

Y4  
. In 8/13

1040

956/6  
JUN 8 13

# G 56/6 GOLD MINING INCENTIVES

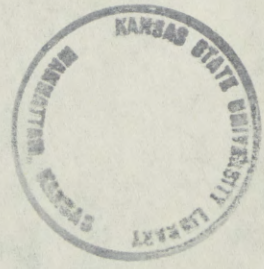
GOVERNMENT  
Storage

HEARING  
BEFORE THE  
SUBCOMMITTEE ON  
MINERALS, MATERIALS, AND FUELS  
OF THE  
COMMITTEE ON  
INTERIOR AND INSULAR AFFAIRS  
UNITED STATES SENATE  
NINETIETH CONGRESS  
FIRST SESSION  
ON  
**S. 49 and S. 615**  
BILLS TO REVITALIZE THE AMERICAN GOLD MINING  
INDUSTRY

✓  
9292707 00917Y  
A11600 701326

FEBRUARY 2, 1967

Printed for the use of the Committee on Interior and Insular Affairs



U.S. GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1967

75-045

Case  
File #  
Box

8/13  
14  
21

GOLD MINING INCENTIVES

HEARING  
BEFORE THE  
SUBCOMMITTEE ON  
MINERALS, MATERIALS, AND FUELS  
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

HENRY M. JACKSON, Washington, *Chairman*

CLINTON P. ANDERSON, New Mexico  
ALAN BIBLE, Nevada  
FRANK CHURCH, Idaho  
ERNEST GRUENING, Alaska  
FRANK E. MOSS, Utah  
QUENTIN N. BURDICK, North Dakota  
CARL HAYDEN, Arizona  
GEORGE McGOVERN, South Dakota  
GAYLORD NELSON, Wisconsin  
LEE METCALF, Montana

THOMAS H. KUCHEL, California  
GORDON ALLOTT, Colorado  
LEN B. JORDAN, Idaho  
PAUL J. FANNIN, Arizona  
CLIFFORD P. HANSEN, Wyoming  
MARK O. HATFIELD, Oregon

JERRY T. VERKLER, *Staff Director*  
STEWART FRENCH, *Chief Counsel*  
E. LEWIS REID, *Minority Counsel*

SUBCOMMITTEE ON MINERALS, MATERIALS, AND FUELS

ERNEST GRUENING, Alaska, *Chairman*

HENRY M. JACKSON, Washington  
ALAN BIBLE, Nevada  
FRANK E. MOSS, Utah  
GEORGE McGOVERN, South Dakota  
GAYLORD NELSON, Wisconsin

LEN B. JORDAN, Idaho  
GORDON ALLOTT, Colorado  
PAUL J. FANNIN, Arizona

II



# CONTENTS

---

	Page
S. 49-----	1
Departmental reports:	
Bureau of the Budget-----	4
Interior-----	3
Treasury-----	4
S. 615-----	5

## STATEMENTS

Bartlett, Hon. E. L., a U.S. Senator from the State of Alaska-----	13
Berry, Hon. E. Y., a U.S. Representative in Congress from the State of South Dakota-----	16
Bible, Hon. Alan, a U.S. Senator from the State of Nevada-----	8
Harder, James O., vice president-general manager, Homestake Mining Co.-----	57
Hibbard, Dr. Walter R., Director, Bureau of Mines-----	20
Johnson, Hon. E. L. (Bizz), a U.S. Representative in Congress from the State of California-----	14
Keller, Kenneth C., American Mining Congress-----	55
Keller, Rev. Edward, Notre Dame University, consultant to the Gold Committee, American Mining Congress-----	49
Kuchel, Hon. Thomas H., a U.S. Senator from the State of California-----	10
McGovern, Hon. George, a U.S. Senator from the State of South Dakota-----	12
McQuade, Lawrence C., Acting Assistant Secretary for Domestic and International Business, Department of Commerce-----	46
Moore, J. Cordell, Assistant Secretary, Mineral Resources, Department of the Interior, accompanied by Joseph McCaskill, staff assistant, and Julian Feiss, geologist-----	17
Mundt, Hon. Karl, a U.S. Senator from the State of South Dakota-----	12
Pecora, Dr. W. T., Director, Geological Survey-----	18
Smith, Fred B., General Counsel, Department of the Treasury, accompanied by Mrs. Ruth Picknell, legal adviser, Office of Domestic Gold and Silver Operations-----	42

## COMMUNICATIONS

Beamer, R. W., executive secretary, Wyoming Mining Association: Telegram to Hon. Ernest Gruening, chairman, Subcommittee on Minerals, Materials, and Fuels, dated January 30, 1967-----	60
Cady, Dave, executive manager, Greater South Dakota Association: Telegram to Hon. Ernest Gruening, chairman, Subcommittee on Minerals, Materials, and Fuels, dated February 2, 1967-----	60
Gemmill, Paul, executive secretary, Nevada Mining Association: Telegram to the Subcommittee on Minerals, Materials, and Fuels, dated February 1, 1967-----	59
Palmer, Robert S., manager, Colorado Mining Association: Telegram to the Senate Subcommittee on Minerals, Materials, and Fuels, dated February 1, 1967-----	59
Romney, Miles P., manager, Utah Mining Association: Telegram to Hon. Ernest Gruening, chairman, Subcommittee on Minerals, Materials, and Fuels, dated February 1, 1967-----	59
Teske, A. J., secretary, Idaho Mining Association: Telegram to Hon. Ernest Gruening, chairman, Subcommittee on Minerals, Materials, and Fuels, dated February 2, 1967-----	59

## APPENDIX

Press release, Department of the Interior-----	61
--	----

CONTENTS

1 .....  
2 .....  
3 .....  
4 .....  
5 .....

STATEMENTS

1. The first statement is that the Commission has been established to investigate the causes of the economic crisis in the United States and to recommend effective measures for its relief. The Commission is composed of representatives of the various interests affected by the crisis, and its report will be a valuable contribution to the knowledge of the public on this important subject.

CONCLUSIONS

The Commission believes that the economic crisis in the United States is the result of a combination of factors, including the overproduction of goods, the unequal distribution of income, and the excessive speculation in the stock market. It recommends that the Government should take prompt action to stabilize the economy, and that the various interests affected by the crisis should cooperate in the effort to bring about a recovery.

APPENDIX

The following is a list of the members of the Commission and the names of the various organizations and individuals who have assisted it in its work.

## GOLD MINING INCENTIVES

THURSDAY, FEBRUARY 2, 1967

U.S. SENATE,  
SUBCOMMITTEE ON MINERALS, MATERIALS, AND FUELS OF  
THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,  
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:05 a.m., in room 3110, New Senate Office Building, Senator Ernest Gruening (chairman) presiding.

Present: Senators Gruening, Bible, Moss, and Hansen.

Also present: Jerry T. Verkler, staff director; Stewart French, chief counsel, and E. Lewis Reid, minority counsel.

Senator GRUENING. The meeting will please come to order.

This is an open, public hearing by the Subcommittee on Minerals, Materials, and Fuels of the Senate Interior and Insular Affairs Committee on S. 49 and on S. 615. S. 49 is substantially the same measure that I have sponsored in the two preceding Congresses. This year, I am happy to say, I am joined by a distinguished bipartisan group of Senators who are concerned about the plight of our once great gold mining industry and the supply of gold in our national Treasury. This distinctive list of cosponsors are from the mining States of the West and include Senators Bartlett, Allott, Bible, Cannon, Church, Dominick, Fannin, Hansen, Jordan of Idaho, Kuchel, Magnuson, McGee, McGovern, Metcalf, Montoya, Morse, Moss, Mundt, and Murphy. It is apparent that it has the bipartisan support of most of the western Senators.

Without objection, I will direct that the text of S. 49 appear at this point in the record of this hearing, together with the text of the reports of the administrative agencies whose comments have been invited.

(The data referred to follows:)

[S. 49, 90th Cong., 1st sess.]

A BILL To revitalize the American gold mining industry

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act shall be known as the "Gold Mine Revitalization Act of 1967."*

SEC. 2. PURPOSE.—(a) For the purpose of aiding and restoring to profitable operation the domestic gold mining industry of the United States the Secretary of the Interior is hereby directed to establish and administer a program to compensate domestic producers of gold for the difference between individual base average costs of production during the fourth quarter of 1939 of currently eligible mines, as determined by the Secretary, and the same or equivalent current costs, similarly determined, of individual operators qualified for assistance under this Act in the fourth quarter of 1966. Where base average costs during the fourth quarter of 1939 are shown to be abnormal because of the occurrence of events beyond the control of the operator, including, but not limited to, production stoppages, natural disasters, or unavoidable accidents, such costs shall be reconstructed from the best available data.

(b) In order to assist new domestic gold mining enterprises and stimulate new production, the Secretary is authorized and directed to establish and administer a similar program for mines which have no history of production for the fourth quarter of 1939 nor for the fourth quarter of 1966 by computing a constructive cost of production taking into account production costs of mining gold in the same or adjacent mining districts under similar conditions for said named periods in order to determine the amount of subsidy payments, if any, to which the new mine operator is entitled.

SEC. 3. COSTS OF OPERATION SUBSIDIZED.—Costs of operating domestic gold mines for which differential payments will be allowed shall include—

- (a) costs of all labor including clerical, supervisory, management, administrative, and technical;
- (b) costs of amortization of capital investment in equipment and construction necessary to efficient operations;
- (c) costs of mine rehabilitation;
- (d) costs of transportation of mine products, smelter freight, treatment and deductions;
- (e) costs of unemployment compensation and fringe benefits;
- (f) costs of supplies, materials, and power;
- (g) costs of State, county, and city property taxes;
- (h) costs of such other expenses as are usual, customary, and normal according to accepted, sound, modern mining practices.

SEC. 4. ELIGIBILITY REQUIREMENTS.—To qualify for cost differential payments under this program, an applicant shall—

- (a) make a showing, by application to the Secretary, that for his next fiscal year, commencing after submission of the application, costs of efficient operation are at a level in excess of an amount at which the applicant can anticipate earning a reasonable profit during the period for which application for assistance is made;
- (b) demonstrate existence of financial resources and technical capability sufficient to operate profitably, under the conditions by which assistance under this Act is allowed;
- (c) agree that, for the period of time for which assistance is received the principal production from the specific mineral property for which application is made shall be gold, and no applicant shall be qualified for assistance under this Act unless the dollar value of gold sold during the period for which payments are made is 50 per centum or more of the total value of all minerals and metals contained in ores and concentrates produced and sold from such specific mineral property: *Provided*, That payments shall be made only for the gold produced in the proportion the nonsubsidized value of the gold produced bears to the value of the total amount of minerals sold from said property.

SEC. 5. AMOUNT OF PAYMENTS ALLOWABLE.—Payments under this Act shall be in such amounts as may be necessary to carry out its purpose, except that—

(a) no such payment shall, in any case, exceed the difference between individual base average costs of production of gold during the fourth quarter of 1939 and the same or equivalent costs in the fourth quarter of 1966;

(b) no differential computed under (a) shall exceed, in proportion, the difference between the Consumer Price Index of the United States Department of Labor for January 1940, and the Consumer Price Index as of date of application for payment.

SEC. 6. DETERMINATION OF ELIGIBILITY AND NEGOTIATION OF AGREEMENTS.—

(a) Producers of gold may apply to the Secretary of the Interior for gold production differential payments under this Act who shall determine (1) the eligibility of the applicant, and (2) amount of payment necessary to enable the applicant to operate at a reasonable profit during the period for which application is made.

(b) Upon determination of eligibility of a producer for payment the Secretary shall enter into a gold production differential payment agreement which shall contain such terms and conditions as the Secretary and the producer shall agree upon, including, but not limited to (1) the manner in which costs shall be ascertained for purposes of making payment; (2) terms and conditions for making payments; (3) conditions under which payments shall be withheld or reduced.

SEC. 7. BOARD OF GOLD DIFFERENTIAL PAYMENTS REVIEW.—(a) There shall be established in the office of the Secretary an independent Board of Review of three members to be appointed by the Secretary, the Chairman to be designated by the Secretary, that shall be responsible for a continuing review of the level of payments under this Act to determine if they are sufficient or in excess of amounts required to accomplish its purposes.

(b) The Secretary shall, by regulation, establish a procedure for review by the Board of Review of applications of producers whose claims are denied, disallowed in part, or reduced. Producers shall have an opportunity to submit reasons in support of their claims before final action of the Secretary.

(c) Members of the Board of Review shall be appointed by the Secretary from among individuals qualified by reason of experience in the mining industry, two of whom shall have had experience in gold mining.

(d) The Board of Review shall be required to meet quarterly. Members shall be paid at the rate of \$50 per day for each day services as a Board member are required and shall be reimbursed for actual and necessary travel expenses and per diem in accordance with the Travel Expenses Act of 1949.

SEC. 8. The Secretary of the Interior shall prescribe such rules and regulations as may be necessary to carry out the provisions of this Act.

SEC. 9. There are authorized to be appropriated such amounts as may be necessary to carry out the provisions of this Act, not to exceed an annual amount of \$50,000,000.

U.S. DEPARTMENT OF THE INTERIOR,  
OFFICE OF THE SECRETARY,  
Washington, D.C., February 1, 1967.

HON. HENRY M. JACKSON,  
*Chairman, Committee on Interior and Insular Affairs, U.S. Senate, Washington, D.C.*

DEAR SENATOR JACKSON: Your Committee has requested this Department's comments on S. 49, a bill "To revitalize the American gold mining industry."

S. 49 directs the Secretary of the Interior to establish and administer a program of making differential payments to existing and new domestic gold mining producers. The purpose of the program is to aid and restore profitable operations in the domestic gold mining industry and to stimulate new production thereof. The bill also calls upon the Secretary to establish a three-member independent board of review to review the above level of payments and to review applications of producers whose requests have been denied, reduced, or partially disallowed. The board members would be chosen by the Secretary solely from the mining industry.

S. 49 is nearly identical to legislation which was reported by your Committee during the 89th Congress, but was not acted upon in the Senate.

We recognize that legislation providing a subsidy to the gold mining industry is attractive to the existing industry and would provide an incentive for reopening some mines and possibly increasing the production of gold.

It continues to be the judgment of the Department of the Treasury that action by the Congress to establish subsidies for gold production might be interpreted in international monetary markets as implying a United States price for gold other than \$35 per ounce. In view of the primary responsibility of the Treasury Department for monetary matters, we are in no position to challenge their judgment.

We believe that our heavy metals program, with which you are familiar, and the other programs of the Department relative to the production of gold should be given an adequate trial period to see if it will aid us in increasing this country's gold production significantly. Our studies have convinced us that the reopening of old mines and the pursuit of conventional gold deposits will yield meager results even with large subsidies. We must find new, hitherto unknown deposits, and utilize advance technology, if significant increases in production are to be achieved. We believe on the basis of evidence now available that there are such deposits which can be worked economically at a price of \$35 using such technology.

We shall, of course, be glad to discuss these programs in greater detail at the hearings.

The Bureau of the Budget has advised that there is no objection to the presentation of this report from the standpoint of the Administration's program.

Sincerely yours,

J. CORDELL MOORE,  
*Assistant Secretary of the Interior.*

## GOLD MINING INCENTIVES

THE GENERAL COUNSEL OF THE TREASURY,  
Washington, D.C., February 1, 1967.

HON. HENRY M. JACKSON,  
Chairman, Committee on Interior and Insular Affairs,  
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of this Department on S. 49, "To revitalize the American gold mining industry."

The bill would establish a program, to be administered by the Secretary of the Interior, of gold differential payments to domestic gold producers. The payments would be based on the differences in the costs of gold production in the last quarter of 1939 and current costs on an individual gold mine basis. The costs for which differential payments would be allowed would include those of labor, amortization of capital investment in equipment and construction necessary to efficient operations, mine rehabilitation, transportation, fringe benefits, supplies, materials, power and property taxes. The bill also prescribes certain eligibility requirements for payments under the proposed program including a requirement that payments may be made only to mines in which gold production accounts for at least 50 percent of the total value of all the minerals produced. Payments would be made only for gold produced.

The Treasury Department continues to oppose the enactment of legislation such as S. 49, which would provide incentive payments to domestic gold producers. Gold is not comparable to other commodities or metals. It is primarily important as a monetary standard of value. The dollar is linked to gold and it is the firm policy of the Government to maintain the present dollar price of gold at \$35.00 an ounce. This policy is the foundation for the international monetary system.

Subsidy payments to domestic gold producers, based on increased cost of operations as provided by the proposed legislation, would, if adopted, result in various prices, all above \$35.00 per ounce, being paid by the Government for new domestic gold production. This could be interpreted to imply the recognition and establishment by the United States of prices for gold which are higher than the official rate of \$35.00 per fine troy ounce. Any such indication of a departure from the present official price could cause a loss of confidence in the dollar and a consequent serious disruption of international trade and payments.

The Secretary of the Treasury has designated me to appear as a witness on behalf of the Treasury at the hearing to be held on S. 49 by the Subcommittee on Minerals, Materials and Fuels on Thursday, February 2, 1967.

The Department has been advised by the Bureau of the Budget that there is no objection from the standpoint of the Administration's program to the submission of this report to your Committee.

Sincerely yours,

FRED B. SMITH,  
General Counsel.

EXECUTIVE OFFICE OF THE PRESIDENT,  
BUREAU OF THE BUDGET,  
Washington, D.C., February 2, 1967.

HON. HENRY M. JACKSON,  
Chairman, Committee on Interior and Insular Affairs,  
U.S. Senate,  
Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your letter of January 24, 1967, inviting the Bureau of the Budget to comment on S. 49, "To revitalize the American Gold Mining Industry." The bill would establish a program to compensate domestic producers of gold for differences between costs of production in 1939 and current costs.

The Departments of Commerce and the Treasury, in separate reports to your Committee, recommend against enactment of this bill. The Department of the Interior accepts the view of the Treasury Department on the adverse impact this bill would have on the international monetary markets.

For the reasons contained in those reports, the Bureau of the Budget recommends against enactment of S. 49.

Sincerely yours,

WILFRED H. ROMMEL,  
Assistant Director for Legislative Reference.

Senator GRUENING. There also is before this subcommittee S. 615, the Gold Mines Assistance Act, which was introduced by the able Senator from South Dakota, Senator McGovern, on January 24, after these hearings on S. 49 were announced and reports requested from the Departments. Senator McGovern's bill also has a distinguished, bipartisan group of Senators from the mining States as cosponsors. They are Senators Bartlett, Bible, Cannon, Dominick, Fannin, Metcalf, Montoya, and Mundt. I will direct that a copy of S. 615 be included in the hearing record at this point.

(The bill referred to follows:)

[S. 615, 90th Cong., 1st sess.]

A BILL To preserve the domestic gold mining industry and to increase the domestic production of gold

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, This Act shall be known as the "Gold Mines Assistance Act of 1967".*

#### PURPOSE

SEC. 2. For the purpose of aiding and stabilizing the gold mining industry of the United States by maintaining the rate of gold production from currently operating gold mines and by stimulating increased gold production through the reopening of mining properties which have ceased operations prior to January 1, 1965, and to encourage exploration, development, and commencement of new gold mining operations, the Gold Mines Assistance Commission is hereby directed to provide financial assistance to domestic producers of gold based upon the standards and eligibility requirements as hereinafter set forth. It is the intent of this Act that financial assistance payments to domestic gold producers hereunder shall have no relation to the monetary price of gold paid by the Treasury Department of the United States.

#### AMOUNT OF PAYMENTS ALLOWABLE

SEC. 3. Payments under this Act shall be in such amounts as may be necessary to carry out its purpose subject to the standards, restrictions, and limitations hereinafter set forth.

(a) Each domestic gold producer who has operated a gold mine continuously for one year prior to the effective date of this Act shall be entitled to annual assistance payments of 10 per centum of the value of its total gold bullion receipts produced in such year: *Provided*, That the application for such assistance by such producer shall be certified as being in conformity with the standards and eligibility requirements as hereinafter set forth in section 4(a) and section 5: *Provided further*, That such domestic gold producers who are duly certified shall be entitled to an increase in financial assistance payments at the rate of 3.75 per centum for each five-point increase in the Consumer Price Index, United States Department of Labor, from and after the effective date of this Act, added to the 10 per centum rate applicable to total annual gold bullion receipts as provided for in this section.

(b) Applicants who have not operated a gold mine continuously for one year prior to the enactment of this Act shall be entitled to receive a financial assistance payment of 125 per centum of the total gold bullion receipts produced from the gold mine of such applicant during the year immediately preceding the date of his application: *Provided further*, That such applicant has been duly certified as being in conformity with the standards and eligibility requirements as hereinafter set forth in section 4(b) and section 5.

(c) Applicants under (b) above who have been duly certified shall be entitled to receive annual financial assistance payments as therein provided for a period of five years from and including the year such applicant first received such financial assistance payment: *Provided*, That thereafter such domestic gold producer applicant shall be entitled to annual financial assistance payments as provided in (a) above provided such producer has been duly certified in accordance with the provisions of this Act.

#### COST OF OPERATION SUBSIDIZED

SEC. 4. (a) No domestic gold producers shall be entitled to receive financial assistance payments as provided in section 3(a) unless his costs of operation for the

year preceding his application for financial assistance hereunder shall be at least 125 per centum of his costs of operation for the year 1939, if he was operating during said year, and, if not, his constructive costs of production for the year 1939 computed in accordance with the provisions of paragraph (b) of this section.

(b) In order to assist new domestic gold mining enterprises and to reopen closed gold mines for the purpose of stimulating new production applicants under section 3 (b), (c) herein who have no history of production for the year 1939 nor for the year immediately preceding the date of their application, shall, if otherwise eligible as hereinafter provided, be entitled to financial assistance payments if, by computing a constructive cost of production taking into account production costs of mining gold in the same or adjacent mining districts under similar conditions for said named periods, such costs have increased to 125 per centum.

(c) In determining whether costs have increased to 125 per centum as set forth in (a) and (b) above, costs of operating domestic gold mines shall include—

- (1) costs of all labor of mining and milling including clerical, supervisory, management, administrative, and technical;
- (2) costs of amortization of capital investment in equipment and construction necessary to efficient operations;
- (3) costs of mine rehabilitation;
- (4) costs of transportation of mine products, smelter freight, treatment, and deductions;
- (5) costs of fringe benefits;
- (6) costs of supplies, materials, and power;
- (7) costs of Federal Insurance Contributions Act, unemployment compensation, and other similar taxes which are or may be imposed upon the employer by the State and Federal Governments;
- (8) costs of State, county, and city property taxes;
- (9) costs of such other expenses as are usual, customary, and normal according to accepted, sound modern mining practices and according to generally accepted accounting principles.

SEC. 5. (a) There is hereby established the Gold Mines Assistance Commission for the purpose of carrying out the policies of this Act and to administer the provisions thereof consisting of five members to be appointed by the President of the United States for a term of four years. One such member shall be appointed to represent the United States Department of Commerce, one the United States Department of the Treasury, one the United States Department of the Interior; the two remaining members shall be public members appointed from among individuals qualified by reason of experience in the gold mining industry within the past five years. The President of the United States shall designate the Chairman of such Commission.

