Bullion. . . .	17.9	25.2	37.0	125.5
Total Treasury Stocks	1,218.0	1,582.5	1,768.3	1,962.2
Outside the Treasury				
Silver Dollars	372.6	352.9	302.7	148.0
Subsidiary Coin.	1,559.3	1,365.2	1,269.6	783.5
Total Silver Outside Treasury	1,931.9	1,718.1	1,572.3	931.5
TOTAL SILVER	3,149.9	3,300.6	3,340.6	2,893.7

E. & M. J. New York Market Price of Silver in Cents per Troy Ounce.

			1963	1964
1955	89.099	January	124.382	129.3
1956	90.826	February	125.644	129.3
1957	90.820	March	127.138	129.3
1958	89.044	April	127.290	129.3
1959	91.202	May	127.873	129.3
1960	91.375	June	127.685	129.3
1961	92.449	July	128.991	129.3
1962	108.375	August	128.782	129.3
1963	127.912	September	129.260	129.3
1964	129.300	October	129.300	129.3
		November	129.300	129.3
		December	129.300	129.3