(b) Any vacancy which may occur on the Commission shall not affect its powers or functions but shall be filled in the same manner in which the original appointment was made.

(c) The organization meeting of the Commission shall be held at such time and place as may be specified in a call issued by the Chairman.

(d) The members so appointed shall each receive \$50 per diem when engaged in the actual performance of duties vested in the Commission, plus reimbursement for travel, subsistence, and other necessary expenses incurred by them in the performance of such duties.

(e) Three members of the Commission shall constitute a quorum, but a smaller number as determined by the Commission may conduct hearings.

(f) The Chairman of the Commission shall invite the Governor of each State in which gold mining properties are located to designate a representative to work closely with the Commission and its staff in matters pertaining to this Act.

#### ELIGIBILITY REQUIREMENTS

SEC. 6. To qualify for financial assistance payments under this program an applicant shall—

(a) make a showing, by application to the Gold Mines Assistance Commission, that for the next year commencing after submission of the application costs of efficient operation will be at such a high level that substantial marginal gold ore reserves will be mined only if financial assistance as provided in this program is paid to applicant;

(b) demonstrate existence of financial resources and technical capability sufficient to operate profitably under the conditions by which assistance under this Act is allowed;

(c) agree that, for the period of time for which assistance is received, the principal production from the specific mineral property for which application is made shall be gold, and no applicant shall be qualified for assistance under this Act unless the dollar value of gold sold during the period for which payments are made is 50 per centum or more of the total value of all minerals and metals contained in ores and concentrates produced and sold from such specific mineral property: *Provided*, That payments shall be made only for the gold produced in the proportion the nonsubsidized value of the gold produced bears to the value of the total amount of minerals sold from said property.

If the Gold Mines Assistance Commission with whom the application is so filed is satisfied that the applicant has complied with the hereinbefore set forth requirements and is eligible for financial assistance payments as hereinbefore provided, such Commission shall then certify its approval of the application and shall upon such determination of eligibility thereupon enter into a gold production payment agreement with the approved applicant providing that a financial assistance payment from funds hereinafter appropriated shall be made on a quarterly basis according to the terms of this Act upon submission of proof by said applicant of—

(1) total gross bullion receipts for the year preceding the application;

(2) establishment of applicant's cost of operation for the year 1939 and the year preceding application under section 3 (a), (b), or (c) whichever is applicable.

SEC. 7. Domestic gold producers who are entitled to financial assistance payments under the provisions of this Act, shall still be required to deliver and sell their gold bullion produced from their gold properties to the United States mints at the price established by the United States Government.

SEC. 8. The Gold Mines Assistance Commission shall prescribe such rules and regulations as may be necessary to carry out the provisions of this Act relating to administration by its office as provided in the last preceding section.

SEC. 9. There are authorized to be appropriated such amounts as may be necessary to carry out the provisions of this Act not to exceed an annual amount of \$50,000,000.

Senator GRUENING. In addition to revitalizing the moribund American gold mining industry and increasing supplies of gold in our national Treasury from our own American resources, these two bills, S. 49 and S. 615, would do long overdue equity, to a limited extent, to our American gold producers and miners. Their plight is directly the result of highly discriminatory action by the Government of the United States—their own Government. Over the long years since the war, that same Government has been adamant in its refusal to take any equitable steps to remedy the wrong. This “do-nothing” position of the administrative agencies with respect to doing equity to our gold miners has been the same in both Republican and Democratic administrations. Hence, there are no political implications in my statement of simple, undeniable fact.

S. 49 would accomplish the purposes I have outlined by establishing a domestic program, administered by the Secretary of the Interior, for payments to American producers based on the differences in the costs of production of gold in the last quarter of 1939—1940 was our peak production year—and costs of production today on an individual gold mine basis. New gold mining enterprise and other gold mines with no history of production in the last quarter of 1939 could qualify for similar aid through establishment of comparative costs, taking into account production costs of mining gold in the same or adjacent mining districts.

I want to emphasize that this program is a domestic one designed to affect only American gold mines. Nowhere in the proposed legislation is the word “price” mentioned.

I emphasize this fact because objections to previous bills of this kind have been based on some apparently metaphysical feeling that an aid

program to stimulate production from our American mines and to do justice to our American gold miners would somehow constitute a "two-price" system for gold and that this would shake the foundations of the monetary markets of the free world. Through the years this committee has tried to get a clear statement of the rational basis for such an attitude.

But our efforts have been in vain. Year after year, the spokesmen for the administrative agencies repeat the same metaphysical incantations about the sanctity—the untouchableness—of the \$35-an-ounce price in our international financial relations without relating it in fact to our proposals for a domestic aid program.

I am well aware that the "heavy metals" program of the Department of the Interior has resulted in an increase in domestic gold production. However, such an increase has been accomplished by one major Wall Street firm in one area in one State. In my own State of Alaska, as in many other States, the figures tell a different story. In Alaska, production of gold dropped sharply in 1966 to 31,237 ounces from production of 42,249 ounces in the previous year. Contrast these production figures with those of 1906 when Alaska alone produced 1,066,000 ounces.

In 1939, which is the base year for S. 49, the bill that is the subject of these hearings, Alaska's gold production totaled 676,737 ounces, some 20 times the 1966 figure. Yet our country needs gold today even more than it did in 1906.

It is this committee's earnest hope that if the administrative agencies do not approve of the provisions of S. 49 they will heed the admonition of the chairman in his letter requesting reports and witnesses on this bill and will come up with an alternative, constructive program.

I now will ask the distinguished Senator from Nevada, Senator Bible, who long has been a leader in the fight to preserve our domestic mining industry and who is a cosponsor of S. 49 as well as S. 615 if he wishes to make any comment.

#### **STATEMENT OF HON. ALAN BIBLE, A U.S. SENATOR FROM THE STATE OF NEVADA**

Senator BIBLE. Mr. Chairman, while my State of Nevada can be said to be enjoying what might be called a "sophisticated gold rush," of sorts, I want to go on record in emphatic support of both the objectives and the provisions of S. 49, the Gold Mine Revitalization Act. As you have noted, I am a cosponsor with you on this measure, as well as a cosponsor of S. 615, the Gold Mines Assistance Act, introduced last week by the distinguished Senator from South Dakota, Senator McGovern, our colleague on the committee. Both of these pieces of proposed legislation have the same objective, that of stimulating production from our American gold mines through assistance payments, but they differ as to method and detail.

In my view, and that of a lot of knowledgeable persons in gold mining and production, neither of the measures would do the job as well as would a realistic increase in the price of gold. But in the present situation we must face up to the fact that a gold price boost is not likely to take place in the immediate future. Therefore, I am doing what seems to be the next best thing and supporting subsidy measures for American gold mining.

I, too, fail to see how a strictly domestic support program for American gold mines could have the ruinous effect on foreign gold markets that spokesmen for the Treasury Department have reiterated so adamantly under both Republican and Democratic administrations in the past. And I join the chairman in the earnest hope that if the administrative agencies will not support the assistance program, they will come up with a constructive alternative proposal.

While I am convinced we need a national gold production program, I am glad to note that the 15-year downward trend in gold production in the United States has been halted. Domestic production in 1965 was valued at about \$58 million, a 15-percent increase over 1964. This increase was due wholly to production from the new Carlin mine in my State of Nevada. Gold production in the United States, however, remains far below commercial consumption, which in 1965 was about three times greater than production from U.S. mines.

The ore deposit now being mined at Carlin was discovered a few years ago by the Newmont Mining Co. as a result of exploration based on geologic mapping and structural analysis published by the U.S. Geological Survey. The company has announced a 15- to 20-year supply of ore, at a production rate of \$7 million per year, and by some estimates, this is conservative. The ore is a new type of gold deposit, one in which the gold occurs in such fine particles that it would not be detected by customary prospecting techniques. The ore is relatively low in grade but large in volume. The company has built a large plant and is said to be already paying one-third of the taxes in Eureka County, thus considerably aiding the local economy in taxes as well as in payrolls.

A mineralized zone similar in character to Carlin was identified by the U.S. Geological Survey at Cortez, Lander County, Nev., last summer. Exploration since then by a consortium of four major companies has established that a workable deposit exists there, although the size is not yet determined.

As I mentioned, these discoveries have triggered a quiet but genuine and sophisticated gold rush in Nevada. About 25 companies are actively exploring, by use of advanced techniques and principles, including major mining companies such as Homestake Mining Co., Newmont Mining Co., American Smelting & Refining Co., Duval, American Metals-Climax, and others. Millions of dollars have been expended by private organizations in this State over the past few years in minerals exploration.

The principal prospecting ground is an area of several thousand square miles in north-central Nevada where the favorable host rock for the gold ore is covered by a great "thrust plate" of other rocks. Exploration thus far has been confined to "windows" in this plate, where the underlying favorable rocks are exposed at the surface and where, if deposits are found, low-cost open-pit mining is feasible. Many deposits doubtless exist in areas covered by the thrust plate. Studies to identify the most favorable locations for such deposits, that private industry would explore and develop, are a major objective of the heavy metals program being conducted by the Department of the Interior, and I want to express my approval of, and support for, the heavy metals program. However successful it has been and gives promise of being in Nevada, I do not think this program can do enough to meet out Nation's needs. Our American gold mining

industry, as a whole, urgently requires assistance and therefore I join in support of programs such as provided by S. 49 or S. 615.

Senator GRUENING. Thank you, Senator.

Several Senators have sent statements for the record. They include Senators Kuchel, McGovern, Mundt, and my colleague from Alaska, Senator Bartlett. Also Congressmen Bizz Johnson and Berry have sent statements. They will be printed at this point.

(The statements referred to follow:)

STATEMENT OF HON. THOMAS H. KUCHEL, A U.S. SENATOR FROM THE STATE OF CALIFORNIA

Mr. Chairman, I thank you for the opportunity to again testify on behalf of a bill to revitalize the American gold mining industry, S. 49.

The gold producing industry of this country is in a grave condition. It is a national disgrace that corrective action has not been taken. Help for this industry is long overdue and should be taken without delay.

Our Nation is alarmed at our ebbing gold supply. Our gold stores are being reduced at a time when the gold resources remaining in the land are far from depleted, and the public is concerned for the future. The relatively few remaining gold mining operations are threatened by ever-increasing costs of production, while the price they can get for the gold produced is frozen. Each gold mine which is forced to shut down helps to fill the unemployment rolls with skilled miners who are anxious to work.

The gold mining industry has contributed greatly to the development of our country and, in particular, to my State of California. To many, gold is California's best-known metal. It was the magnet which drew the early pioneers and stimulated the State's growth for many years.

In 1848, James W. Marshall made his historic discovery at Sutter's Mill at Colma on the American River. Soon afterward, the gold rush was in full sway as thousands of gold seekers poured into California. In a few short years, the gold rush had caused many areas of the State to be permanently settled.

Since 1848, California gold mines have yielded more than 106 million fine ounces of gold. This is more than any other single state has produced and represents about 35% of the total United States production. In 1964, California's gold production amounted to only 71,028 fine ounces, as compared to the all-time high of almost 4 million fine ounces produced in 1851, or the 1940 production of 1,455,000 fine ounces. Today, production is practically nonexistent.

The prospectors have disappeared. The mines are empty. What was once a great industry in California and throughout the West is now merely a memory—not for any lack of gold, but because that industry can no longer find a way to survive with the sadly outdated and unrealistic price ceiling that is placed on the fruits of its efforts. Today we are asking gold miners to produce one of our Nation's most urgently needed commodities at a restricted price level established over thirty years ago during the depths of the depression. This is especially onerous, since gold is the only mineral with an artificially frozen price.

I believe there is far too little understanding of the tremendous investment required and the amount of raw ore that must be processed to produce a single ounce of gold. We insist that the gold mining industry produce gold in 1966 at 1934 prices. Nor do we demand that wheat or cotton or beef be produced in 1966 at a depression price level.

The gold industry finds itself in a situation not of its making, but which exists because the government has fixed an artificial price for gold considered necessary in the public interest as a basis for our monetary system. Monetary, not business, policies are slowly and surely forcing the demise of the gold mining industry and the artificial curtailment of our gold supply, which result is contrary to the public interest. What will we use as a basis for our monetary system when the artificially maintained price ceiling has caused our country's gold supply to disappear? We owe the gold industry relief to avoid continuation of a situation which verges on confiscation of property without compensation.

S. 49 will encourage the discovery, development and production of domestic gold. The bill will in no way change the current price paid for gold by the United States Treasury. The bill merely allows the Department of the Interior to subsidize the American gold mining industry by making up for the increased costs of producing gold. It will provide the incentive to rebuild our dwindling

gold reserve. It will reopen many existing mines, will cause new ones to be established, and will make jobs available.

I am proud to be a sponsor of this important legislation.

Mr. W. T. Shannon, Director of the California Department of Fish and Game, has requested that I advise the Committee of a proposed amendment to prevent pollution of streams by gold mining activities. I ask consent that Mr. Shannon's letter and proposed amendment to S. 49 be placed in the record of these hearings at this point.

STATE OF CALIFORNIA—RESOURCES AGENCY,  
DEPARTMENT OF FISH AND GAME,  
—Sacramento, Calif., January 19, 1967.

Hon. THOMAS KUCHEL,  
U.S. Senate, Washington, D.C.

DEAR SENATOR KUCHEL: Our department is well aware of your interest and activities in the control of problems that affect natural resources.

During the past session of Congress, the Gold Mine Assistance Act of 1965 (HR 11667) was introduced by Congressman Johnson. Although the bill did not receive final deliberation during the past session, we understand that it will be reintroduced during the forthcoming session.

In our review of the bill as amended August 31, 1966, we have become concerned over the possible adverse effects on associated resources that this legislation might encourage in its present form.

Without proper planning *before the start* of a mining operation, mine wastes that are discharged to lakes and streams can cause severe damage to other water and land resources. To be specific in just one area, fisheries resources in the waters of many of our watersheds could be harmed if silt, sand and other pollutants are not precluded from entering State waters.

Several years ago a number of mines in California's Yuba River drainage were reopened and became operational under a federal assistance program (PL 85-701). Pollution resulting from the discharge of crushed ore and toxic solutions devastated many miles of formerly excellent trout streams. Our department and the Regional Water Quality Control Board, although proceeding diligently under our pollution laws, have been unable in general to control these pollution sources, because of their intermittent nature and because of the reluctance of local officials to bring legal action against the operations that violate the laws.

The majority of gold mining in California occurs in terrain that consists of steep slopes bisected by streams. This terrain makes the operation of pollution control facilities difficult. It is of critical importance that the operator demonstrate before mining starts that operations can occur without damaging the uses of downstream waters.

Under the conditions we have outlined and in view of the proposed legislation, we feel that the best way to avoid problems accompanying mining operations is to ensure before subsidization that an acceptable pollution control plan has been developed by the operator and accepted by the State or that the operator agrees to comply with a set of waste discharge requirements or recommendations established by the State.

Therefore, we are attaching for your review of copy of HR 11667 and a proposed amendment which we feel would protect the uses of State waters in mining areas and at the same time preserve the original purpose of the bill. We would appreciate your favorable consideration of this amendment.

If we can be of assistance in providing additional information in this matter, please contact us.

Sincerely,

W. T. SHANNON, *Director.*

#### PROPOSED AMENDMENT TO H.R. 11667

Insert Subsection (d) after line 12, page 8, under Section 6:

“(d) File with the Gold Mines Assistance Commission either:

“(1) a pollution control plan with an affidavit from the pollution control agency of the state in which the operation exists that the plan is acceptable to and meets the requirements of the state to prevent pollution, or a statement from such state pollution control agency indicating that no such plan is necessary or,

“(2) a set of requirements or recommendations issued by the state to prevent pollution accompanied by a declaration of intent by the applicant to comply with said requirements or recommendations, or a statement from the state pollution control agency indicating that no such plan is necessary.”

Insert the following as a new Section 7 on page 9, line 5:

"SEC. 7 The Gold Mines Assistance Commission shall approve federal financial assistance under this Act only if there is on file with the Commission a certification by the pollution control agency of the state or states in which the operation lies that the operation had not caused pollution and had been conducted in complete compliance with all laws, regulations, rules, standards or other requirements of the state relating to water quality or pollution control during the period of time for which application for financial assistance is made."

Renumber the present Sections 7, 8, and 9 on page 9 to Sections 8, 9, and 10 respectively.

---

STATEMENT OF HON. GEORGE MCGOVERN, A U.S. SENATOR FROM THE STATE OF SOUTH DAKOTA

In past sessions of the Congress I have introduced legislation calling for a subsidy to our gold mines. It is evident that any effort to raise the price of gold will meet with stiff resistance from the Treasury Department.

In past years my bill has called for an annual assistance payment equivalent to 5% of the value of any operator's gold bullion receipts produced in each year, together with an escalation clause for each 5 point increase in the Consumers Price Index.

My bill this year, S. 615, contains identical provisions of past bills except that it calls for a payment of 10% as against the past figure of 5%. I have increased this percentage after consulting with mine operators and authorities. I am convinced that past legislative efforts did not call for a significant enough figure to really revitalize the industry. I want to make it clear that I am not wedded to this figure of 10% but I do earnestly submit that Congress should assist this once great, but now foundering, industry.

My distinguished colleague, Senator Gruening, has introduced a somewhat similar proposal. His bill calls for Federal compensation to the industry on a formula based on the cost of production between the 4th quarter of 1939 and the present time. My bill provides that these costs must have gone up 125% during that same period to make a recipient eligible. While I am listed as a co-sponsor of Senator Gruening's bill, I personally feel that legislation designed to give a uniform subsidy to the industry is more workable and equitable than any other form.

Homestake Mining Company in my State produces by far the largest amount of gold bullion mined in the United States. Homestake has continued its basic operations, sometimes at a substantial loss, when other mines have closed.

Let me suggest to the distinguished Chairman that the Subcommittee give consideration to reporting both bills this year or that a combination of both measures be reported for the Senate's consideration.

---

STATEMENT OF HON. KARL MUNDT, A U.S. SENATOR FROM THE STATE OF SOUTH DAKOTA

Mr. Chairman, I am happy to testify once again in support of the splendid efforts which this committee is making to provide new government policies on our gold problem.

I am only sorry that it has been necessary for us to come together again. I had hoped, after the splendid hearings which were held last year, that some new goals would be set, some new approaches taken, some new formulas enunciated so we could begin a sincere attack on the problem of lagging gold production. It is disheartening that the Administration has blocked these moves.

I am fortified in my presentation by the fact that on January 30, two days ago, the Federal Reserve Board announced that our country had a \$27 million decline in our gold supply during December, making our entire loss for the year \$571 million. In 1965, they reported a loss of \$1.66 billion. This decline has been continuous and our country cannot tolerate this drain on our great resource.

Two other items in this report disturb me. First, France continues to draw on our supply; second, we have had to purchase gold from Canada and the United Kingdom in order to maintain the level of our gold supply. While we apparently cannot prevent the first—we ought to be taking steps to assure our gold supply without foreign purchases.

Our gold producing industry needs stimulation and encouragement so that it can expand to become the great source of wealth production as well as income and revenue production which it once was.

My home state of South Dakota has within its borders the fabulous Homestake Gold Mine which once flourished, but which is slowly declining to the detriment of the stockholders, its large and loyal labor force, the community of Lead, and the entire state of South Dakota all of which have benefited greatly from the output of this industry. I am sure this decline is detrimental to the United States. If the erosion of the gold industry continues, large reserves may be lost. We who live in South Dakota view with alarm the threat that we may lose, entirely, the greatest single industry within the State. However, I believe the whole of our Nation would be the loser if we fail to take steps to make mining profitable again.

Mr. Chairman; You and I listened last year to the testimony of government witnesses on legislation dealing with our gold production problem. These witnesses said, "oh, yes we need more gold production—but we don't want to take any steps which might, in some way, effect the world market."

I suggest, Mr. Chairman, this fear is rather a fanciful one. The price of gold is pegged at the price which the United States pays for it. If there is speculation, it results only from the fantasies which exist in the mind of the speculator. I do not know what principle of economics is applied which says that the more abundant a product is, the higher the price is likely to go. I suggest that the very opposite is true in general.

I recall the colloquy which the Chairman, last year, had with a Treasury official when the Chairman reported that, contrary to government testimony, favorable action by this committee on this type of legislation did not set off any tremors in the world market. The realities of the situation are such that *facts* favor the stand which you and I are taking—only *speculation* on world reaction supports the Treasury position.

It seems only sensible to me that we should maintain an adequate supply of gold for our nation—that we should maintain our mining industry which threatens to deteriorate beyond the point of restoration—that we should shore up the economies of communities and states which have depended on the production and the commercial activity of these domestic mines. All these things will result from favorable action on this legislation.

I want to thank the members of this committee, and you, Mr. Chairman, for laboring so mightily on this project.

---

STATEMENT OF HON. E. L. (BOB) BARTLETT, A U.S. SENATOR FROM THE STATE OF ALASKA

Mr. Chairman, as the swallows who return to Capistrano might say, "We've been here before."

And, if I may change birds in mid-flight, like the swan which dies after many a summer, the gold industry in this Nation is in danger of expiring after many a year at the fixed price of \$35 an ounce.

As you well know, Mr. Chairman, that price was fixed in 1934. The great depression was in full swing. Prices were low. Now, 33 years later, much in the world has changed. I suppose it is a new generation of swallows which now returns to Capistrano. I know that we are working with a new generation of cost figures in mining as in all areas. But through the years, at least one thing has remained fixed, unaltered by time or man, evidently held in awe by some persons who consider it a golden hook on which to stabilize a changing world. I refer of course, to the fixed price of gold which in reality has become a tarnished hook on which to hang a slowly dying but once flourishing mining industry.

Through the years attempts have been made to raise the price of gold, first for all purposes, and then for certain domestic non-monetary uses. The executive branch, regardless of the party in power, has rejected any such suggestions. Their position has been that any change in the price of gold would, in effect, be a devaluation of the dollar, which in turn could start a world-wide run on this Nation's gold reserves. I might comment that this argument has been advanced so often to counter so many different proposals that it is rivaling the fixed price of gold as a pillar of stability in a changing world.

And now we come to S. 49, a bill designed to stimulate gold production. The stimulation would come not for any change in the price of gold, but through a subsidy payment based on the difference between mining cost in 1939 and today.

This is not a new bill. Last year it was approved by the Senate Committee on Interior and Insular Affairs. Unfortunately, it was not brought to the Senate floor for a vote. Let us hope further progress can be made this session.

No doubt any progress will be impeded by opposition from the Treasury Department, and no doubt the opposition will be based on the old stand-by that any form of subsidy to gold miners could be interpreted abroad as devaluation of the dollar.

As you know, Mr. Chairman, the Federal Government has launched a heavy minerals exploration program. I am sure that you, as I, welcome such a program, but does it not seem strange that while our government feels it can fully finance a search for gold without affecting the value of the dollar, it cannot subsidize a man or firm for part of the costs of extracting the ore from the earth?

This continued refusal to assist the mining industry has played a part in a serious decline in our gold reserves. On February 1, 1967, the Washington Post carried a wire story reporting that U.S. gold supplies dipped to \$13.2 billion on December 31, the lowest figure since the 1937 total of \$12.7 billion. Since the peak year of 1949, this Nation's gold stocks have decreased by more than \$11 billion, it was reported.

Mr. Chairman, there is more than one way to start a run on our gold reserves. If it can be argued that confidence in the dollar is so shaky that a subsidy to miners could start a run, it can be argued with equal if not more force that a steady decline in our gold reserve will also start a run on our gold supplies. Obviously, when our reserves fall to a low enough point, foreign interests holding gold certificates are going to scramble to exchange their certificates on the sound reasoning that there may not be any left for them if they don't get to Fort Knox first.

For this reason I cannot see the logic in making a distinction between federal aid to search for gold and federal aid to extract the ore. It seems to me that a foreign nation holding U.S. gold certificates would welcome an inflow of gold from any source to our reserve. Gold discovered but unmined would not encourage faith in the stability of the dollar.

Of course, Mr. Chairman, there is another side of the gold problem—the fact that this Nation, which was once and could be again a major producer of gold, must import this mineral for industrial purposes. It also should be noted that many of the world's major resources are found in South Africa and Communist-bloc nations. I don't think any person in or out of government would care to rely on these nations for supplies of any other important mineral.

Mr. Chairman, I believe the case is clear that S. 49 which you introduced should be enacted. With General DeGaulle pursuing policies detrimental to the stability of the dollar, pressure on our gold reserve is not going to ease in the near future. If we are going to negotiate from a position of strength in the continuing international monetary talks, we had better do something about protecting our gold reserve. Your bill would help.

Mr. Chairman, I salute you for your perseverance in face of adversity. You are to be congratulated for continuing the fight to revitalize the gold industry, a fight which other men might have dropped long ago.

---

STATEMENT OF HON. HAROLD T. (BIZZ) JOHNSON, A U.S. REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

"The paramount problem facing the domestic gold mining industry is one of survival in the face of rising costs and a fixed price of its product."

Mr. Chairman, this single sentence from the Bureau of Mines' most recent Mineral Facts and Problems sums up the situation with which we are trying to deal here today. I must say, Mr. Chairman, that over the years this committee has demonstrated a great and sympathetic understanding of the problems of the gold mining industry and efforts of this committee are deeply appreciated by the people of the State of California and especially of the gold producing areas of the Second Congressional District.

For the record, however, I would like to make a few historical notes about what has happened to our gold mining industry. Gold was, of course, one of the first metals used by man. Ancient history shows that early man was quite taken by the beauty and imperishability of this rare metal. Almost from time immemorial gold has been used in the arts and as a medium of exchange.

In the nearly 500 years since Columbus first discovered America, an estimated 2,200,000,000 ounces of gold have been produced throughout the world.

Although, the United States has been a major factor in gold production for less than 20% of this 500 year span, this Nation has produced approximately 14% of the total.

Historically the United States led the world in the production of gold from 1849, the year after gold was discovered in the hills of California which I am proud to now represent here in Congress, until 1905 at which time this Nation was unseated by the Union of South Africa as the world's leading gold producer. We ranked second for another quarter century when Canada moved into that position and dropped us into third place. In 1934 Soviet Russia became third ranking and the United States now has dropped to a very poor fourth place. Production of gold in this Nation has been dropping steadily since 1940 when it reached an all-time record high. The postwar recovery in the late 40's and early 50's only restored production to half of what it was a decade earlier and in 1963 plunged to the lowest point of any peacetime year in more than a century.

Mr. Chairman, I think we should recognize that the production statistics for the country have shown an increase in the last two years, although this increase has been relatively minor. 1966 production of gold is estimated at 1,810,000 ounces brings the United States production up to the levels of the 50's. However, this was due to the impact upon national production of a single operation, the Carlin Gold Mining Company, a subsidiary of the Newmont Mining Corporation operating in the vicinity of Elko, Nevada, where they have discovered and are processing an estimated ore reserve of seven million tons.

As this committee well knows, the United States can not today be considered a major producer of gold for its output amounts to only 3% of the world total. Only twenty-five producers supply 94% of all the domestic gold produced. Actually three firms represent approximately two-thirds of our total national production with much of the domestic gold mined in this nation as a by-product of base-metal mining operations.

With the exception of the Newmont operation I think it would be safe to forecast that by the end of this decade there would be no gold produced domestically except as a by-product. This means that the production of this precious metal, the demand for which is ever increasing, is dependent upon other industries. We find ourselves in this situation at a time when world production is continuing to increase at a rapid rate as is indicated by the following tabulation:

Year	World production (ounces)	Year	World production (ounces)
1955-59	33, 000, 000	Average:	
Average:		1963	44, 200, 000
1960	38, 200, 000	1964	46, 100, 000
1961	39, 700, 000	1965	47, 000, 000
1962	42, 300, 000	1966	48, 400, 000

Of even greater importance to the United States is the spectacular increase in consumption of gold. Consumption of gold in the domestic arts and industry has exceeded mining productions since 1957. In the past four years the consumption of gold in the United States has doubled. Here are the figures:

1963	2, 920, 000	1965	5, 280, 000
1964	4, 800, 000	1966	6, 900, 000

With production statistics and consumption skyrocketing, we find ourselves largely dependent upon imports of gold. Considering that the major ore reserves existing outside the United States are found in the troubled Republic of South Africa and in Communist Bloc nations, it is incumbent upon this nation to be prepared to take advantage of the ore reserves we have within our own boundaries and I believe that these reserves are indeed substantial.

The longer we delay in meeting this responsibility the more costly it will become. More mines will fall by the wayside and will become more and more difficult if not impossible to reopen as time and disuse take their toll.

Mr. Chairman, this committee in its wisdom during the 89th Congress, recommended enactment of the legislation you have before you. I would applaud the committee for this action designed to permit the Federal Government to meet its responsibilities to this crucial industry. I sincerely hope that the committee will renew this recommendation and that we can, in the 90th Congress, achieve the goal for which we have been working over the years. We must bring back to life our gold mining industry.

Recognition of the importance of this industry was given by the Department of Interior when it included gold in its list of minerals eligible under the Office

of Minerals Exploration program. Certainly there is no question in the minds of Interior Department officials as to the value of this mineral known as gold. But what value is this mineral which we may discover through federally supported exploration programs if we can not realize the fruits of this exploration? Gold reserves are of no value unless they are developed and mined. Gold in the hills is not like money in the bank. It can not be withdrawn in a moments notice. It can only be withdrawn through expensive and extensive mining operations which demand the skill and technology of our current scientifically oriented space age. We can not meet this challenge at prices which have prevailed since the depths of depression and you all know that the price of gold has been maintained at artificially low levels by Federal decree since 1935. No citizen of this great Nation of ours would expect to exist today on what it cost him to live more than 30 years ago during the greatest depression this nation and the world has ever known and yet this is what we, as a government, are asking the gold mining industry to do. Let us bring the gold mining industry back into our economy and we can accomplish this through enactment of the legislation which you have before you today.

Thank you.

---

STATEMENT OF HON. E. Y. BERRY, A U.S. REPRESENTATIVE IN CONGRESS FROM  
THE STATE OF SOUTH DAKOTA

Mr. Chairman, Members of the Committee, as author of legislation very similar to that under consideration here today, and as Representative of the Second Congressional District of South Dakota which contains the United States' largest operating gold mine, I am very happy to be here today to testify in support of legislation to assist this dying industry.

There is a persisting myth in this country which, unfortunately, these hearings are helping to erase. The myth is reflected in the public misconception that the domestic gold industry is as financially sound and thriving as it was at the turn of the century. Unhappily, this myth has obscured the very serious and long neglected problems facing the gold producers.

South Dakota is the leading gold producing state in the Nation. Only one gold mine is currently in operation, but it is the largest in this country and the largest in the Western Hemisphere. The Homestake Mine generates more than \$16 million per year into the economy of our state. The payroll is nearly \$12 million per year and more than \$2.5 million is spent on equipment and material alone within South Dakota.

Homestake has also done outstanding work in civic areas. It consistently grants scholarship funds to colleges in South Dakota, it has repeatedly furnished the men and equipment to aid local authorities in times of natural disasters, such as forest fires and blizzards, and has volunteered its services to both the community of Lead and surrounding areas in the Black Hills to meet countless emergencies. But this admirable record is in danger of being terminated. Increased costs in production, coupled with the fixed price of gold, may soon force the mine to shut down its operations.

Just this past month, Homestake reported that its earnings were down more than 35 percent from the same 1965 period. In announcing the drop, the Vice President of Homestake said that the steady relentless pressures of nation-wide inflation were the most important reason for the decline in earnings. This was reflected in \$1 million of increased costs for supplies, machinery and equipment; a \$32,000 increase in local property taxes; a \$30,000 gain in state sales tax, plus added wage and insurance and power costs.

Like any other industry, Homestake had to meet higher costs all across the board. But unlike other industries, it cannot raise the price of its product by one cent.

Despite every effort to install new methods and new equipment in mining operations, gold production costs have risen steadily. The price of the product is fixed, however, and if the trend continues, without some type of relief from the federal government, the mine will be forced to close down. These cost-squeeze forces have already caught up with scores of other mines, and they have been forced to stop operations completely.

One of the most alarming factors of the present situation, however, is that in light of faltering production, United States gold supplies are being rapidly depleted. Our unfavorable balance of trade continues to help this gold drain, and the seriousness of the economic threat continues to grow.

But there is another point which has been obscured. Our domestic production cannot meet the present commercial demands for gold right here in our own

country. From 1955 through 1959, the average amount of gold used commercially in the United States for industrial purposes was 1.7 million ounces per year. In 1964, this use had jumped to 4.8 million ounces and yet the domestic production was only 1.5 million ounces. In 1965, 1.68 million ounces were produced, but 5.2 million were needed for industrial and commercial use. We do have an opportunity before us to save the gold industry. We also have a chance to come up with concrete programs whereby new searches for gold ore reserves can be stimulated, and the answer lies in the remedial legislation before the committee and similar legislation which I have introduced in the House, as H.R. 3042.

Only by directly aiding this industry, can we hope to increase domestic production and meet the problems which threaten our national use of gold and the very financial system of the United States and the Free World.

Senator GRUENING. I would like to call on some of our Government witnesses and I will ask that the Honorable Cordell Moore, Assistant Secretary for Mineral Resources of the Department of the Interior, come forward with members of his able staff.

**STATEMENT OF J. CORDELL MOORE, ASSISTANT SECRETARY,  
MINERAL RESOURCES, DEPARTMENT OF THE INTERIOR; AC-  
COMPANIED BY JOSEPH McCASKILL, STAFF ASSISTANT, AND  
JULIAN FEISS, STAFF GEOLOGIST**

Mr. MOORE. Mr. Chairman, members of the committee, it is always a pleasure to appear before this body. We appreciate your invitation to be here today to report on S. 49.

The proposed bill would direct the Secretary of the Interior to establish and administer a program of payments to gold miners based upon current costs of production as compared with an earlier base period.

The bill further provides for the establishment of a three-member independent board of review.

In previous testimony on similar legislation we have pointed out that the importance of gold as an industrial commodity is overshadowed by its role in international monetary policy. Whatever we in Interior do with reference to gold has had to be done in a manner that does not disturb its relationship to the dollar.

So while we cannot support enactment of subsidy legislation such as S. 49, we nevertheless have developed a program which we believe will, among other things, bring a greater increase in our output of gold than would enactment of S. 49, without creating uncertainty in international monetary markets.

We should like, with your permission, Mr. Chairman, to tell the committee something of our Heavy Metals program, and report on its progress.

Senator GRUENING. Please go ahead.

Mr. MOORE. This is a joint program of the Bureau of Mines and the Geological Survey and both directors of these agencies are here and prepared to discuss it in detail.

The program has stemmed from a good many years of work and study in several disciplines. The Bureau of Mines, for example, has made intensive analyses of practically all known gold mines—big and little. We wanted to see whether the application of modern technology in mining and milling could really result in substantial improvement in our gold output. To me the results of the Bureau's study were a disappointment. There is not much promise for rejuvenation of

domestic gold mining by concentrating on the reopening of known mines.

This led us to a second type of study: What are the prospects of finding new ore bodies that can be worked economically?

The Geological Survey has been convinced for some time that we could find large deposits in which gold in small quantities is disseminated throughout the rock in much the same manner as a porphyry copper deposit. Engineers in the Bureau of Mines were convinced that with modern mining and metallurgical technology these deposits could be worked economically at present gold prices.

The Survey set out to describe the geological conditions in which such deposits might occur and to suggest target areas for private exploration.

The Carlin mine in Nevada resulted from this approach. This mine represents the most important development in gold mining in recent years.

We pursued this line of thinking and less than a year ago we were able to launch a combined Geological Survey and Bureau of Mines program to locate target areas for heavy metals including gold, and to extend to the development of these areas all of the advanced technology we are able to muster.

This program has been underway only a short time but the results to date are gratifying. We should like to see it given time to prove itself and then reviewed.

Dr. Hibbard, the Director of the Bureau of Mines, and Dr. Pecora, Director of the Geological Survey, are both here. Each has a short prepared statement. After they have presented their statements, they will be prepared to answer questions from the committee members.

In closing I should like to express to you, Mr. Chairman, and to members of the committee, my appreciation of your continued interest and help in the development of the Nation's mineral resources.

Senator GRUENING. Thank you very much, Mr. Secretary. Pursuant to your suggestion that we hear Dr. Pecora and Dr. Hibbard before asking questions, I suggest that they proceed and then we would like to level some questions at all of you.

Mr. MOORE. Thank you, Mr. Chairman.

Senator GRUENING. Please proceed. I am not aware of who has priority or more rank, the Director of the Geological Survey or the Director of the Bureau of Mines, but I think you could settle that between you. Whoever wishes to speak first may do so.

#### STATEMENT OF DR. W. T. PECORA, DIRECTOR, GEOLOGICAL SURVEY

Dr. PECORA. Thank you, sir. We flipped a coin. I lost.

My name is William Thomas Pecora, Director of the Geological Survey. I submitted, Mr. Chairman, a prepared statement of a few pages with a lot of facts and figures. In view of the fact that my voice is suffering from a cold, may I suggest that I give a few highlights and then defer to Dr. Hibbard to proceed.

Senator GRUENING. Please proceed as you wish.

Dr. PECORA. Thank you.

The Geological Survey has been engaged for many, many years, as the chairman and his colleagues well know, in several kinds of programs

in support of the general minerals industry. The first of these is what we call our background program, the making of maps and geologic studies, in the United States. We also have through the State Department a program abroad of not too immodest proportions to assist technical aid in foreign countries, which also are related to the resources of those countries.

Thirdly, we are administering the program of the Office of Mineral Exploration, which is essentially a loan program in the exploration affairs. This is a small and modest program, but these three areas represent a contribution to the entire picture.

Last year, through the support of the Chairman and his colleagues, a Heavy Metals program was inaugurated which emphasized and pinpointed a group of heavy metals of which we are in short supply. Gold is one of them. The purpose here was to put an extra effort into the understanding of the distribution of these metals so that perhaps we might come up with some targets which industry would pursue with its own risk money to develop, explore, and produce.

The program is showing some success. We have extensive projects in several States, including Alaska, sir, as you well know. Last summer, we visited the State and discussed this in some detail. We feel that a contribution is being made which will help the heavy metals situation in this country. For example, in Nevada, our field staff of geologists, geophysicists, and geochemists, have discovered a new class of gold deposit. I use the words "new class" because we have not foreseen this variety of gold deposit. It is, as we call it, the invisible gold. This is a finely disseminated deposit, so finely disseminated that it cannot be seen with a naked eye nor with a hand lens, which is our usual field tool, nor can the gold be crushed nor prospected by the normal panning methods. But more than this, the gold is distributed in a certain formation, a particular geologic formation, known as the Roberts formation. The Carlin mine is predicated on this principle of the Roberts formation.

There are three or four other prospects actually being explored at the present time by private industry which have the same geological relationship.

We have other studies under way in Wyoming, Colorado, Alaska, California, and other States. We feel that given continued support on our side—that is, the field geological side, we can make a greater contribution to the entire program.

May I now defer to my colleague, Dr. Hibbard?

Senator GRUENING. Thank you very much, Dr. Pecora. Your written statement will also be included in the record at this point.

Dr. PECORA. Thank you.

(The statement referred to follows:)

#### STATEMENT OF DR. W. T. PECORA, DIRECTOR, GEOLOGICAL SURVEY

The Heavy Metals program was organized within the Interior Department during the last year as an aid to industry in furthering the production of gold and certain other metals in short supply. The program is conducted by the Geological Survey and the Bureau of Mines, both of which have obtained new funding to support greatly expanded investigations on gold and the other heavy metals, which include silver, platinum metals, mercury, tin, bismuth, antimony, and tantalum.

The programs of the two bureaus are complementary and closely coordinated. The Geological Survey is conducting widely ranging field and laboratory studies to improve the knowledge of the geology and geochemistry of gold and the other

heavy metals, to identify and evaluate new resources of the metals, and to identify areas, or "targets", favorable for their occurrence that private industry will explore and develop. The Bureau of Mines is conducting research on the methods of reliably evaluating low-grade deposits, on mining systems, and on extraction methods, particularly as applied to new kinds of deposits identified by the Geological Survey.

Under the Heavy Metals program, the Geological Survey has started work on 45 field projects, in 22 states, and the summer of 1967 will increase this to more than 50 projects. These projects are in the western states and Alaska, in the Great Lakes region, and in the eastern states from Maine to Alabama. In addition, the Survey is conducting or planning off-shore investigations related to marine placers along the Alaska coast particularly, but also along the Washington, Oregon, California, and Carolina-Georgia coasts. Laboratory investigations are under way on the processes of solution, transport, and deposition of gold and other heavy metals, on the natural abundance, or "background", in rocks of various kinds, and on detection devices and techniques. To provide the analytical support required by so large a program, 16 mobile laboratories of various kinds have been assembled, and fixed laboratories in Denver and Washington have been expanded. Both the fixed and the mobile laboratories are equipped to determine gold and other metals by new, sensitive, rapid, and reliable methods, and they have a total capacity of more than 1,000 samples per day. The program is also supported by ground and airborne geophysical surveys, by a limited number of research contracts with universities, and by geologic drilling. This drilling is designed to supply essential geologic information in the third dimension and to test hypotheses, but it is not exploration drilling of the kind normally done by the mining industry.

Although the Heavy Metals program has been under way less than a year, important results have already been achieved. Chief among these is the identification of a gold-bearing zone in the Cortez, Nevada, area announced in U.S. Geological Survey Circular 534, published six months ago. Exploration of the zone was begun almost immediately by a group of four mining companies and is still in progress; results are reported to be encouraging. The Cortez occurrence is of special significance because it is similar to that of the important Carlin mine, which was established in 1965 on a new type of deposit that was developed by private exploration of a target identified by geologic studies of the Geological Survey. Both the Carlin and Cortez deposits are related to a great and complex flat fault in such a way as to suggest that other deposits may exist in places beneath the fault, which covers thousands of square miles in north-central Nevada. To identify the areas where such hidden deposits might exist is the focus of our work in Nevada.

The presence of gold concentrations in the neighborhood of the copper ore deposits of Ely, Nevada, and of the largest concentration of tellurium known in the United States, was announced in U.S. Geological Survey Circular 535, published last November. Circulars making similar announcements are expected in the near future for work in other states.

Support of the gold mining industry through the exploration loan program of the Geological Survey's Office of Minerals Exploration continues. During the 1966 calendar year, 8 contracts for exploration of gold or gold-silver deposits were made. These contracts totaled \$299,108, of which somewhat more than half—\$174,650—represents the Federal contribution. Since July 1961, when gold was added to the list of eligible minerals, 37 contracts relating to gold were made, totaling \$2,170,961 and representing 26.4 percent of all OME contracts. In addition, 12 contracts totaling \$467,126 were made for exploration of deposits that contain some gold along with other metals.

Both the Heavy Metals program and Exploration Loan program are progressing satisfactorily.

#### STATEMENT OF DR. WALTER R. HIBBARD, DIRECTOR, BUREAU OF MINES

Dr. HIBBARD. My name is Walter R. Hibbard, Jr., Director of the Bureau of Mines. I, too, have a prepared statement which I should like to submit for the record. If I may, I should like to summarize essentially what is in this statement.

Senator GRUENING. Your prepared statement will be printed in full at this point and you may summarize it for the subcommittee, then we will have some questions for you and Dr. Pecora.

(The statement referred to follows:)

STATEMENT OF DR. WALTER R. HIBBARD, JR., DIRECTOR, BUREAU OF MINES

Mr. Chairman and members of the Subcommittee on Minerals, Materials, and Fuels, as always I am pleased to appear before you, and today I am particularly delighted to have the opportunity to talk with you about programs and activities of the Bureau of Mines relating to gold.

Before I touch on these programs, however, I would like to review briefly some background information pertinent to the problems of the domestic gold-mining industry.

Annual mine production of gold in the United States reached a peak of nearly 5 million ounces in 1940. By 1944 and 1945, however, output fell below 1 million ounces as a result of defense demands and the issuance in October 1942 of War Production Board Order L-208, which closed most gold mines. Following rescission of the Order in 1945 some gold mines reopened. But many could no longer be operated profitably because of the increased cost of labor and supplies. They remained closed. By 1950, nevertheless, gold production had recovered to 2.4 million ounces, about one-half its prewar level. After 1950, gold production declined progressively to about 1.5 million ounces in 1964. The downward trend was reversed in 1965 largely due to the inauguration of production at the Carlin gold mine in Nevada, which more than offset production declines in other gold-mining areas.

The principal continuing factor in the drop in U.S. gold output has been a persistent decline in output of gold from placer deposits, chiefly in California and Alaska. Placer mine output fell from 611,000 ounces in 1950 to less than 100,000 ounces in 1966. Gold outputs from lode mines and as a byproduct of base-metal ores in 1966 also were below 1950 levels.

Contrasting with the overall decline in production, demand for gold for industrial and artistic use in the United States has shown an almost uninterrupted rise since 1953. In 1966, domestic consumption of gold reached an alltime peak of about 6.6 million ounces, more than three times mine output. About three-fourths of the gold consumed in industry was for jewelry, artistic, and dental uses; most of the remainder was used in electrical and electronic components for industrial and defense-oriented uses.

Although output in most of the principal gold-producing countries has been declining, world gold production has been rising principally due to the remarkable development of new mines in South Africa. However, the growth rate appears to be slowing, and South African production may level off in the next few years. The 1966 production gain was the 13th consecutive annual increase. Notwithstanding the increase in output, world monetary stocks have declined in the past year as virtually all newly mined gold apparently went into private holdings for industrial use, investment, and speculation.

It is recognized that unless production costs can be reduced through improved technology and new ore body discoveries made by the application of advanced scientific methods of search and evaluation, domestic production is likely to resume its long-term declining trend in the near future.

As part of its regular program to provide timely information on domestic mineral commodities, the Bureau conducted an engineering appraisal of more than 1,300 domestic active and inactive gold mines and undeveloped sources to determine their gold production potential. These included both lode and placer gold deposits, but did not include sources of byproduct gold, such as copper, lead, zinc, and silver deposits. The study revealed an availability of about 400 million ounces of gold from sources in 18 States. However, only 9 million ounces or slightly more than 2 percent, was found to be producible under prevailing mining and metallurgical technologies. The study also revealed that any significant increase in available gold in the United States is most likely to come from (a) the discovery of new sources, (b) intensive exploration and development of the more promising known mineralized areas, and (c) development of new or improved mining and metallurgical techniques.

Also, underway is the Bureau of Mines Heavy Metals program. This program looks to the Geological Survey to identify favorable target areas, which may be large, low-grade deposits suitable for high-tonnage, surface-mining operations. It assumes that the lives of existing operations may be extended by improved

technology. It further assumes that there are reserves of heavy metals in inactive mining districts, which could be made commercial by improving some element of production technology. And, finally, there is the possibility that the Geological Survey programs may identify new types of heavy metals deposits, which may require new production technology, particularly in the area of extractive metallurgy.

On this basis, we see the Bureau's role as beginning when the Survey has identified favorable target areas. Our first responsibility is to develop the equipment and techniques to sample and delineate heavy metals deposits both on the land and in the marine environment. In general, satisfactory drilling equipment for sampling off-shore deposits is not available. We plan to test two different types of drill rigs for marine sampling this summer in our off-shore drilling campaign in the Bering Sea off Alaska. This is a cooperative effort with the Geological Survey using the Bureau of Mines ship, the R/V Virginia City. We look forward with anticipation to this work in Alaskan waters as one of the most favorable target areas.

Coming back to shore for a moment, our objectives are identical. We are now proceeding with plans to sample favorable areas that have been identified by the Geological Survey. It appears at this time that our major effort for this forthcoming summer field season will be in Wyoming and Nevada. This sampling program will be conducted by our Denver Mining Research Center. Personnel at this Center have pioneered statistical techniques of sampling and are recognized as world leaders in the field.

In the initial years of the Bureau's heavy metals work, we must concentrate our major effort on sampling and delineating potential deposits. But, we are still doing considerable work in studying existing heavy metal operations and inactive mining areas that might be reopened using present or newly developed technology. One of our most promising and interesting projects has been an engineering and economic study of a hypothetical open-pit operation at one of the most famous gold-mining areas of the old west, Cripple Creek, Colorado. A detailed analysis has been made of all costs, including existing taxation levels, varying levels of output, assumed grades of ore, etc. All study data have been programmed on a computer. Similar studies are planned for other areas and we feel the technique has considerable merit for future economic studies and their correlation with technological breakthroughs that may evolve.

There is one final area, metallurgical research, that I wish to discuss with you. One segment of this program is directly involved in developing and perfecting analytical techniques and equipment to be used in both field sampling and assaying of heavy metal samples. Another equally important aspect of our metallurgical work is to develop new methods and techniques of processing heavy metals ores. Five of our research centers are contributing to this metallurgical program.

This concludes my statement, Mr. Chairman. I want to leave you with the assurance that we in the Bureau of Mines are anxious to assist you. It occurs to me, for example, that the subcommittee and its staff might find it valuable to visit one or more of our research centers, to see the facilities, talk to the scientists and engineers, and familiarize yourselves with our efforts to augment the supply of gold and other heavy metals. Please consider this an invitation to do so.

*Salient gold statistics*

	1935	1940	1950	1964	1965	1966 <sup>1</sup>
<b>United States:</b>						
Mine production... thousand ounces...	3,237	4,870	2,394	1,456	1,705	1,793
Value..... thousands.....	\$113,295	\$170,450	\$83,798	\$50,971	\$59,682	\$62,769
Percentage derived from:						
Dry and siliceous ores.....	67	56	43	54	54	56
Base-metal ores.....	9	13	31	37	40	39
Placers.....	24	31	26	9	6	5
Imports..... thousand ounces.....	49,740	120,749	4,650	1,169	2,905	1,250
Exports..... do.....	56	32	15,258	12,078	36,717	13,100
Monetary stocks (end of year)..... millions.....	\$10,125	\$21,995	\$22,706	\$15,471	\$13,806	\$13,200
Net industrial consumption..... thousand ounces.....	<sup>2</sup> -927	1,057	2,795	4,801	5,276	6,600
World: Production..... thousand ounces.....	29,440	42,270	32,500	46,100	47,700	48,600
Equivalent gold price in 1940..... dollars.....	36	35	19	14	14	14
Equivalent gold price in 1958..... dollars.....	82	80	44	32	32	31

<sup>1</sup> Preliminary.

<sup>2</sup> More gold was returned from industrial and monetary use during 1932-36 than was issued for use in the arts and industries.

<sup>3</sup> Estimated.

Dr. HIBBARD. I know you are all aware of the history of gold production and I would invite your attention to the Bureau's Commodity Data Summaries, a copy of which has been sent to all members of the committee. The gold portions of it are on pages 60 and 61.

You are all aware that gold production reached a peak in about 1940, with about 5 million ounces of gold produced in the United States. Subsequent to that time, the domestic production has dropped to around a million and a half ounces in the last year. It is a little over a million and a half, actually, 1.8 million is the estimated production.

In contrast to that, the industrial usage of gold has increased every year since 1950, and in 1966, we estimate the industrial use of gold, consumption of gold, to be about 6.9 million ounces, nearly four times the domestic production.

Senator GRUENING. You say the use of gold is greatly increasing, but not the production of gold, is that right?

Dr. HIBBARD. The use of gold is nearly four times the domestic production. This gold is largely used for jewelry, art work, dentistry, electronics, electrical equipment—these kinds of applications.

The gold output in many of the principal producing countries has declined in the past 10 years or so. There are two notable exceptions to this. In the Union of South Africa, of course, the production of gold has increased every year since 1952 and in 1966 we anticipate its gold production will amount to 31 million ounces. This is about three-fourths the world's gold production. The other increase, and it is a small one but it is real, has occurred in the United States in the last 2 or 3 years, 1965 and 1966. This is largely the result of the new discovery at Carlin and the development of the so-called invisible gold.

I would point out that in both of these cases, these increases have resulted principally from discoveries of new ore deposits. They have in general been the result of the application of new technology. The South African gold discoveries were largely in the Orange Free State and some parts of Transvaal. The Carlin deposits, of course, were new discoveries in Nevada.

To test this hypothesis, the Bureau for the last 2 years has made a study of the known gold deposits in the United States. I have here a copy of the study. It is in the press right now and we hope to have it in printed form as soon as we possibly can.

Senator GRUENING. I would direct that this be included in the record.

Dr. HIBBARD. I believe it could be if you would like it. It is 39 pages long and we hope that it will be in printed form.

Senator GRUENING. I think it is important that we get all the information available to those who are interested in promoting the production of gold.

Dr. HIBBARD. This is the only copy I have. May I submit this?

Senator GRUENING. Yes, please do.

(The study referred to follows:)

#### PRODUCTION POTENTIAL OF KNOWN GOLD DEPOSITS IN THE UNITED STATES

(By Field Staff, Bureau of Mines)

#### ABSTRACT

As part of its regular program to provide timely information on domestic mineral commodities, the Bureau of Mines conducted an engineering appraisal

of more than 1,300 lode and placer gold deposits in the United States to determine their gold production potential. While these deposits were estimated to contain over 400 million ounces of gold, only 9 million ounces, or slightly more than 2 percent, was found to be producible at \$35 per ounce under prevailing mining and metallurgical technologies.

The study revealed that any significant increase in available gold in the United States is most likely to come from the discovery of new sources, intensive exploration and development of the more promising known mineralized areas, and development of new or improved mining and metallurgical techniques.

#### INTRODUCTION

As part of its regular program to provide timely information on domestic mineral commodities, the Bureau of Mines conducted an engineering appraisal of domestic active and inactive gold mines and undeveloped sources. Although every effort was made to include all deposits with gold production potential, regardless of cost, some significant sources may have been overlooked. Sources of byproduct gold—such as copper, lead, zinc, and silver deposits—where the gold yield is dependent upon production of other metals, were not considered.

Gold mineralization is widespread and tens of thousands of gold prospects have been recorded in the United States. Of these, about 9,000 (5,000 lode and 4,000 placer) properties have produced enough gold to be classed as mines. About 1,300 of these mines (814 lodes and 494 placers), were selected for detailed study. These properties represent almost all of the Nation's gold reserves.

Evaluation of these reserves and their production potential was made on the basis of existing data and under mining and metallurgical technologies prevailing at the time of the study. Information relative to the geology and origin of gold deposits was drawn largely from the literature which is referenced in a bibliography at the end of the report.

Except for active mines and a few of the larger inactive properties for which a portion of the ore could be classified as measured and indicated reserves, virtually all of the reserves are inferred. The distribution of values in gold mines usually is erratic; hence, the lack of substantial developed reserves is a leading characteristic. Measured ore reserves usually are depleted as a final effort on the part of management before closing a mine, to recover as much as possible of the money expended for their development.

From 1792 through 1964, U.S. gold production totaled 308.5 million troy ounces, of which approximately 88 percent came from gold ores and placers and only 12 percent from byproduct sources. In recent years, the proportion of byproduct gold has been increasing and in 1964 it was 37 percent of the total.

The present study revealed an availability of about 408 million ounces of gold (not including byproduct potential) from sources in 18 states. However, only 9 million ounces or slightly more than 2 percent, was found to be producible at \$35 or less per ounce. More than 96 percent of the commercial reserves are in deposits in two major producing States—South Dakota and Nevada.

More than 99 percent of the U.S. gold production, exclusive of byproduct gold, has come from 12 gold-producing districts, only one of which, the Piedmont district, is east of the Mississippi River. The Pacific Border district, which extends from Alaska through California, has accounted for more than 40 percent of total U.S. gold output.

Five States—Idaho, Alaska, Washington, California, and Montana, in decreasing order—contain almost four-fifths of the gold reserves producible at more than \$35 per ounce. More than 55 percent of the total is in Idaho and Alaska.

Ninety-seven percent of the commercial reserves and almost three-fourths of the noncommercial reserves are in lode deposits.

#### ACKNOWLEDGMENTS

Many mining company officials, mining consultants, and others provided information that contributed greatly to the completeness of the study. All of them cannot be acknowledged individually, but contributions deserving special mention were made by Gene Nelson and William Byington, A. J. Industries; officials of U.S. Smelting, Refining, and Mining Co.; James O. Harder, Homestake Mining Co.; Paul Miller, Bald Mountain Mining Co.; George C. Orton, Bradley Mining Co.; Walter A. Stinson, Original Sixteen to One Mine; Cecil D. Brophy and V. A. Hoak, Yuba Consolidated Goldfields Co.; R. G. Smith, The Natomas Co.; William B. Clark, California Division of Mines and Geology; and Max H. Bergendahl, U.S. Geological Survey.

Leonard C. Clark, formerly mining engineer with the Bureau of Mines Area VI Mineral Resource Office, San Francisco, Calif., developed the cost-level method and coordinated the work of the professional staff that included J. A. Herdlick, B. I. Thomas, Kevin Maline, and A. L. Kimball, Juneau, Alaska; S. W. Zoldok and D. P. Banister, Spokane, Wash.; R. P. Darnell, Denver, Colo.; W. E. Burleson, Socorro, N. Mex.; J. H. Soulé, Tucson, Ariz.; and A. R. Kinkel, San Francisco, Calif.

#### DOMESTIC GOLD SOURCES

##### *Types of deposits*

Major U.S. sources of gold are lode gold deposits, placer deposits, and base-metal and silver lode deposits. Only the first two types, which supplied 87 percent of the domestic gold output in 1940 and 63 percent in 1964, are the concern of this report. The level of gold production from base-metal and silver deposits is dependent upon the economics of copper, lead, zinc, and silver.

Lode gold deposits in the United States occur as single veins, fracture zones consisting of many parallel veins, or as stockworks of small irregular veins. Most of the highly productive deposits have been strongly tabular in shape, with a large lateral extent and a relatively narrow width.

Gold is one of the most persistent of minerals, and occurs in geologic environments ranging from high-temperature deposits extending to depths of 10,000 feet or more to low-temperature deposits which persist to only a few hundred feet. Ore grades are highly variable. Some large deposits are extremely uniform in grade; in others most of the gold is concentrated in high-grade pockets in otherwise low-grade ore zones. Average grades of ore hoisted from large commercial mines have ranged from 0.03 to 1.0 or more ounces per ton. Gold usually occurs as native metal but tellurides are common in some districts. Coarse visible gold is characteristic of some deposits, but more frequently gold is fine grained.

Mineral associations are variable. The most common gangue mineral is quartz, usually containing a few percent of pyrite and other sulfides. Other deposits contain larger quantities of base-metal sulfides, particularly pyrite, chalcopyrite, arsenopyrite, and galena. Low-temperature gold deposits often contain rhodochrosite and adularia.

Placer deposits are formed by natural stream concentrations of the metal after its liberation from host rocks by deep weathering and erosion. As the liberated gold moves downstream it eventually sifts through the loose stream bed to rest on bedrock. Many important placer fields have been derived from erosion of deposits whose primary gold content was too small to sustain lode production. Concentrations are found both in active watercourses and in ancient streams which have been replaced by new drainage routes. In many cases, these ancient placers have been covered with later sediments or lavas. Placers may be classified into river channel, bench, buried channel, residual, dry, beach, and offshore types.

##### *Mineral Producing Districts*

Mineral deposits have no genetic relationships to political boundaries and their most logical geographic grouping is on the basis of specific mineral producing districts. Gold occurrences in each district have in most cases a similar history. In Alaska the gold producing districts are in the Central Uplands and Plains, the Seward Peninsula, and the Pacific Border areas.

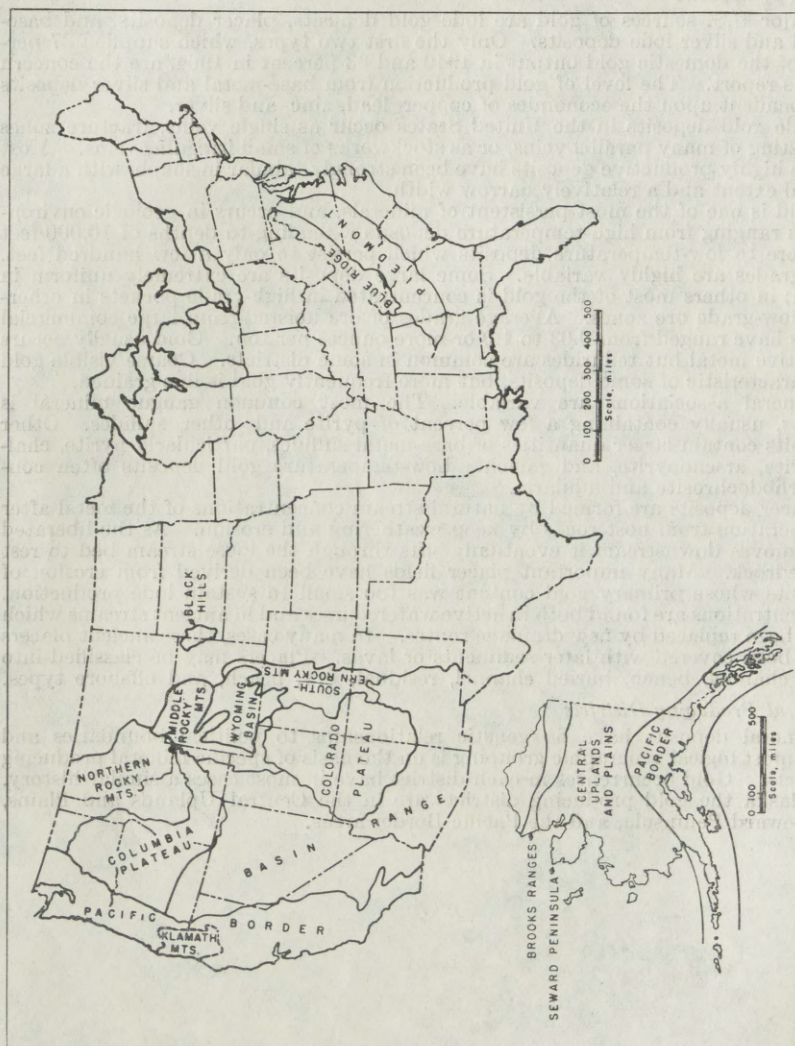


FIGURE 1.—Mining districts in the United States having gold potential.

Gold deposits are found in twelve districts of the conterminous United States. They are the Pacific Border (which extends from Alaska), Columbia Plateaus, Basin-Range, Colorado Plateau, Northern Rocky Mountains, Middle Rocky Mountains, Wyoming Basin, and Southern Rocky Mountains districts in the Pacific and Rocky Mountain States; the Black Hills district in the northern Great Plains; and the Piedmont district in the southeastern seaboard States. These 12 districts through 1964 yielded 265.2 million ounces of gold, (more than 99 percent of the U.S. total) mostly from about 5,000 lode gold and 4,000 placer mines. Tens of thousands of small prospects contributed to the total. (Total U.S. output, including byproduct gold, was 308.5 million ounces through 1964). Some 1,300 lode and placer mines in these 12 districts are estimated to contain an additional 407.8 million ounces of gold, distributed, as shown in table 1.

TABLE 1.—U.S. production and potential production from gold mines by districts

[Millions of troy ounces]

District	Production	Potential
Pacific border (including Alaska).....	110.5	102.3
Southern Rocky Mountain.....	39.3	8.0
Basin-range.....	34.5	31.7
Black Hills.....	30.6	16.1
Northern Rocky Mountain.....	22.3	162.0
Central uplands and plains (Alaska).....	15.0	65.7
Columbia Plateaus.....	6.3	5.1
Seward Peninsula (Alaska).....	5.0	( <sup>1</sup> )
Piedmont.....	1.7	2.8
Wyoming Basin.....	( <sup>2</sup> )	13.4
Colorado Plateau.....	( <sup>2</sup> )	.5
Middle Rocky Mountain.....	( <sup>2</sup> )	.2
Total.....	265.2	407.8

<sup>1</sup> Included with Central uplands and plains.<sup>2</sup> Less than 50,000 troy ounces.

## CENTRAL UPLANDS AND PLAINS DISTRICT

The Central Uplands and Plains district of Alaska lies between the Brooks Range and the Pacific Border district and consists of a great expanse of plains interrupted by the lowlands of several large rivers, separated in the west by occasional upland areas.

Placer deposits, chiefly those of the Fairbanks area, have supplied most of the gold produced in this district and about 25 percent of the State total. The auriferous gravels of the Fairbanks area are largely ancient buried placers and constitute the largest production potential in the area. In places they attain great width and depth. Lode gold occurs in the Fairbanks area, in quartz veins in schist, usually near intrusive granite rock. Narrow veins, 2 inches to 3 feet in width, have been the most productive, but locally ore zones 8 to 12 feet wide have been sufficiently high-grade to mine. These wide ore zones consist of closely spaced auriferous veinlets. Much of the gold is free. Gold also occurs in the sulfides, particularly in arsenopyrite and stibnite.

## SEWARD PENINSULA DISTRICT

The Seward Peninsula district ranks as the third largest gold producing region in Alaska (following the Fairbanks area and the Juneau gold belt). The ancient beach placers near Nome and the stream channels extending inland from the southern shore have been the most productive. Recent stream placers have been of little importance. Residual placers occasionally contain significant concentrations of gold.

There are two ancient auriferous beach lines, one about 1 mile inland and another about 5 miles inland. These deposits, first worked by drift mining, then by hydraulic mining where adequate water was available, are largely exhausted. Recent beach placers, never notably rich, are also largely exhausted. The remaining placer deposits were worked intensively until 1962 when dredging operations in the Nome area ceased.

Production from lode deposits has been minor compared to that from placers but there are many occurrences of primary gold ore. The most prominent deposits are filled veins and fracture zones containing a gangue of quartz and some

sulfides. In some deposits the gold is associated with the sulfides, in others it occurs as free gold in quartz. Small quantities of gold also occur with disseminations of quartz and sulfides throughout wide zones of metamorphic rocks.

#### PACIFIC BORDER DISTRICT

The Pacific Border District, which encompasses the entire western coastal region of North America from Alaska to California has been the premier lode and placer gold-producing region in the nation, accounting for more than 40 percent of the output.

##### *Alaska*

The Alaskan section of the Pacific Border District is a narrow, arcuate, mountainous region extending from southeastern Alaska through the Aleutian Islands. Its southeastern portion contains one of the State's major gold producing areas, the Juneau gold belt, which is marked by occurrences for a length of 100 miles. The Alaska-Juneau and Alaska Treadwell mines, both near Juneau, are the principal properties and together have yielded about 30 percent of Alaska's gold output. These two mines reportedly contain large tonnages of low-grade gold ore. Other significant deposits include those on Chichagof Island, those in the Berners Bay, Ketchikan, and Eagle River areas in southeastern Alaska, and those in the Nabesna, Valdez, and Willow Creek areas to the northwest. Only about 1 percent of the gold produced in Alaska was derived from placer deposits.

The Juneau gold belt is bounded by the diorite batholith core of the Coast Range on the east and by greenstone and chloritic schists on the west. At the Alaska Juneau mine, the rocks of the belt consist of a sequence of metamorphosed sediments (slate, phyllite, quartzite, and schist) interspersed with irregular intrusions of metagabbro. The gold occurs chiefly in numerous irregularly distributed quartz stringers and gash veins in slate and metagabbro. The gold is irregularly distributed in the quartz and has a wide range in particle size. Sulfide minerals are present, but the gold essentially is free.

In the Alaska Treadwell mine, mineralized albite-diorite dikes are intruded along the structure of a black slate. The ore-bearing dikes are thoroughly impregnated with sulfides principally pyrite and in part are shattered and filled by reticulating veins of calcite and quartz which also carry sulfides. The gold is so evenly distributed throughout the dikes that no well-defined ore zones can be distinguished as ore shoots. Often the whole rock mass was mined as ore.

##### *Conterminous United States*

Since 1848, about 102 million ounces of gold have been mined in Washington, Oregon, and California, of which California produced over 90 percent. Lode gold occurs mainly in deep-seated veins associated with Tertiary and Mesozoic granitic intrusives. Vein walls are of many rock types with slate the most common. Quartz is the predominant gangue mineral and veins usually contain a few percent of sulfide minerals. Native gold is the principal ore mineral. It occurs both in microscopic and visible particles, occasionally in masses. Gold occurs both in the sulfides and throughout the quartz.

Over two-thirds of the gold production in the Pacific Border district has come from placers. Stream and river channel, bench, and buried placers all have been important sources.

#### COLUMBIA PLATEAUS DISTRICT

The Columbia Plateaus district includes southeastern Washington, eastern Oregon, and most of southern Idaho. Placer mines have supplied most of the 6 million ounces of gold produced. Lode deposits consist of veins and fracture zones containing gold in a gangue of quartz and sulfides. Most of the area is overlain by thick late Tertiary lavas which are barren of gold and which cover possible gold-containing horizons.

#### BASIN-RANGE DISTRICT

The Basin-Range district includes western Utah, Nevada, southeastern California, southern Arizona, and southwestern New Mexico. Production from gold deposits has been 35 million ounces, mainly from lode mines in Nevada. There are more than 500 mining districts in the area. In most of them gold was produced as a byproduct or a coproduct, but in many districts, notably Goldfield, Nev., Bodie, Calif., and San Francisco, Ariz., gold was the predominant mineral.

The deposits characteristically occur in low-temperature veins which for the most part bottomed at depths of 2,000 feet or less. Gangue minerals are quartz, adularia, calcite, and sulfides of base metals and silver. The host rocks are many different sediments and volcanics. Most deposits have a close spatial relation to intrusive rocks.

Placers are numerous but have yielded only a small gold output. The prevailing arid climate has both limited the formation of placer deposits and hampered attempts to exploit those that do occur. Another factor has been the condition of the gold which most frequently occurs in sulfides as very fine particles which the intermittent streams of the area have not concentrated effectively.

#### COLORADO PLATEAU DISTRICT

The Colorado Plateau district covers eastern Utah, extreme western Colorado, northern Arizona, and northwestern New Mexico. There has been no production from lode mines and only a small output from placers.

#### NORTHERN ROCKY MOUNTAIN DISTRICT

The Northern Rocky Mountain district includes the northeast corner of Washington, most of northern Idaho, and western Montana. Gold deposits have yielded about 22 million ounces since their discovery in the 1850's. Gold occurs in quartz-filled veins and fracture zones, mainly in volcanic and intrusive rocks. The deposits are related to area-wide igneous activity during late Mesozoic or early Tertiary time. A large amount of low-grade gold-bearing material in the form of mineralized dikes is reported to be present.

Significant production was made from high-grade placers, but these resources are now depleted.

#### MIDDLE ROCKY MOUNTAIN DISTRICT

The Middle Rocky Mountain district lies in parts of Montana, Wyoming, Idaho, Utah, and Colorado. Most of the gold has been produced as a byproduct of base-metal and silver ores from the Park City district in Utah and the Jardine district in Montana and from gold horizons in these districts.

The Atlantic City gold district at the southern end of the Wind River uplift in Wyoming has yielded a moderate quantity of gold from quartz veins in Precambrian metamorphic rocks. Productive placer deposits also occur in this district.

#### WYOMING BASIN DISTRICT

The Wyoming Basin district, which covers a large area of southwestern Wyoming and a small part of northwestern Colorado, has recorded only a small gold production, nearly all from placers. Extensive gravels containing low gold values occur in Moffat County, Colo.

#### SOUTHERN ROCKY MOUNTAIN DISTRICT

The Southern Rocky Mountain district lies mainly in Colorado with small extensions in Wyoming and New Mexico. Production has been about 39 million ounces, chiefly from the Cripple Creek area and the San Juan Mountains area, both in Colorado. Gold occurs in low-temperature veins along belts of Tertiary intrusives. Gold occurs in quartz and pyrite and occasionally with silver minerals, but most frequently with varying amounts of lead, zinc, and copper sulfides. A large proportion of the gold occurs as a telluride.

Placer deposits are important. Production has come from bench placers in Park and Summit Counties, Colo., and from stream and river placers draining the Front Range and San Juan Mountains. Large buried placers are probably present although they have been little worked and enormous amounts of very low grade material are in the outwash plains below the gold areas.

#### BLACK HILLS DISTRICT

The Black Hills district is confined to the immediate Black Hills area in western South Dakota. Most of the area's production of 30.6 million ounces of gold has come from replacement deposits in Precambrian schist, as replacements in silicified areas in Paleozoic limestone, and as vein deposits in Tertiary eruptive rocks. Placer deposits in the district also have been productive.

## PIEDMONT DISTRICT

The Piedmont district lies between the Appalachian Mountains and the Atlantic coastal plain in Virginia, North Carolina, South Carolina, Georgia, and Alabama. The gold lodes, which with few exceptions parallel the trend of the country rock, are irregular and contain relatively small lenticular ore shoots. However these are often high grade. The wall rock is a Precambrian or early Paleozoic schist. Visible gold occurs in the quartz and much fine-grained gold is in the pyrite. Gangue minerals are principally quartz, pyrite, arsenopyrite, pyrrhotite, and less commonly, galena, sphalerite, and chalcopyrite.

Considerable gold has been recovered by hydraulic methods from the saprolite overlying the lode deposits and large resources of this material remain. There has been substantial production of placer gold.

## METHOD EMPLOYED IN MAKING ENGINEERING APPRAISALS

*The Cost-level Method*

Appraisal of gold properties based solely on past production was considered inadequate to evaluate the many variable affecting reactivation of long-dormant mines. Consequently, a cost-level method of mine evaluation based on engineering techniques was devised to provide realistic data from which the production potential for each individual mine could be derived. This calculated potential included an optimum annual rate of production, total recoverable metals, years of life, capital requirements, and the estimated cost per troy ounce of gold produced after crediting byproduct metals. Economic and geologic factors, such as return of capital, profit, grade of ore, and geologic characteristics, influenced the production potential.

The evaluation of individual mines was made entirely on the basis of existing data. Sources of the data included: (1) Published reports on the geology of mining districts and individual deposits; (2) production records for individual properties; (3) published reports of past mining and milling procedures; (4) field examinations by Bureau of Mines engineers of the most important gold districts and major mines to determine present condition; (5) examination of unpublished data, including company-confidential reserve estimates, operating reports, and mine maps, made available to Bureau of Mines engineers by producers and former producers; and (6) interviews with present and former mine owners, operators, and engineers; with knowledgeable Federal and State officials, and with manufacturers of mining and milling equipment.

All pertinent data from these sources were used to estimate physical requirements necessary for production at each of the more than 1,300 mines selected for detailed study. An appropriate operating rate was assigned to each, followed by estimation of the capital required for rehabilitation, exploration and development, plant, and operating costs.

*Costs*

The derivation of appropriate costs was of major importance in applying the cost-level method. Capital cost included the expense of rehabilitation, exploration, mine development, and plant; operating cost included mine and mill operating expenses and overhead. Some of the elements considered in developing these costs are explained below.

*Rehabilitation*

The expense of rehabilitating buildings, equipment, and surface and underground openings was estimated on the basis of actual needs, so far as they could be determined. Quantity requirements were estimated and assigned a dollar value at cost rates applicable to the type of rehabilitation.

*Exploration and Development*

Exploration cost was determined by applying appropriate unit cost rates to the estimated footage, or other appropriate unit, for drilling, surface trenching, or underground work. Unit rates were adjusted to accommodate working conditions.

*Plant*

Plant (mill) capital costs were determined by rule-of-thumb methods based on current costs of similar plants, by formula applied to the cost of a similar plant built in previous years, or by distribution of the percentage of cost when equipment cost was known.

The relatively unchanged economy during the period 1958-64 allowed the cost of plants constructed during this period to be used directly without modification for rule-of-thumb estimates based on plant type and tons-per-day of capacity. By this method, the cost of a 500-ton-per-day cyanide mill in 1964 was approximately \$3,000 per ton of daily capacity; one with 1,000 tons-per-day capacity was \$2,850; 2,000 tons-per-day, \$2,400; and 5,000 tons-per-day, \$1,800. Flotation plant cost was estimated at two-thirds of cyanide plant cost.

Current mill cost also was estimated from the known cost of a similar plant constructed in a prior economic period, when such data were available, by the following formula:

$$\text{New plant cost} = \text{Original plant cost} \times \frac{\text{Current construction cost index}}{\text{Prior construction cost index}} \times \frac{\text{New plant daily capacity}}{\text{Original plant daily capacity}} \times 0.7$$

The cost of small plants, 25 to 300 tons-per-day capacity, was estimated at equipment cost multiplied by 3.4.

Used equipment, and its appropriate cost, was assigned in some instances when total estimated resources were not large enough to amortize the purchase price of new equipment during the contemplated life of the mine. In other instances, salvage value of equipment was credited to short-lived properties.

#### Operating Cost

*Lode Mines.*—Operating cost per unit of raw material produced was governed by the type of mine and the circumstances of the ore occurrence. It was assumed that most lode mines would need mills for ore beneficiation; others, usually small operations incapable of amortizing mill cost, were assumed to be shippers of raw ore to custom mills or smelters. Mining and milling costs were estimated on the basis of costs experienced in comparable operations; 10 to 20 percent was added to the sum of mining and milling cost for overhead.

*Placer Mines.*—Operating cost per yard of placer gravel treated at dragline dredges and bucketline dredge mines was estimated from the costs achieved at similar currently operating mines, or costs were escalated from past operations by use of appropriate index.

Reliable operating costs for drift, hydraulic, and stationary plant operations were not available; costs used in the study for these mines were derived by estimating the required labor and supplies. An index of principal mine operating expense, 1950-64, is shown in table 2.

TABLE 2.—Index of principal metal mining expenses, 1950-64

[1957-59=100]

Year	Total	Labor	Supplies	Fuels	Electricity
1950	70	64	78	95	(1)
1951	78	69	88	94	(1)
1952	85	77	96	93	(1)
1953	89	87	88	96	(1)
1954	94	95	89	95	(1)
1955	88	84	91	94	(1)
1956	94	93	95	97	(1)
1957	97	95	99	103	(1)
1958	100	99	100	99	(1)
1959	105	106	102	99	(1)
1960	102	101	102	100	102
1961	101	100	101	101	103
1962	99	96	101	100	103
1963	98	95	102	100	102
1964	97	94	102	97	101

<sup>1</sup> Not available.

Source: U.S. Bureau of Mines Minerals Yearbook.

The range of costs applied in estimating exploration, development, mining, and operating expenses are shown in table 3. Selection of costs within the indicated ranges was made by the appraising engineer on the basis of experience and known local conditions. Bucketline dredge cost is shown in table 4; floating gravel washing plant cost is shown in table 5.

*Other Considerations*

In any such analysis a number of perturbation factors are involved. Their impacts can only be estimated in the light of historical records. Among the economic factors are price adjustments, priority ratings, and monetary inflation. Labor negotiations and labor supply are important considerations. Technological innovation is a powerful factor that cannot be fully anticipated. As mentioned earlier, this study was based on the concept of full utilization of existing (1964) technology.

Because ownership costs could not readily be determined, all properties were assumed to be owned by the mine operators, and royalty or other property payments were excluded from the calculations of cost of operation. Taxes other than Federal were not included.

TABLE 3.—Range of cost applied for exploration, development, mining, and milling items, 1964

Cost item	Unit	Range	
		From	To
Exploration, development, mining:			
Drilling:			
Churn.....	Foot.....	\$3.00	\$10.00
Diamond.....	do.....	6.00	12.00
Rotary.....	do.....	1.00	4.00
Trenching:			
Back-hoe.....	Hour.....	5.00	15.00
Dragline.....	do.....	15.00	40.00
Tractor.....	do.....	15.00	25.00
Surface stripping:			
Truck.....	do.....	5.00	25.00
Shovel.....	do.....	20.00	45.00
Scraper.....	do.....	10.00	25.00
Slusher.....	Cubic yard.....	0.06	0.12
Underground:			
Cross-cut.....	Foot.....	30.00	50.00
Drift.....	do.....	30.00	50.00
Drift, rehabilitation.....	do.....	5.00	50.00
Shaft sinking.....	do.....	100.00	500.00
Shaft, rehabilitation.....	do.....	25.00	400.00
Raising.....	do.....	10.00	30.00
Operating: <sup>1</sup>			
Mining:			
Lode:			
Open pit.....	Short ton milled.....	1.00	5.00
Underground.....	do.....	5.00	25.00
Placer:			
Dragline dredge.....	Cubic yard.....	.22	.45
Bucketline dredge.....	do.....	.11	.22
Drift.....	do.....	9.00	18.00
Hydraulic.....	do.....	.25	.45
Milling:			
Cyanidation.....	Short ton.....	2.00	7.00
Flotation.....	do.....	2.00	6.00
Flotation—Cyanidation.....	do.....	2.50	8.00
Gravel washing plants.....	Cubic yard.....	.10	.25

<sup>1</sup> Milling capacities range between 25 and 25,000 tons per day; custom ore shipments ranged between 10 and 50 tons per day.

TABLE 4.—Bucketline dredge cost, 1964

Annual capacity (million cubic yards)	Bucket size (cubic feet)	Maximum digging depth below water level (feet)	Weight (tons)	Cost per ton, erected	Cost, erected (in millions of dollars)
8.4.....	22	<sup>1</sup> 150	5,000	\$1,300	6.5
10.4.....	27	120	4,000	1,370	5.5
6.9.....	18	100	3,000	1,400	4.2
3.8.....	10	80	2,000	1,600	3.2
3.0.....	8	50	1,300	1,850	2.4
2.3.....	6	40	700	2,000	1.4
1.6.....	4 $\frac{1}{4}$	25	460	2,175	1.0

<sup>1</sup> A bucketline dredge of this digging capacity has not been built; bucket size may be restricted by engineering requirements.

Source: Yuba Manufacturing Co.

TABLE 5.—Floating gravel washing plant cost, 1964

Annual capacity (million cubic yards)	Trommel size	Weight (short tons)	Cost per ton, erected	Cost, erected (in thousands of dollars)
0.6.....	54-inch diameter, by 30 feet.....	76	\$1,380	105
1.5.....	72-inch diameter, by 47 feet.....	207	1,210	248
3.0.....	120-inch diameter, by 63 feet.....	488	1,270	620

Source: Bodinson Manufacturing Co.

U.S. GOLD POTENTIAL—OVERALL APPRAISAL

Historical Production

From 1792 through 1964, the United States produced almost 308.5 million ounces of gold from all sources (table 6). A large share of the gold was produced before accurate statistical collection procedures were in effect; for that reason, many authoritative estimates of early gold production were accepted to arrive at the State and National totals. Historical gold production identifies the major gold producing States and cites significant economic, technologic, and historical events since 1848 that influenced gold production.

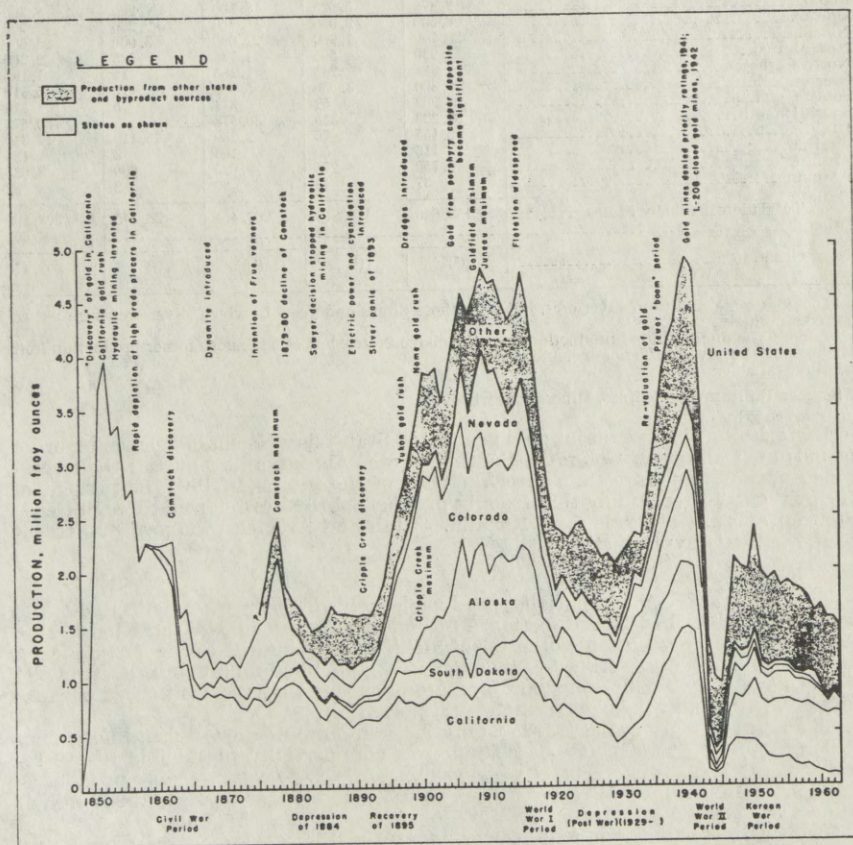


FIGURE 2.—Historical production of gold in the United States and selected major producing States, 1848-1963.

## GOLD MINING INCENTIVES

Almost all of the 308.5 million ounces of gold produced in the United States came from 18 States—Alabama, Alaska, Arizona, California, Colorado, Georgia, Idaho, Montana, Nevada, New Mexico, North Carolina, Oregon, South Carolina, South Dakota, Utah, Virginia, Washington, and Wyoming. Of the total, 99 percent was identifiable by source (State and type of deposit); 88 percent came from gold ores (51 percent from lodes and 37 percent from placers) and 12 percent was a byproduct of other metal mines. In 1964, byproduct production had risen to 37 percent of total output.

TABLE 6.—U.S. gold production from major gold-producing States, 1792-1964

[Thousand troy ounces]

State	Production from gold ores			Byproduct production	Grand total
	Lodes <sup>1</sup>	Placers	Total		
Alabama.....	30	15	45	5	50
Alaska.....	8,800	21,000	29,800	110	29,910
Arizona.....	5,500	500	6,000	7,200	13,200
California.....	32,474	68,293	100,767	5,300	106,067
Colorado.....	36,891	1,790	38,681	2,058	40,739
Georgia.....	266	600	866	5	871
Idaho.....	2,475	5,625	8,100	200	8,300
Montana.....	6,500	9,000	15,500	2,200	17,700
Nevada.....	20,700	1,900	22,600	3,000	25,600
New Mexico.....	1,230	505	1,735	525	2,260
North Carolina.....	938	245	1,183	12	1,195
Oregon.....	2,300	3,500	5,800	10	5,810
South Carolina.....	262	52	314	5	319
South Dakota.....	30,223	350	30,573	-----	30,573
Utah.....	2,155	75	2,230	15,110	17,340
Virginia.....	115	50	165	3	168
Washington.....	2,750	275	3,025	600	3,625
Wyoming.....	37	43	80	2	82
Total identifiable by States.....	153,646	113,818	267,464	36,345	303,809
Other <sup>2</sup> .....	-----	-----	-----	-----	4,661
Grand total.....	(3)	(3)	(3)	(3)	308,470

<sup>1</sup> Includes some gold from silver ores, but only those States and years in which silver ores were not reported separately.

<sup>2</sup> Largely the undistributed production from the above States, but also includes minor production from Michigan, Pennsylvania, Tennessee, and others.

<sup>3</sup> Not available.

Source: U.S. Bureau of Mines, Minerals Yearbook.

Historically, the five major gold producing States have been, in decreasing order of output, California, Colorado, South Dakota, Alaska, and Nevada; their combined output was more than three-quarters of the total. In 1964, 82 percent of the gold output (excluding that from byproduct sources) came from three States—South Dakota, California, and Nevada. Utah and Arizona produced 82 percent of the nation's byproduct gold.

#### Production Potential

This study of U.S. potentially producible gold deposits was made under the conditions prescribed in the section, Methods Employed in Making Engineering Appraisals. It revealed a potential of 407.8 million ounces (table 7), made up of 302.2 million ounces from 814 lode deposits, and 105.6 million ounces from 494 placer deposits. (Small-scale hand-operated deposits were not considered because of lack of data and their very small total potential).

The study further indicated that only 9.4 million ounces or slightly more than 2 percent of the total could be classified as commercially producible (those recoverable at a cost not to exceed \$35 per ounce.) Of the commercially producible gold, 9.1 million ounces (97 percent) are contained in lode deposits and 0.3 million ounces (3 percent) in placers.

The commercially producible deposits are in 13 western States where gold now is being produced, and virtually all are in presently producing properties. Most of these reserves are measured or indicated. Nevada and South Dakota account for 96 percent of the lode reserves; Alaska and California for more than 97 percent of the placer reserves.

TABLE 7.—U.S. gold resources

[Thousand troy ounces]

State	Gold reserves potentially producible at \$35 per ounce or less		Gold reserves potentially producible at more than \$35 per ounce		Total potentially producible gold reserves
	Lode	Placer	Lode	Placer	
Alabama			129	114	
Alaska	28	(1)	35, 168	54, 724	
Arizona	(1)	(1)	2, 086	5, 153	
California	35	(1)	12, 736	12, 904	
Colorado	(1)	(1)	5, 561	14, 278	
Georgia			359	272	
Idaho	(1)	(1)	133, 542	3, 018	
Montana	(1)	(1)	24, 130	1, 365	
Nevada	3, 351	(1)	6, 416	1, 690	
New Mexico	(1)	(1)	1, 610	7, 601	
North Carolina			318	417	
Oregon	(1)	(1)	15, 401	1, 233	
South Carolina			471	22	
South Dakota	5, 400	(1)	10, 356	319	
Utah	(1)	(1)	26	466	
Virginia			378	274	
Washington	(1)		44, 323		
Wyoming		(1)	98	1, 470	
Total, United States	9, 100	290	293, 108	105, 320	407, 818

1 Withheld to avoid disclosing individual company confidential data.

The few inactive commercial deposits are not being exploited for a number of reasons. These include: Unclear titles to property or mineral rights or the involvement of these interests in litigation; zoning regulations and other land-use restrictions which prohibit or restrict mining activity (the Sawyer decision in 1884, prohibiting the dumping of debris in the Sacramento-San Joaquin River systems, is a case in point); situations where gold mining would conflict with a more lucrative or critical use of the property in question; the difficulty of obtaining water rights where hydraulicking may be otherwise feasible; the difficulty sometimes encountered in getting a number of property or claim owners to agree to consolidate their holdings and to offer them to mining interests at a reasonable price; the existence of peculiar environmental factors which would seriously inhibit mine development.

The noncommercial resources—those producible at more than \$35 per ounce—are contained in lode deposits (74 percent) and placer deposits (26 percent) in 13 western States—Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming—and 5 southeastern States—Alabama, Georgia, North Carolina, South Carolina, and Virginia. Almost four-fifths of the total are in deposits in 5 States—Idaho, Alaska, Washington, California and Montana, in decreasing order and 55 percent are in two States—Idaho and Alaska. Virtually all of the noncommercial reserves are in known deposits, and are inferred on the basis of historical production and geological data.

#### CONCLUSIONS

This study has revealed the following significant facts concerning the U.S. gold potential:

(1) The portion of the total gold reserves of the United States producible at \$35 per ounce is relatively small, and virtually all in presently producing mines.

(2) U.S. gold reserves producible at more than \$35 per ounce are almost entirely in the inferred category.

(3) Any significant increase in available gold in the United States is most likely to come from (a) the discovery of new sources, (b) intensive exploration and development of the more promising known mineralized areas, and (c) development of new or improved mining and metallurgical techniques.

(4) Most of the literature on gold deposits was published before 1920.

Dr. HIBBARD. The study conducted by the Bureau of Mines of the Interior Department was an engineering and economic study of 1,300

active and inactive gold mines. These are both lode and placer type mines, but we were not concerned with byproduct gold. This is largely looking at the specifics of existing known gold deposits which were either active or had been active in the past. Of these 1,300 properties, we believe, from economic and engineering estimates, that there is somewhere in the order of magnitude of 400 million ounces of gold in these sources in 18 States. However, based on our economic analysis, and this analysis is the result of looking at known costs of doing certain types of unit procedures, putting together a proposed method of mining and ore treatment at a particular property and developing an estimated cost—which I must emphasize is an estimate and not an accurate cost—from these estimates, we believe that about 9 million ounces of the 400 million, or slightly more than 2 percent, are producible under existing mining and metallurgical technologies and that the other gold would require more productive technology and significantly lower costs than are available today.

Therefore, we believe that any significant increase in available gold in the United States is most likely to come from the discovery of new sources, intensive exploration, and development of more promising new mineralized areas, and the application of the best massive mining and metallurgical techniques that we know of today. The joint Geological Survey-Bureau of Mines heavy metals program is responsive to this.

The Bureau has, currently, work distributed in 10 of its research centers in 15 States. One of the things that we are doing at the moment is looking in Colorado at the Cripple Creek area and doing an economic study of the possibility of open-pit mining, because we believe that this open-pit approach may be successful. We know it has been successful with the porphyry coppers and we believe this kind of approach might be the most economical approach to massive low-grade deposits. So this economic study is underway but the result is not yet available. We will have it very soon, we hope.

In addition, we are following the lead of the Geological Survey, and are preparing ourselves to move into those areas where they think the most promising deposits are, to make economic studies and to determine what new technology is necessary to bring such deposits into production. There are some most promising deposits in both Wyoming and Nevada, and of course, offshore Alaska. We are now outfitting our new marine mining vessel *Virginia City*, and, in cooperation with the Geological Survey, we expect to be off Alaska's coast in the Bering Sea next summer looking for offshore gold.

Meanwhile, we are developing sampling techniques, because with these so-called invisible type deposits, porphyry type deposits, we need better analytical tools than we have had before. We also are developing the mining systems approach to selective sampling, selective mining and optimizing the return with a minimum of cost.

We are also looking at other mining techniques which have been used in the porphyry coppers, such as the possibility of heap leaching. We are looking at all of the technology we know of to optimize the return and to minimize the cost.

We believe that this approach has merit because again, looking at the effects in the South African production and the Carlin discovery, we believe that substantial increases in gold supply are going to come from new discoveries and the application of modern technology.

Senator GRUENING. Dr. Hibbard, in Secretary Moore's statement appears this sentence:

Engineers of the Bureau of Mines were convinced that with modern mining and metallurgical technology, these deposits could be worked economically at present gold prices.

The only place that that appears to be so at the present time is at the Carlin mine in Nevada. Are there any other examples at present?

Dr. HIBBARD. I don't hear you.

Senator GRUENING. Are there any other examples where the present deposits of gold can be worked economically at present gold prices except the one in Nevada?

Dr. HIBBARD. In our studies, in this report, sir, there are a number of locations where the gold deposits can be worked at existing prices.

Senator GRUENING. They can be, but it has not been demonstrated yet, has it?

Dr. HIBBARD. Many of these deposits which are in this report are being worked today, sir.

Senator GRUENING. And the operators can produce gold profitably at the present price of \$35 an ounce?

Dr. HIBBARD. Yes, sir. These deposits in some cases are the ones which are now being worked and are responsible for the 1.8 million ounces which came out last year.

Senator GRUENING. What is the annual production in the Carlin mine, for instance?

Dr. PECORA. In the order of \$7 million a year, as announced by the company; 200,000 ounces was the announced production scheme.

Senator GRUENING. Have you any figures to show the margin of profit? I would assume that with current inflationary trends and rising costs, whatever the margin is, it is likely to be diminished. Have you any idea how much of a profit margin there is now?

Dr. PECORA. At the Carlin mines, sir?

Senator GRUENING. Yes. That is the shining example, isn't it?

Dr. PECORA. Yes, the Carlin mine represents the brightest coin that we have over the last 50 years as far as a gold discovery is concerned. According to a statement by the company officials at the inauguration of the mine and subsequent statements, the average grade or tenor of the ore body which was blocked out for mining was 0.32 ounces of gold per ton. Now, 0.32 ounces of gold per ton is in the order of magnitude of \$10.88—between \$10.50 and \$11 of gold per ton. This is in the same general range as that of our principal gold mine, the Homestake Mine in South Dakota. But because the Carlin mine is operated as an open pit, the costs are much less than that for the deep mining of the Homestake. And there are fewer technical problems and a better chance of systematic treatment in the open pit and in the mill because of the nature of the ore deposit.

Now, other properties which are being explored in Nevada of this same character offer the same opportunity, but because they are too early in the stage of exploration, Mr. Chairman, we cannot make any statements on a public basis, because it is a sensitive problem.

Senator GRUENING. How long would you estimate it will take before we can really have a clear picture of whether this new approach will work and result in a substantial increase in our gold supply enabling our people to mine gold profitably?

This is pretty much in the region of wishful thinking rather than a demonstrated fact, is it not?

Dr. PECORA. No, sir. I would say, sir, that we have much more confidence than the words of the Senator might express, if I may say, because in the first year, we have had several successes as indicated by publications of target areas already released to the industry and which are, in fact, being pursued.

In the original discussion of this program with members of your committee and on the House side, a period of 5 years as a time frame was used to give us an opportunity to make this deep inquiry, both in the exploration side and in the mining systems and refining side. So that within a 5-year time frame, we should be able, sir, either to show that the contribution is a substantial one and has more than hope before us, or to show that this approach cannot help substantially. In other words, I think you gave us a 5-year timespan in which to demonstrate our ideas and techniques unimpeded and with your support in this direction. We are in our first year and already, sir, we report with confidence a number of facts which we have presented to the public through our publications and others that are in the process of publication to show that we are achieving some success in this area.

Now, to project this 5 years from now would put us in an awkward position. We would like to have a few years to try this out with your continued support, because we feel that we can make a contribution on our joint endeavor, the Bureau of Mines and Geological Survey, that we can make a good contribution to the problem of the country in the heavy metals area.

Senator GRUENING. But the test, after a period of years, would be whether these new methods produce enough gold to take care of the demand. Is that not what you are after?

Dr. PECORA. This is our goal. Our goal is to increase the production of all of these heavy metals that are in short supply and we have selected, as you know, somewhere in the area of 10 of these heavy metals. One might say, sir, that in the same contention, one metal from our point of view is no different from another metal insofar as its relationship to the national economic structure is concerned or to balance of payments, that the same problem applies to all metals and all minerals in short supply. But approaching this small group of metals as critical, you have given us the opportunity to put our full forces at work, both within the Government and by utilizing the talent and technique in the universities and in industry to see whether or not there can be a major step forward to improve our domestic position. For this support and endorsement, both of us are very grateful to your committee.

Senator GRUENING. Senator Moss, do you have some questions?

Senator MOSS. Do you have reason to believe that this program will be able to bring back gold production to the level needed to balance out our domestic uses as well as the monetary uses we have for gold?

Dr. PECORA. Senator, this is the goal of the Heavy Metals program, of course. We have reason to believe that we can approach a much better position than we now enjoy in all of these metals by reason of the work that we are doing. I would have to ask the Senator to perhaps defer his question for about 3 years to see what kind of ex-

perience we are having. I would say we have confidence. We have confidence that we can ameliorate our domestic position, but in what quantitative aspect is a matter yet to be ascertained.

I may also add that the Senator has raised a very important point, that of what we call our leadtime. In every mining situation from the actual discovery, as both Senators very well know, there is a leadtime of some years before a discovery can be put into production. In the case of Tintic, Utah, it has taken several years and they are still around the corner from production. In the case of Carlin, which is an ideal case, it took 4 or 5 years. So the work we are doing jointly in our two bureaus will require another 4 or 5 years before the fruits can be enjoyed. But within the 5-year time frame that you have given us, we can set a stage for this kind of production.

Dr. HIBBARD. Certainly the balancing of our domestic use with our production is a desirable goal. I personally believe this ought to be achievable. I think the big question is leadtime.

Senator GRUENING. Now, Dr. Hibbard, you suggest that the subcommittee might find it helpful to visit one or more of your research centers to see the facilities. Which one would you suggest that the subcommittee visit?

Dr. HIBBARD. Well, sir, the most interesting work at the moment is being done in two locations—at Denver, where we are doing the mining systems work and the economic study of the open-pit mining approach; and secondly at Tiburon on San Francisco Bay, where we are outfitting our marine mining vessel and preparing for our Alaskan season next summer. We would certainly welcome the opportunity to greet the subcommittee at either or both of these locations. These locations also correspond to places where the Geological Survey has activities. We could review our program in detail and show you what we are doing and how we are progressing.

Senator GRUENING. I think it might be well if the Department of the Interior, the concerned officials, would lay out a program for such an inspection trip. We are all very much concerned for the success of this new effort and we hope it will do what its proponents think it might do.

Senator Hansen, do you have any questions?

Senator HANSEN. I do not. I apologize for being late, sir.

Senator MOSS. I would like to ask one more question, Mr. Chairman.

The problem presented to your two bureaus here in relation to gold is different from that of other heavy metals, because in those other heavy metals the price fluctuates in accordance with supply and demand and climbs when you are in short supply, whereas the gold price just remains fixed year after year, as it has now for more than 30 years. Does not that present you with a much more difficult problem in increasing production of gold?

Dr. HIBBARD. Of course, cost in relation to price is always an important aspect of production. But again, judging from the success in places like South Africa and the new deposit in Nevada, I personally believe that this is an attainable goal, something which we can give a real good account of ourselves.

Senator MOSS. If our Treasury people could work out with the world financial community some other base for money than gold and free the price of gold from this restriction, it would simplify the problem a great deal, would it not?

Dr. PECORA. I should imagine that there is a point of view that certainly would not receive much applause through the community; that is, the price of gold has not dropped below \$35 an ounce, fortunately.

Senator GRUENING. Were there any areas in my State of Alaska which seem promising for this kind of work?

Dr. PECORA. Yes, indeed, sir. I am sorry, we have not completed it. We are making a chart and at some convenient time with the committee, we should be very happy to appear in executive session and give you some more details of some of our findings and show on this chart a distribution of many areas that are of real interest. Alaska has many of these on our chart. The Western States, of course, and surprisingly, some of our Eastern States, also—

Senator GRUENING. Well, I think all the members of the committee—practically all the western Senators who are cosponsors of this legislation or of Senator McGovern's bill, S. 615—would be interested in knowing what has been found in their States. I know Senator Hansen, from Wyoming, would be interested in what is found out there.

Dr. PECORA. We have a report of progress and because of the sensitive nature of this problem, both of us have to demonstrate tremendous control so that the reports are put out simultaneously for all members of industry and the public to see in order to prevent what might be a privileged situation. We have followed this pattern in the past and it is the best pattern to follow. But the report on northwestern Wyoming deposits which are again, in our phraseology, studied on a one-two basis—the one-two punch—we come out with an exploration evaluation on a geologic and regional basis and then the Bureau of Mines' scientists and engineers will follow this up to see whether or not there can be some additional work done by their techniques. These reports are in progress. We have put out three or four already as you know.

Dr. HIBBARD. I might add we are currently doing work in all of the States represented by the Senators on this subcommittee.

Senator GRUENING. Dr. Pecora, you say in private session. Is this of such a nature that it has to be confidential?

Dr. PECORA. Yes, sir; we are privy to a great deal of confidential information given to both our organizations by the mining companies. For years, we have felt that this a proper relationship to maintain and we need to guard this confidentiality.

For example, we might be able to discuss in some detail some of the information in the exploration work we have done in these several States, but we would not want this information to be public unless it were documented properly and guarded for confidentiality. For this reason—I think the Senator will understand this—in order for us to perform our function on the Government side, we need to have a very close association with the minerals industry, because it's their risk money which goes into the exploration and development. We are merely giving targets, ideas, and suggestions.

Senator GRUENING. What is the procedure for the transition from a discovery of ore containing gold to its mining operations by some private enterprise? How is that effected?

Dr. PECORA. If I may give an example—we have talked about Carlin on a number of occasions. Let me give another example in

Nevada because of the similarity to the Carlin gold occurrence. This is the invisible gold type.

Late last summer, we published a brief circular on the occurrence of an anomaly for certain heavy metals in Cortez, Nev., which is an adjacent county to Eureka County, where Carlin mine is located. It's about 50 miles away. We pointed out certain geological and geochemical relationships and pointed out in this report the geological character which is similar to that in Carlin. A consortium of four different companies, and the Senator will forgive me if I do not mention names, immediately began an exploration program based on their risk money of drilling and trenching. This is in process at the present time. Normally, it would take a couple of years to determine whether there is a block of minable material and at what rate and whether it can be recovered profitably.

After this is a determination to provide a mill and to construct it, and this will take another couple of years. So the procedure is for us to publish immediately, as immediately as we can, and then industry follows up. The chairman of a major company told me recently that he applauds the Government's effort in this joint affair to make available to the minerals industry these clues, targets, suggestions, analyses, because they are willing to come in with risk money to follow up. It saves them, you see, the time it takes to look for these, and it saves them wasted money, because they can put their efforts in selected target areas. This is the greatest contribution on the Government's side that we are making for the private sector. We are saving them time and money, increasing their efficiency and effectiveness. And this is a good relationship to keep established. And I believe the Senator would support this.

Senator GRUENING. These are companies that provide capitalization for development?

Dr. PECORA. Yes.

Senator GRUENING. Wasn't there a law enacted in the last Congress that allows them to deduct larger amounts for exploration?

Dr. PECORA. The exploration bill which passed will be very helpful to companies in their exploration program. In addition, of course, the very small companies, or small individuals who do not have large capital, are aided through our loan program in the Office of Minerals Exploration. We have recently announced several contracts in the order of \$10,000 to \$50,000 matching smaller amounts put up by the small operators. So there is good response on both the small miner's side and the major companies, yes, sir.

Senator GRUENING. Thank you very much, Dr. Hibbard. Dr. Pecora.

Senator GRUENING. We have the General Counsel of the Department of the Treasury, Mr. Fred B. Smith. We have your statement, Mr. Smith. We will be very happy to have you read it. The view that the Treasury Department has presented us through the years has been of great concern to us. We do not always agree with it but we listen carefully in the hope that a new dawn will occur. We follow the language very closely, just as the administration is listening to signals from Asia to see whether any modification in any language offers hope of a changed policy. So we would like to have you read your statement.

STATEMENT OF FRED B. SMITH, GENERAL COUNSEL, DEPARTMENT OF THE TREASURY; ACCOMPANIED BY MRS. RUTH PICKNELL, LEGAL ADVISER OF OFFICE OF DOMESTIC GOLD AND SILVER OPERATIONS

Mr. SMITH. Thank you very much, Mr. Chairman. I have with me Mrs. Ruth Picknell, who is the Legal Adviser for Treasury's Office of Domestic Gold and Silver Operations.

Senator GRUENING. Very happy to have you, Mrs. Picknell.

Mr. SMITH. Mr. Chairman and members of the subcommittee, I appreciate this opportunity to appear before you today and to set forth the views of the Treasury Department on S. 49, a bill intended to give new vigor to the American gold mining industry.

The bill would establish a program, to be administered by the Secretary of the Interior, of gold differential payments to domestic gold producers. The payments would be based on differences in the costs of gold production in the last quarter of 1939, and current costs, on an individual gold mine basis.

Last May I appeared before this subcommittee in opposition to S. 2652 and S. 1377, very similar bills, providing for differential payments to gold mining industries. The reasons which I stated for the Treasury's opposition to these bills apply equally to S. 49. The Treasury Department has been and continues to be opposed to the enactment of bills providing for subsidy payments to gold miners because we believe they would lead to uncertainty and speculation with regard to the official price for gold. As I stated last May, we feel that such payments would be interpreted by foreign countries as a recognition by the United States of a higher value for gold than the official rate of \$35 an ounce. The consequences would undoubtedly be to stimulate private speculative demands for gold. Overall, the result would be inimical to confidence in the dollar and would tend to aggravate our gold outflow problem. Speculation as to the price of gold could result in a very short while in the loss from monetary channels into private hoards of more gold than the limited amount of increased production that could be achieved through a program of gold subsidy payments to miners.

Other countries can and do have gold subsidy programs and, as the chairman has pointed out, these do not appear to have any significant impact on international monetary stability. However, most of these programs were initiated many years ago and the markets became adjusted to them under different circumstances in the past. These countries, moreover, do not have currencies that are widely used in international transactions, and do not maintain the convertibility of their currencies into gold at a fixed price, as does the United States. Thus, the decisions of these countries to pay subsidies for their new gold production could not under present circumstances have any significant impact upon the monetary system of the free world, nor would they be likely to result in any lessening of confidence in the currencies of such countries.

On the other hand, the U.S. dollar and its stable relationship to gold constitute the foundation for the world's international monetary system. Dollars as well as gold are held in substantial amounts in the monetary reserves of many countries. For this reason monetary authorities of the rest of the world, as well as the financial markets,

would be concerned over any developments which may occur which might appear to reflect upon this relationship between dollars and gold—especially any change in the official attitudes of the United States. As an example of the importance which the rest of the free world attaches to the attitude of the U.S. Treasury toward the price of gold, let me cite that following recent statements by representatives of a major foreign power that resulted in some disturbance in the international gold markets, the U.S. Treasury found it necessary to issue a statement to the effect that any suggestion for raising the price of gold was not acceptable to the United States. This indicates the sensitivity of the market and the type of reaction which might result if the Congress were to take favorable action on gold subsidy bills which suggested a higher value for gold than the present \$35 price.

While this and previous administrations going back many years have felt compelled to oppose gold subsidy bills for these reasons, we do not have in any sense a negative attitude toward the problems of gold miners and we do strongly support appropriate efforts to encourage increased gold production. Last year mention was made of the new programs being undertaken by the Department of the Interior which held out real hopes that, through new techniques of exploration and development assisted by the Federal Government, significant expansion of the U.S. gold production on a basis that is economic at the \$35 price is feasible. Today you have heard from the Assistant Secretary of the Interior and representatives of the Department's Bureau of Mines and Geological Survey as to the results to date of this program. It appears to me that hopes have already been partially justified, significant discoveries have already been made, and the prospects for the future look promising. We believe that programs of this sort represent the best prospect for revitalizing the gold mining industry of the United States. The interesting thing about the Interior Department program, it seems to me, is that it holds out hope of further discoveries in as many as 22 States, including almost all the States where gold has traditionally been mined. Results of the Interior Department program to date suggest that, through new discoveries and new methods of extraction and processing, gold can be produced in larger quantities in the United States economically at the \$35 price.

With the support of the Interior Department program, these results can be achieved without our assuming the risks to our own monetary system and to that of the free world, which the Treasury Department believes would be involved in any decision by the United States to pay subsidies for its new gold production.

Thank you very much.

Senator GRUENING. Thank you very much. I want to congratulate the Treasury Department on the more moderate tone of its presentation this year than in previous years.

I notice, for instance, you say they would be likely to result in a lessening of confidence in the currency of this country. In the past, panic, disaster, and chaos were prophesied if this legislation were enacted. I am glad you have seceded from that extreme and flamboyant position. Of course, those of us on the Hill here do not share that extreme apprehension as to what would happen to the dollar. We think that any legislation which does not affect the price of gold

but merely assists our American gold miners to overcome their great government-imposed handicaps should not cause panic in international circles. I notice and I am gratified to see that this is now stated as a possibility rather than as a dire certainty. To that extent, I think we are making progress.

I do not quite share the optimism that the programs outlined today will result in enough production of gold to take care of our needs. So we will continue to press for this type of legislation while sharing in the hope that prophecies of the Interior Department will be fulfilled.

Mr. SMITH. May I be allowed to make one comment, Senator Gruening?

Senator GRUENING. Mr. French calls my attention to the fact that one of your predecessors, the former Under Secretary, stated that even holding a domestic gold production incentives hearing was perilous. We waited with bated breath, happily, the panic did not develop. We are glad it did not and we did not think it would.

Mr. SMITH. May I make one comment?

Senator GRUENING. Yes.

Mr. SMITH. I would just like to say this: I am sure the Senator is well aware that we are still struggling with our balance-of-payments problem. We still have a problem of protecting our gold reserves. The war in Vietnam and the costs of the war aggravate and make more difficult the problem of moving toward substantial balance in our international payments. Of course, the loss of dollars when we have a deficit in our international payments, those dollars are a threat to our gold reserves. While I may not have used the same words that some of my predecessors have used, I think I should make clear that the Treasury is still as deeply concerned about this type of proposed legislation as we have always been, and we are as vigorously opposed to these bills, as we have been in the past. I just wanted to make that comment so that you would not take any impression to the contrary from the words that I used in this statement.

Senator GRUENING. Well, we very definitely get the impression that your statements are much more moderate. They point to these possibilities as risks which you feel should not be taken. But you do not state, as Treasury has stated before in previous hearings, that our proposals would result in utter disaster and that calamity would immediately descend on the Nation. This is a view, of course, which is always in the realm of speculation and prophesy. I do not think anybody, even in the Treasury Department, can say with certainty what results will ensue.

There are some fairly enlightened economists up here on the Hill who do not share Treasury's alarm.

We respect the Treasury Department's view. It has a right to that view, a right to present it. Those of us who have followed this subject for a good many years—this has been going on now for a great many years—do not share your apprehension. Now there is this other rather slender hope that these new methods of exploration might help out the situation. This possibility makes for a little more hopeful outlook.

But we have been disappointed in the past that when we have come up with proposed legislation, the Treasury Department has indicated its opposition to our ideas, but it has never volunteered any alternative methods. We think the plight in which the gold mining

industry finds itself is the one exceptional case in our free enterprise economy. A single industry is selected for a type of discrimination that is contrary to all other principles. We understand the reason for Treasury's concern with gold in its relationship to the monetary system. But we think somehow a method should be found to avoid this discrimination.

We would hope that the ingenuity of the Treasury Department, which is concerned not only with the monetary standard but is also concerned with the success of our economy and any important segment thereof, would have somehow come up with an alternative method. There ought to be some way other than these perhaps doubtful procedures of the Interior Department—I say doubtful because they tell us it is going to take 5 years to find out. Interior's program is still in the very early exploratory stage. So far, only one particular operation is indicating success along those lines.

It is our earnest hope that the ingenuity of the Treasury Department would be equal to coming up with some alternative to our proposed incentives for domestic production only. We do not consider our proposal as the only one that is possible.

The subcommittee would very much appreciate it if, when you go back to the Treasury Department, you would review this whole situation in view of the balance-of-payments situation, our diminishing supply of gold, the increasing need for gold, and the equities of our American gold producers, and see whether some modification might not be worked out. That seems wholly reasonable.

Now, in the past, we have asked this again and again and again, and we have never received any affirmative or constructive suggestion.

Subsidy is not new. We have various forms of subsidy in our economy. We subsidize shipbuilding to equalize the cost of shipbuilding in this country as against foreign countries. We also subsidize some other minerals, and of course foodstuffs and fibers. There are a number of possible ways of meeting this situation.

Again I urge that the Treasury Department give our domestic gold mining situation some serious thought. Let us see whether some combination of the exploratory performances of the Interior Department, which, as I say, will not show any convincing results for some time, and our incentive approach might not be achieved.

None of our allies in our great war imposed on their gold producers a shutdown order such as L-208. This order put gold mining in America out of business to an extent from which it has never recovered.

We think such treatment of a domestic American industry is unjust and unwarranted. The order was imposed at a time we were at war and it was assumed that these gold miners, if they ceased to mine gold, would mine strategic minerals. But it has not worked out that way.

Well, thank you very much, Mr. Smith.

Mr. SMITH. I will take back to Secretary Fowler a report of what you have just said.

Senator GRUENING. I feel very deeply and very seriously that, although you have pointed out that your view has not changed, there is at least some slight modification of your approach. I think that is very gratifying. I have discussed the matter of domestic incentive with some international bankers who are presumably

knowledgeable. They do not share the extreme alarm of the Treasury Department. Yet Treasury and the bankers are in the same field. So the time may come, and I hope it is not too far distant, when you may further modify your position and give our proposals a try.

Mr. SMITH. Thank you.

Senator GRUENING. We have further witnesses.

Mr. Lawrence C. McQuade, Acting Assistant Secretary for Domestic and International Business, Department of Commerce.

I am sorry to have kept you waiting. I know you have listened to this testimony with some interest.

**STATEMENT OF HON. LAWRENCE C. McQUADE, ACTING ASSISTANT SECRETARY FOR DOMESTIC AND INTERNATIONAL BUSINESS, DEPARTMENT OF COMMERCE**

Mr. McQUADE. I appreciate the opportunity afforded by this committee to give the views of the Department of Commerce on S. 49. The bill would establish a program to compensate domestic producers of gold for the difference in costs of production during the fourth quarter of 1939 and current costs.

We in the Department of Commerce understand and share the concern of the supporters of this bill for the well-being of the gold mining industry. The industry faces both a fixed selling price and rising costs of operation. Since the peak year of U.S. domestic gold production in 1940, the price level of the goods and services which comprise our gross national product has risen, overall, about one and one-half times. The price of gold, however, has remained fixed at \$35 per troy ounce.

Recognizing these facts, we have had, since 1958, a statute which provides for subsidies to exploration for gold but not its production. Under this law, the Government has offered to meet 50 percent of the cost of exploring for gold. In 1966 seven contracts were executed for exploration compared with four the previous year.

As this committee is well aware, gold is a monetary commodity and cannot be regarded as if it were merely another commodity.

While the prices of other products are generally determined by the free interplay of market forces, the price of gold is, for all practical purposes, established as a part of Government monetary policy. In 1934, for example, when other prices were sharply declining, the United States changed the defined gold parity of the dollar from \$20.67 per ounce to \$35 per ounce—a price increase of nearly 70 percent. As a result of the increase in the official price of gold and also of the substantial reduction of other prices, the rate of U.S. gold output between 1933 and 1940 doubled.

No doubt the fact that the United States maintains the official price of gold at \$35 an ounce has led other countries to introduce various types of gold production subsidies. However, they are in a different situation than the United States. Their currencies are not generally held by other countries as official reserve assets, whereas the defined gold parity of the U.S. dollar represents a cornerstone of the international monetary system—based on fixed exchange rates and the gold convertibility of the U.S. dollar, as the world's principal reserve currency, at the fixed price of \$35 per ounce.

The Department of the Treasury has the primary responsibility for gold monetary policy. The Department of Commerce has a primary responsibility for expansion of exports. If the United States were to introduce gold production subsidies, other countries might well interpret this action as an indication that the United States no longer regards the defined gold parity of the dollar as adequate. By creating what would amount to a dual pricing system in the United States for gold, we run a risk that world confidence in the gold convertibility of the dollar at the fixed price of \$35 an ounce would weaken at a time when our efforts to balance our international payments position are directed toward reinforcing that confidence, and avoiding a run on the dollar by foreign holders of billions of dollars worth of U.S. assets.

The Department of Commerce, aware of the importance of a sound dollar to our responsibilities with respect to U.S. export expansion, opposes the adoption of the proposed legislation now under consideration by this committee. We must avoid actions that involve a risk of bringing about a contraction of international trade and payments. It would have adverse effects on continued world economic growth and stability, upon which American economic interests rely to a significant degree.

The Department is concerned about the adequacy of the supply of gold for industrial uses. Total industrial uses represent more than three times our domestic production, so that at this time gold must be regularly withdrawn from monetary use to cover these needs. About 65 percent of this industrial use is for jewelry; about 7 percent for dentistry; and 28 percent for other uses, largely plating of electronic components, but also including military and space equipment. In 1965, these industrial uses increased by 10 percent over 1964.

U.S. gold production is less than 4 percent of world production so that even if U.S. production could be doubled or even tripled by subsidy arrangements, this would make only a marginal contribution to world gold stocks. Thus, the increment in gold supply would be small by the most important comparison: the magnitude of the Treasury gold stock, or, more importantly, the losses of gold which might result if foreign governments should exchange dollar holdings for gold because of their lack of confidence in our willingness to maintain the present parity.

For these reasons the Department of Commerce, while sympathetic to the problems of the gold mining industry, cannot support the subsidy programs proposed in S. 49.

Senator GRUENING. Mr. McQuade has the Department of Commerce given thought to any alternative legislation which might relieve the plight of our American gold miners?

Mr. McQUADE. Senator Gruening, I think we are impressed by the program which was outlined by Assistant Secretary Moore, in which he makes the point—I guess I am quoting from Dr. Hibbard—that any significant increase in available gold in the United States is most likely to come from: (a) the discovery of new sources; (b) intensive exploration and development of more promising known mineralized areas; and (c) development of new or improved mining or metallurgical techniques. My impression is that it is possible to help the gold mining industry by means other than a subsidy and thereby avoid the difficulty posed by the monetary question.

Senator GRUENING. You indicate, which of course we know to be a fact, that because the demand of private industry for gold is so much greater than the supply—three times as much—gold is being regularly withdrawn from monetary use to meet these industrial demands. Is that not likely to cause the same kind of alarm in monetary circles?

Mr. McQUADE. Well, it is a question of judgment, Senator. I would think—we have something like \$26 billion of potential claims upon us by foreigners and their confidence in the dollar and the integrity of the \$35 an ounce price, if it were shaken, could potentially cause that big a run. That is probably more theoretical than real. I would think on the whole that that is less troublesome than the possibility of confidence failing because of withdrawals for non-monetary use.

Senator GRUENING. You would say that your fears are not necessarily absolute. Do you say we must avoid actions that involve a risk in upsetting the system of international monetary payments. Do you think there is a clear and present danger, or do you think the possibility is just something to speculate about?

Mr. McQUADE. Well, nobody knows what will happen until we face the reality.

Senator GRUENING. I am glad to hear you say that because, in the past, we have been confronted with certainties as to dire results.

I notice also in your statement, and as in the past the other Departments have reflected the views of the Treasury Department, there is a certain moderation in the warnings you give.

We are all hopeful that this program of the Interior Department will work. Personally, I have no confidence that it will be sufficient for the task that has to be done. It is highly problematical; it is extremely marginal, at best. Probably, as time goes on, costs will continue to rise.

An operation that seems profitable, as does the one in Carlin in 1967, may not be so in 1970 because the costs of production and materials rise. When that occurs, we will be confronted again with this problem of trying to find an adequate solution for this unique discrimination against one industry.

Again, I would like to say to you as representative of the Department of Commerce, as I did to the Treasury Department, that I wish you would explore alternatives. It would be fine if this program of the Interior Department works. But I do not think it is going to be adequate. I think it is going to take us 4 or 5 years to find out. In the meanwhile, our supply of gold is diminishing, our balance of payments situation is not improving materially. So I wish you would take that message back and get your economists to devote a little time to it.

Thank you very much.

Mr. McQUADE. Thank you very much, Senator.

Senator GRUENING. The Reverend Edward Keller, Notre Dame University, consultant to the Gold Committee, American Mining Congress, will be our next witness.

We are glad to have you here, Reverend Father Keller. I think these hearings require benefit of clergy.

**STATEMENT OF REV. EDWARD KELLER, NOTRE DAME UNIVERSITY,  
CONSULTANT TO THE GOLD COMMITTEE, AMERICAN MINING  
CONGRESS**

Father KELLER. It is very unusual for clergy to be before the Congress to testify before someone so erudite. A clergyman's thoughts are usually considered erudite on the subject of passing the box to get money from the parishioners.

My name is Edward A. Keller, C.S.C. I am an associate professor of economics at the University of Notre Dame, Notre Dame, Ind. I am testifying as an economic consultant of the Gold Committee of the American Mining Congress.

I have read with interest the hearing before your subcommittee of May 4, 1966, on "Gold Production Incentives." Since that hearing the gold problem has increased. The January 1967 Monthly Economic Letter of the First National City Bank of New York in its "Annual Gold Review" notes:

For the first time in modern monetary history, all of the newly mined gold is going into private hands. \* \* \* For 1966, the private gold absorption may be estimated at \$1.5 billion. Official monetary gold stocks, as reported by governments and Central Banks, have actually shown a small decline. \* \* \* The avalanche of private demand for gold has left little, if any, gold for government and Central Banks to add to monetary reserves. In 1965, the record was already bad since of the \$2 billion of new gold supplies, only 250 million was added to world official stocks—the smallest such addition since 1933.

Year after year and practically month after month the gold stock of the United States continues to decline until it is now down to the level of 1938. The United States now holds only about one-third of the world official gold stock compared to two-thirds in 1949. In the face of the persistent deficit in our balance of international payments, the U.S. gold problem looms large, so large that many solutions have been made by serious monetary scholars. I will point out only three merely for the purpose of highlighting the gravity of our gold problem: (1) Completely demonetize gold by removing the 25 percent gold reserve back of Federal Reserve notes; (2) raise the price of gold to \$70 or \$75 an ounce; (3) to create "instant" or "paper" gold by transforming the International Monetary Fund into an international bank which could extend bank credit to nations with a deficit problem. This is Professor Triff's (Yale) plan. This new international money would have to be linked with gold because gold is still the ultimate international reserve.

These various proposals are being studied because of the need for greater international liquidity due to the expansion of international trade in the free world, international inflation and the decline in gold production and the private hoarding of new gold.

The testimony before your committee, Mr. Chairman, on May 4, of last year brought out the fact that the domestic demand for gold by industry and the arts is about three times as large as total domestic production with gold consumption amounting to 6 million ounces a year while estimated domestic gold production in 1966 amounted only to 1.8 million ounces. This difference between domestic demand and supply represents a significant drain upon our monetary gold stocks. During the first 9 months of 1966 the Treasury released \$105 million for domestic consumption and in 1965 \$118 million worth of gold for this particular purpose.

There is every indication that demand for gold for industry and arts—including gold for space and defense needs—will continue to increase in the years ahead and domestic production will continue to decline, resulting in a larger and larger drain upon our monetary stocks, thus obviously making worse an already extremely serious gold problem.

As an economist the answer to me seems obvious: Try to bring supply in line with demand to relieve the Treasury of this continuing drain upon monetary stocks of gold. With the price of gold fixed at \$35 an ounce and cost of production having increased about 300 percent since 1939, the most reasonable remedy is to grant sufficient incentives by way of subsidies to revitalize the American gold mining industry.

I, along with most economists in the United States, would oppose depreciating the American dollar by raising the price of gold because this would cause economic chaos in the free world and could even result in a severe recession among the free nations.

The gold subsidy bill I would recommend should include the following four provisions:

(1) A modest subsidy for mines now in operation for the purpose of keeping them in operation and to increase their production.

(2) Provide a realistic subsidy for dormant mines. A realistic subsidy would be one large enough to induce the nonoperating mines to resume operations and a guaranteed subsidy for a long enough period, a minimum of 5 years, to warrant a bank lending money for the purpose of resumption of operations.

(3) The bill should include an escalator clause that would automatically increase the subsidy with an increase in the cost of production.

(4) There should be stated very clearly a provision in the bill that the subsidy would have no relationship to the official price of gold, \$35.

This provision would require sale of the newly mined gold to the Treasury for \$35 an ounce but determination and payment of the subsidy should be made by a Gold Mines Assistance Commission created specifically to fulfill the provisions of the proposed bill.

The hearings before your subcommittee, Mr. Chairman, last May covered most of the provisions I have mentioned with more than adequate statistics and argument for the necessity of a gold production incentives bill. It would be superfluous for me to repeat the testimony of the many experts who testified or submitted statements. I will address the remainder of my remarks primarily to the objections raised by the Treasury against any gold subsidy bill.

Mr. Fred B. Smith, General Counsel of the Treasury, who testified here this morning, in his letter of May 3, 1966, to the Honorable Henry M. Jackson states: "The Treasury Department is opposed to enactment of the proposed legislation because this could lead to uncertainty and speculation with regard to future gold prices. Payments to gold miners designed to take into account increases in costs of production since 1939 could be interpreted to imply the recognition by the United States of prices for gold which are higher than the official rate of \$35 per ounce, and as a first step in the direction of revising this official price. This could undermine confidence in the stability of the Treasury price for gold in international transactions, tending to shake confidence in the dollar and to aggravate our gold outflow problem."

The statement in the proposed legislation to the effect that a change in the monetary price of gold is not intended would not in our opinion materially reduce the serious danger to the dollar which could result from such payments to gold producers. The monetary system of the entire free world is hinged to the interconvertibility which we maintain between gold and the dollar at that price. Thus, it is of vital importance for the stability of the dollar—and for the free world economic and political system to which this stability contributes—then there be no doubt about our intention to maintain a \$35 price. If any such doubts should arise, the role of the dollar as an international reserve and means of payment could well be shaken to the point of causing a severe reaction on international trade.

In my estimation the fears expressed by the Treasury are exaggerated. When the gold coverage of deposits of the Federal Reserve banks was removed in 1964 there was no "run on the dollar," no rush to convert dollars held by the central banks of Europe into gold. This action, backed by the Treasury, could have been interpreted as a step in the direction of demonetizing gold and could have been interpreted as a move by the U.S. Government toward devaluation of the dollar.

Of course, the fears of the presidents of the central banks were allayed by public and private statements of our Government that the drastic action of repealing the legal 25 percent gold cover of loans of the Federal Reserve banks was not a preparatory step toward depreciation of the dollar. The officials of the central banks of Europe are not stupid and knew this drastic step was taken to protect the dollar against devaluation by freeing a significant amount of gold to meet our international obligations. They knew and know that devaluation of the dollar could bring the undesirable results stated by Mr. Fred B. Smith in his letter to Senator Jackson.

This subsidization of gold production is a much less drastic and dramatic remedy than the 1964 partial demonetization of gold and actually is a strong measure to protect the dollar against depreciation because it would plug an important leakage of gold from U.S. gold stocks. The subsidization of domestic gold production is hedged by language that clearly indicates and legally guarantees that the subsidy has no relationship to the \$35 official price of gold. If the central banks of the free world did not panic in 1964 they certainly would not precipitate a monetary crisis by a law that merely attempts to revitalize the gold mining industry in the United States to strengthen the American dollar.

In my estimation the central banks of the free world are more concerned about our fiscal policy of running budget deficits year after year which have caused the current domestic inflation which has made worse the gold problem by affecting adversely our exports. The refusal of our Federal Government to face up to the problem of inflation by taking appropriate fiscal action causes deep concern in European banking circles because Europe is faced with the same problem. Because of their experience with serious inflations in the past, Europeans have a "built-in" inflation psychosis while we in the United States have just the opposite—a built-in fear of deflation because of the deflation of the 1930's.

I'm convinced that the private absorption of practically all of newly mined gold in the world—outside the U.S.S.R., and China and satellite countries—is not speculation against an increase in the price

of gold but simple hoarding as a hedge against inflation. This is proved by the fact that the most significant hoarding has taken place in France where \$3 to \$4 billion of gold are held in "private savings." The typical Frenchman has traditionally hoarded gold as a hedge against inflation even under the free gold standard.

My opinion is apparently also held by the New York First National City Bank as indicated by the following quotation from the bank's current monthly economic letter, cited above: Given the tightness and the high cost of money throughout much of the world, the persistence and the sheer amount of gold buying are extraordinary. In the judgment of the Bank for International Settlements—

the indications are that most of this component of private gold off take over the years is accounted for by firmly held savings in gold, rather than by large blocks of speculative holdings awaiting a shorter-term capital gain.

If my judgment is correct there will be a "dehoarding" of gold only when inflation here and in Europe is brought under control. In the meanwhile, with little or no newly mined world gold going into world monetary stocks, the problem of international liquidity increases.

France has been the one European country which has converted large dollar holdings into gold, \$2.9 billion since 1962, compared to \$3.4 billion for all of Western Europe in the same span of time. Since France has removed all restrictions on gold, in effect going back on a gold standard, gold hoarding in France should increase thereby putting pressure on French officials to convert still more dollars into gold. Apparently General de Gaulle is challenging the American dollar. In the light of this apparent challenge, the Treasury, instead of opposing any domestic gold subsidy act which would partially relieve the pressure on the dollar, should do something about France.

I would suggest one action our Government could take and that is to recommend the establishment of a Central Bank for the EEC—Common Market.

This proposed EEC Central Bank might seem to be merely a limited Triffin plan, mentioned above, but its foundations can be found in the Treaty of Rome which on May 25, 1957, legally established the European Economic Community. In article 3(g) the treaty provided for:

The application of procedures which shall make it possible to co-ordinate the economic policies of Member States and to remedy disequilibria in their balance of payments.

The treaty in chapter 2 titled "Balance of Payments" in article 104 states:

Each Member State shall pursue the economic policy necessary to ensure the equilibrium of its overall balance of payments and to maintain confidence in its currency, while ensuring a high level of employment and the stability of the level of prices—

It also states in article 105:

1. In order to facilitate the attainment of the objectives stated in Article 104, Member States shall co-ordinate their economic policies. They shall for this purpose institute a collaboration between the competent services of their administrative departments and between their Central Banks.

2. In order to promote the co-ordination of the policies of the Member States in monetary matters to the full extent necessary for the functioning of the Common Market, a Monetary Committee with consultative status shall hereby be established . . .

Article 3(j) provides for:

The establishment of a European Investment Bank intended to facilitate the economic expansion of the Community through the creation of new resources.

Article 129 expands upon 3(j) by stating:

The members of the European Investment Bank shall be the Member States.

And Article 130 reads:

The task of the European Investment Bank shall be to contribute to the balanced and smooth development of the Common Market in the interest of the Community. For this purpose, the Bank shall by granting loans and guarantees on a non-profit making basis facilitate the financing of the following projects in all sectors of the economy.

No. 1, I shall not submit the rest of this lengthy document. It is not pertinent to the testimony.

Certainly these provisions of the treaty could be expanded to establish a true EEC Central Bank, retaining the existing six Central Banks as Federal Reserve banks and the Monetary Committee could be transformed into a Board of Governors with each of the now six Central Banks appointing a member of this Board and by majority vote elect a Chairman of the Board of Governors as the seventh member.

I have devoted so much space to this proposed Common Market Central Bank because most of the agitation for increased international liquidity comes from Europe as evidenced by the recent meeting of the IMF and the presidents of Europe's Central Banks for the purpose of devising a new international money. The establishment of an EEC Central Bank and possibly an EFTA Central Bank could provide the necessary liquidity and at the same time take most of the pressure off the dollar and much of the substance out of the argument of the Treasury against any gold subsidy bill.

The Treasury argues that any gold subsidy bill would create a two-price system for gold, an international price of \$35 an ounce and a domestic price higher than \$35 by the amount of the sliding-scale subsidy. This is not true; rather, it is merely a subsidy added to the mint price of \$35 for the purpose of revitalizing the American gold mining industry to provide domestically produced gold for domestic consumption in industry and the arts.

Since each dormant mine, depending on its present condition, would require most likely a different subsidy one would be forced, if one used the logic of the Treasury, to call it a multiprice system, ranged from a few dollars above \$35 for the few operating mines, and up to \$100 or more an ounce for some dormant mines. That the central banks of the free world would consider the subsidy plan to be a two-price system has been answered, in my estimation, above. The nations of the free world have had experience with the use of Government subsidies to stimulate production, primarily in agriculture. These subsidies are not interpreted as and are not called a two-price system and are understood to be necessary to solve a domestic shortage.

If the nations of the free world have not "panicked" under present-day conditions of private absorption of new gold and lack of liquidity, there is no proof offered by the Treasury, except the opinion of Mr. Smith and that of the Department of Commerce also, that subsidization of domestic gold production is an inevitable step toward devaluation of the dollar.

To assert dogmatically, as Treasury does, that the gold subsidy would automatically be interpreted by officials of the central banks of the free world as a first step toward increasing the price of gold is neither a compliment to their intelligence nor to their trust in the pledge of our Government that the subsidization of domestic gold production to meet gold needs will not be cause for our increasing the price of gold, particularly when this pledge is guaranteed in law.

Senator GRUENING. Thank you very much, Father Keller, for an excellent statement.

Of course, you are aware of the fact that we have made it crystal clear time and time again that there is no attempt in our incentive legislation to raise the price of gold. It has been stated specifically. You have pointed out the fantastic nature and quality of the Treasury Department's apprehensions. Your statement is quite specific. Your suggestions differ in detail from our bill. I take it you would approve any legislation?

Father KELLER. Mr. Chairman, I approve of any legislation that would give relief to our gold mining industry at the moment.

I think there is much misunderstanding, from what I have heard here this morning, of the impact of such a subsidy upon gold mining. It would have little or no appreciable effect. What I am backing, at least, could be that we try somehow to bridge this gap between domestic gold consumption and domestic gold production. This is the only purpose of the bill. I think it would be spelled out in your bill and I think in Senator McGovern's bill, it is so spelled out. It is not an attempt to add to the stocks of world gold. I doubt whether we have deposits of sufficient magnitude to make it possible to add significantly to the world gold stock.

Senator GRUENING. Well, the underlying purposes of this legislation are two-fold: First of all, to relieve the plight of the gold mining industry, the operators and the miners who have been practically put out of business under a unique and arbitrary procedure followed by our Government and not followed in any other country, and second, it is to increase our supply of gold. We realize that this may not do all that is desired or needed, but it would certainly be a step in the right direction.

As you listen to the testimony, you will note the chairman's comments that while the same old objections are raised by the Treasury Department, which is more or less slavishly followed by the other departments, there now is a great degree of moderation in their tone. They are not quite as positive as witnesses have been in previous years. They went so far as to say that the mere discussion of this problem imperiled the dollar, which, of course, was very silly, because it did nothing of the kind. But that consistently has been their attitude. I am hopeful that if we keep on, then when the situation develops that these other methods of exploration will not suffice and that our supply of gold has dwindled further and further and further, perhaps some steps like this will be taken.

Your testimony, Father Keller, has been very helpful. You have really expressed the views that the committee has had and your additional contribution about the European Community is very helpful and constructive.

Father KELLER. Thank you. I think you understand why I introduce that concept, because the attempt to establish an inter-

national bank in effect creates a new type of international money—it is a little bit unrealistic to assume that this could happen and would happen. My plan, I think, is a first vital step in that direction, where the European Economic Commission and possibly nations associated with EFTA could create for themselves sufficient liquidity, particularly put the pressure on France to take some of their reserves out of gold and dollars and pool these reserves in a common reserve which could be the basis for which, at least in the EEC, they could issue a type of common market money which would give them adequate liquidity.

Senator GRUENING. Thank you very much, Father Keller.

There are additional statements to the record I ask to be included. They are statements by Kenneth Kellar, vice president of the Homestake Mining Co., on behalf of the American Mining Congress, and James Harder, vice president and manager of the Homestake Mining Co. Also there are telegrams from Robert Palmer, of the Colorado Mining Association, Paul Gemmill, of the Nevada Mining Association, Miles Romney, of the Utah Mining Association, A. J. Teske, of the Idaho Mining Association, Dave Cady, of the Greater South Dakota Association, and a letter from R. W. Beamer, of the Wyoming Mining Association.

(The communications referred to follow:)

STATEMENT OF KENNETH C. KELLAR ON BEHALF OF THE AMERICAN  
MINING CONGRESS

My name is Kenneth C. Kellar. I am a Vice President of Homestake Mining Company, currently the largest gold producer in the United States, and Chief Counsel of its gold operations at Lead, South Dakota, where I maintain a private law practice. Again, I welcome the opportunity to present to the members of this Subcommittee, on behalf of the American Mining Congress, the views of the mining industry relative to gold relief legislation designed to revitalize this fast disappearing segment of our industry. I am a Director of the American Mining Congress and a member of its Gold Committee.

Our views have not changed since the American Mining Congress stated its position last May when, on behalf of that organization, I testified before this same Subcommittee, May 4, 1966, in support of S. 2562, which gold assistance Act was then before the 89th Congress for consideration. The bill, S. 615, introduced by Senator George McGovern of South Dakota and co-sponsored by a number of western Senators representing both major political parties, is virtually the identical bill which was introduced by the South Dakota Senator at the last Session of the Congress except that the rate for financial assistance payments pertaining to existing gold mines has been changed from a 6% to a 10% rate applicable to gross bullion receipts of the producer applicant realized during the immediate preceding year.

This upward rate adjustment, we believe, is more realistic because the 5% figure in S. 2562 soon became obsolete after the bill was introduced because of the impact of continuing inflation escalating costs of production. The 5% rate should not be regarded as realistic because the rate should be sufficiently high enough to provide adequate payments which will warrant producers to continue existing operations and, further, must be sufficiently high enough to enable current operators to provide attractive enough wage scales to recruit miners for the gold fields. The 10% rate, as provided in S. 615, the McGovern bill, takes these factors into consideration; and this rate, if enacted, would return to current producers considerably less per ounce in financial assistance payments than that being provided by Canada under their cost of aid program to Canadian gold operators. The 10% rate above referred to is designed to be a stabilizing factor for the few gold producers which have been able to survive to date; other sections of the bill, of course, as did S. 2562 last year, set forth higher incentive payments designed to reopen the dormant gold properties in the United States.

During the past year, another significant increase in domestic gold consumption has occurred. Unofficial estimates of the Treasury Department for 1966 indicate that such consumption increased during the year by approximately 18%.

Hence, annual gold consumption in the United States for space and defense needs, industry, dental requirements, use by arts and crafts, etc., approximate 6 million ounces per year while gold production, domestically, has remained quite static at 1.7 million ounces for 1966. Thus, consumption exceeds production by more than three times and this disparity constitutes a substantial drain upon our gold monetary stocks.

We, again, reiterate our previous position that favorable consideration should be given to S. 615, which provides financial assistance payments for both existing mines and provides incentives to reopen closed gold mines of the Nation. We believe that S. 615 contains sound basic principles for federal assistance to our gold mining industry in that the proposed legislation provides a modest assistance payment to the few existing mines which have been able to survive several decades of inflation; provides substantial financial incentives which should lead to a reawakened interest by owners of gold properties to reopen their mines in the western states, thus providing jobs in depressed economic areas; provides, further, for an increase in the rate of financial assistance payments tied to the Consumer Price Index to recognize that continuing inflation may persistently aggravate the problem of the existing producers; provides, further, that it is the express intent of the Congress of the United States that the federal assistance payments provided for in the legislation shall have no effect upon the monetary price of gold; provides, further, that the domestic operator, upon production of gold, must sell directly and solely to the Treasury at its official price.

During the hearings last May, on the gold relief bills which were before both the House and Senate Interior and Insular Affairs Committees, the Treasury Department of the United States again raised its familiar and persistent objection to this type of legislation on the ground that it cannot approve a two-price system for gold. We believe S. 615 negates the concept of a two-price system. The bill sets up a procedure under which domestic gold producers, in the year following gold production and sale at the \$35 monetary price, would receive a bonus, or a federal assistance payment, based upon a cost formula in relation to the immediate past year's production. We believe, if this bill be enacted, it will stimulate and revive our domestic gold mining industry. While increased domestic gold production would not be an answer to the magnitude of the balance-of-payments problem, nonetheless, if the legislation effectively increases domestic gold production to a point where the supply of new gold is adequate to take care of our own domestic needs, thus relieving pressure against our monetary gold stocks, certainly such legislation should be considered to be in the national interest.

Subsequent to these May hearings, at the sessions of the American Mining Congress held in Salt Lake City, last September, and after, of course, both the mining industry and Treasury had made their respective positions clear in such hearings, the subject of gold remedial legislation was again given careful consideration by the Resolutions Committee of our organization. Our position was again reiterated in our Declaration of Policy adopted at Salt Lake City, Utah, September 11, 1966, in which the American Mining Congress recognizing the problem, stated as follows:

"Current estimates indicate that the nation is still faced with a substantial deficit in its balance of payments. Monetary gold stocks of the United States continue to decline as foreign central banks and other official agencies exercise their right to convert dollars into gold at \$35 per ounce. No discernible progress has been made in efforts to achieve a more stable monetary order by international agreements. None to date has done more than meet an immediate crisis.

"Gold remains the final basis of settlement in international financial transactions and is not likely to be displaced by any monetary units based on credit alone. Maintenance of a monetary stock of gold more than ever is a vital need, and additions to it from whatever source are surely in the nation's interest. One obvious move to accomplish this end and improve our country's financial strength would be to increase the output of gold from domestic mines. To gain this objective, we again 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."

We respectfully urge favorable consideration of S. 615.

**STATEMENT OF JAMES O. HARDER, VICE PRESIDENT-GENERAL MANAGER, HOMESTAKE MINING COMPANY**

My name is James O. Harder. I reside in Lead, South Dakota, where I have been employed by the Homestake Mining Company since 1932. I am a Vice President, and General Manager of the Black Hills Operations of this Company, which latter position I have held since 1957. At the gold hearings held last May 4, 5 and 6, 1966, I filed a statement before this Committee urging favorable consideration for S. 2562, the Gold Mines Assistance Act of 1965. On May 6, 1966, I appeared in person before the Subcommittee on Mines and Mining of the House Committee on Interior and Insular Affairs in support of companion measures to S. 2562, i.e., H.R. 10925, 10924, 11081, and 11667. At that time I took a very pessimistic view of the future of gold mining in the United States in general, and Homestake Mining Company in particular. I respectfully request this Committee to incorporate by reference my remarks which are in the Record of both the House and Senate Subcommittee at the hearings last year above mentioned.

I now wish to make a statement in support of S. 615, one of the gold assistance bills now before this Subcommittee for consideration. S. 615, introduced by Senator George McGovern of South Dakota and co-sponsored by a number of western Senators representing both major political parties, is essentially the same bill as S. 2562 which was introduced in the 89th Congress; except, the assistance rate for currently operating gold mines has been changed from 6% to 10% of the preceding year's gross bullion gold receipts, which suggestion was made to Senator McGovern both by my Company and United Steelworkers of America, who is the certified bargaining representative at our South Dakota gold mine.

On behalf of Homestake, which produces almost 40% of the annual domestic gold output from United States' mines, we wish to point out that the 6% rate in the 1965 Act soon became quite unrealistic in view of rapidly increasing costs. The escalation in costs in 1966 over 1965 was quite disheartening. Later, in my testimony, I will point out the impact of inflation upon our operations. The United Steelworkers Union also indicated to Senator McGovern that a 10% rate was much more realistic in view of the fact Homestake wage scales are sub-standard compared with the non-ferrous mining industry of the West.

We, in the industry, have long been appreciative of the persistent advocacy for gold assistance by the Chairman of this Subcommittee, Senator Gruening of Alaska. We are happy indeed to have such a staunch advocate for the cause of the domestic gold miner. However, I believe S. 615 is more desirable than S. 49, the gold assistance bill introduced in the 90th Congress by Senator Gruening and co-sponsored by numerous Senators from the West, because I believe the objective of all those who sponsored gold assistance bills is to pass legislation which will revitalize the almost defunct domestic gold mining industry by providing attractive enough incentives to reopen closed mines and lead to concerted aggressive exploration for new gold ore reserves. My many years experience as a practical mining operator lead me to believe that dormant gold mines will not be reopened unless the owners of the properties have a fairly definite formula built into the legislation, both with respect to the amount of assistance potentially payable and the period of time for which it will be paid. Otherwise, in my opinion, it would be virtually impossible to raise the capital and finance the reopening of gold mines because of the large amount of money which will be required for such projects.

In my opinion, certain basic principles are needed in any gold assistance legislation which I believe have been written into S. 615. I refer to the necessity of a definite formula to fix the amount of assistance; to the fact that an escalation clause should be incorporated in the legislation to provide for a higher assistance rate as the forces of inflation continue to move ever upward; to the necessity of fixing a definite time during which the assistance will be paid to permit amortization of capital invested which, in my opinion, should be ten years instead of the five now in the present draft of S. 615; to the essentiality of providing in the legislation that it is the specific intent of the Congress that federal financial assistance payments under the Act will have no relation to the monetary price of gold, and that the domestic operator must sell his product to the U.S. Treasury at the official monetary price with the assistance payments to be made in the subsequent year by a different agency of the federal government. I think with such safeguards present in S. 615, the orthodox and oft repeated argument of Treasury, that they cannot countenance a two price monetary system for gold, falls by the wayside and is totally invalid.

With reference to overall U.S. gold production in 1966, may I point out to the Committee that, according to unofficial figures, it has remained fairly static at 1.7 million ounces per annum. On the other hand, gold consumption for industry, space and defense needs, jewelers, artisans and dentists, etc., has again increased in the year 1966 by 18% so that we are now consuming approximately 6 million ounces per annum, over three times domestic annual production. I need scarcely point out to the members of this Committee that the disparity between consumption and production constitutes a substantial leak, weakening our monetary gold reserves. I submit it is high time we took care of this internal domestic problem.

My pessimistic projection for Homestake operations, in the year 1966, which I made at the gold hearings last May, was more than justified by subsequent events. My pessimism has not abated with respect to my prophecy that, barring unlikely gold revaluation or the alternative of federal financial assistance legislation, Homestake has only a few years left for its gold operations. Our net profit for the year 1966 from the production and sale solely of gold bullion at our Lead, South Dakota gold mine, excluding extraneous items of income not related to gold such as water, rent, lumbering operations, farm rents, etc., has dropped to an estimated \$1,100,000 for the past year. This is a decline of approximately \$914,000 from 1965. This marked reduction in net profits from gold is attributable to a number of factors, i.e., a decrease in the gold content of the ore mined from \$10.88 per ton in 1965 to an estimated \$10.65 per ton in 1966; a decrease in overall production of 31,000 tons since our 1966 production was 2 million tons; the cumulative deadening effect of many substantial increases in operating costs such as a \$300,000 wage increase in April, 1966; a \$1,000,000 increase in the costs of supplies, machinery and equipment since the year 1965 placed a very heavy drain upon the Company for items of heavy machinery; a \$32,000 increase in local taxes reflecting the impact of increased South Dakota sales taxes; increased power costs; higher local property taxes; and approximately \$100,000 increase per year in social security taxes including medicare.

In the years immediately ahead, we already are aware of additional costs of operation which are certain to occur. Homestake has just negotiated a union contract with United Steelworkers for a three-year term, effective December 1, 1966, which, with wage increases and the Company's assumption of certain fringe benefit payments will, in the next three years, increase our total annual labor costs for employees in the bargaining unit by \$507,000 plus an additional estimated \$75,000 in restoration of a downward rate adjustment which was made last April to contract miners. Furthermore, extension of similar benefits to salaried employees in the work force will increase our costs by approximately \$100,000. Moreover, our federal social security taxes, in 1967, will automatically increase by \$25,000-\$40,000, depending upon number of employees. Finally, judging by the past few years experience, we must assume that inflationary trends will continue in prices of supplies, equipment and machinery for an estimated cost increase of about \$150,000 per annum. In addition, we face the probability of an increase of federal corporate income taxes as the war in Vietnam continues to escalate. Increased unemployment compensation taxes will take effect, if the 90th Congress modifies the federal unemployment compensation law. Another serious adverse condition affecting Homestake operations is the lack of manpower produced in part by the weak financial condition of gold mining.

Our gold reserves in the United States continue to dwindle as foreign creditors make their withdrawals. Our balance of payments problem is still extremely serious. Our domestic gold consumption continues to increase at a remarkably fast pace while the indications point to less, rather than larger, domestic production. Our gold reserves sink ever lower toward the 25% reserve needed to back up federal reserve notes with the distinct possibility that the Congress in the not too far distant future may be faced with the request to remove this requirement. All of which, I submit, emphasizes the seriousness of these problems and the desirability of this Committee giving very careful consideration to the requests of our gold assistance bill. I believe S. 615, if enacted, will do much to stimulate domestic gold production; to reopen a number of mines; and to stabilize those still in existence including Homestake, the largest producer in the United States. Such legislation is needed now, before our productive capacity in this country deteriorates even more than it has in the past few years since World War II.

The United States Geological Survey and the U.S. Bureau of Mines are to be commended for their fine work in developing advanced ore finding and production techniques, but the fact remains that the present price of gold is too low in this era of inflation to return exploration, development and production costs in the average discovery that can be expected. Therefore, it is vital to provide a better price structure to encourage the development of new gold mines and insure the life of present gold mines.

DENVER, COLO., February 1, 1967.

U.S. SENATE SUBCOMMITTEE ON MINERALS, AND FUELS,  
Senate Office Building,  
Washington, D.C.:

The Colorado Mining Association heartily endorses S. 49, gold mine revitalization bill, designed to make it economically possible to reopen gold mines closed by the Government decree under unfortunate 208 order. The gold mining industry is the only industry kept from making a legitimate profit through production of gold by a fixed Government ceiling price.

No industry has suffered more from unwarranted discrimination designed to prevent production from 100 of known deposits of gold located in Colorado and other mining areas. We urge the Commission to approve the legislation at an early date and permit this legitimate business to conduct operations at a fair and reasonable profit.

ROBERT S. PALMER,  
Manager, Colorado Mining Association.

RENO, NEV., February 1, 1967.

SUBCOMMITTEE ON MINERALS, MATERIALS, AND FUELS,  
Senate Interior Committee  
(Attention of Jerry T. Verkler, Staff Director):

We respectfully urge favorable consideration of S. 615, to revitalize dormant gold mine production in Nevada, where a large potential rests in idle properties and in extra exploration to discover new ore deposits.

PAUL GEMMILL,  
Executive Secretary, Nevada Mining Association, Inc.

SALT LAKE CITY, UTAH, February 1, 1967.

HON. ERNEST GRUENING,  
Chairman, Subcommittee on Minerals, Materials, and Fuels,  
Senate Office Building,  
Washington, D.C.:

Please accept for record of committee's February 2 hearing this message urging favorable consideration of S. 615, relating to Federal gold relief measures.

MILES P. ROMNEY,  
Manager, Utah Mining Association.

BOISE, IDAHO, February 2, 1967.

Senator ERNEST GRUENING,  
Chairman, Subcommittee on Minerals, Materials, and Fuels,  
Senate Committee on Interior and Insular Affairs,  
Washington, D.C.:

With respect to the hearing on Federal gold relief scheduled for February 2, the Idaho Mining Association respectfully submits for the record this restatement of its firm and long-standing conviction that a substantial financial incentive through Federal legislation is urgently and sorely needed to revitalize and re-activate the gold mining industry in Idaho and throughout the Nation. Gold production in our State has dropped to an all-time low and this branch of our industry has been virtually squeezed out of existence by the inexorable pressure of constantly rising costs against a Government fixed price established more than 30 years ago. We strongly urge your favorable consideration of legislation that will provide adequate incentive payments to restore the health, vigor, and productivity of this vital domestic industry.

A. J. TESKE,  
Secretary, Idaho Mining Association.

PIERRE, S. DAK., February 2, 1967.

Senator ERNEST GRUENING,  
Senate Office Building, Washington, D.C.;

The Greater South Dakota Association respectfully requests the Subcommittee on Mines give immediate consideration to Senate bill 615, the Gold Mine Assistance Act of 1967, and further to favorably report this measure to the Congress. It is imperative that congressional approval of this legislation be given by this Congress. We would like to be advised of hearings on this matter that we may offer testimony in support of this much needed legislation.

Sincerely,

DAVE CADY,  
Executive Manager, the Greater South Dakota Association.

WYOMING MINING ASSOCIATION,  
Riverton, Wyo., January 30, 1967.

Hon. ERNEST GRUENING,  
Chairman, Subcommittee on Minerals, Materials, and Fuels,  
U.S. Senate, Washington, D.C.

DEAR SENATOR GRUENING: Reference is made to S. 615, a proposed Gold Mine Assistance Act of 1967, which is under consideration by your Subcommittee.

The Wyoming Mining Association endorses S. 615 and urges favorable action by your Subcommittee to facilitate passage of this bill.

Respectfully yours,

R. W. BEAMER, Executive Secretary.

Senator GRUENING. We will stand in recess until further call of the Chair.

(Whereupon, at 11:50 p.m., the subcommittee recessed, to reconvene subject to call of the Chair.)

## APPENDIX

---

The committee believes that the following announcement by the Secretary of the Interior is highly pertinent to the subject of its inquiry, especially with respect to the heavy metals program, and directs that the announcement be included as an appendix to those hearings:

U.S. DEPARTMENT OF THE INTERIOR, NEWS RELEASE—BUREAU OF MINES—  
MARCH 28, 1967

### ONLY 2 PERCENT OF GOLD IN KNOWN U.S. DEPOSITS ECONOMICALLY MINABLE

The United States has known gold resources totaling more than 400 million ounces, but of this only 2 percent—roughly 9 million ounces—can be produced economically with the mining and metallurgical techniques now available, Secretary of the Interior Stewart L. Udall announced today.

This conclusion was reached by the Department's Bureau of Mines after engineering appraisals of 1300 active and inactive domestic gold mines. The properties are in 12 gold-producing districts which up to 1964 had supplied more than 99 percent of all United States gold-mine output. The Bureau did not include in its study base-metal mining operations that recover gold as a by-product. Such operations now contribute approximately 40 percent of the domestic gold supply.

Commenting on the findings, which are presented in a newly published technical report, Secretary Udall said they indicate "an urgent need for improving present mining and extraction technology. Given marked technological advances," he said, "additional and probably substantial amounts of gold could be produced at costs below the established price of \$35 an ounce."

Walter R. Hibbard, Jr., Director of the Department's Bureau of Mines, noted that some improvements, such as application of modern surface mining methods, are now being used to advantage on a large low-grade deposit at Carlin, Nev.

"Bulk mining, in which large equipment is used to dig and move huge quantities of low-grade material, may prove the key to commercial development of other domestic gold deposits as yet undiscovered," Hibbard said.

In ore processing, Hibbard indicated that hydrometallurgy—including such methods as leaching metal from ore without mining it, and the use of more efficient solvents to separate gold from waste materials—offers a promising field for further advances. The Bureau has intensified its research and development in this field, he added, as part of the Administration's heavy metals program being conducted jointly by the Bureau of Mines and the U.S. Geological Survey.

New sources of gold now are being sought intensively, and Hibbard stressed the need for better ore sampling and evaluation techniques in the exploration efforts now underway to discover these new sources. Tests of newly devised sampling techniques will be made by the Bureau soon, he said, in an effort to evaluate off-shore deposits of Alaska.

Four-fifths of the 400 million ounces in the deposits appraised by the Bureau exists in five States—Idaho, Alaska, Washington, California, and Montana. The 9 million ounces that can be mined economically under present conditions are primarily in South Dakota and Nevada.

Gold production in the United States is running less than one-third of the current domestic demand for gold in the arts and in industrial applications. Any improvements in the gold supply and production situation would help alleviate some of this shortage.

The Bureau's report on its appraisal study is Information Circular 8331, "Production Potential of Known Gold Deposits in the United States." A copy can be obtained without charge from the Bureau of Mines, Publications-Distribution Section, 4800 Forbes Ave., Pittsburgh, Pa. 15213. Requests for this report should specify both its number and its title.

## APPENDIX

The committee believes that the following announcement by the Secretary of the Interior's highly pertinent to the subject of this inquiry, especially with respect to the heavy metals program, and desires that the announcement be included as an appendix to these hearings:

U. S. DEPARTMENT OF THE INTERIOR, NEWS RELEASE—BUREAU OF MINES—  
MARCH 23, 1967

ONLY 2 PERCENT OF GOLD IN KNOWN U. S. DEPOSITS ECONOMICALLY RECOVERABLE

The United States has known gold resources totaling more than 400 million ounces, but of this only 2 percent—roughly 9 million ounces—can be produced economically. With the advance and metallurgical techniques now available, 80 percent of the remainder, 321 million ounces, is still unrecovered today.

This condition will be changed by the Department's Bureau of Mines after only a few years. The Bureau is now developing a process which will produce more than 12 million ounces of gold annually from the same amount of ore. The Bureau will not include in its early production program the heavy metals program, but will produce 10 percent of the domestic gold supply. Commercial production of the process, which is the result of a long and costly research program, is expected to begin in 1970. The process will produce 10 percent of the domestic gold supply. Commercial production of the process, which is the result of a long and costly research program, is expected to begin in 1970. The process will produce 10 percent of the domestic gold supply.

With the Department's Bureau of Mines, the Department of the Interior is now developing a process which will produce more than 12 million ounces of gold annually from the same amount of ore. The Bureau will not include in its early production program the heavy metals program, but will produce 10 percent of the domestic gold supply.

"This means that the heavy metals program will be able to produce 10 percent of the domestic gold supply. Commercial production of the process, which is the result of a long and costly research program, is expected to begin in 1970. The process will produce 10 percent of the domestic gold supply.

As one processing, the Bureau of Mines is now developing a process which will produce more than 12 million ounces of gold annually from the same amount of ore. The Bureau will not include in its early production program the heavy metals program, but will produce 10 percent of the domestic gold supply.

Methods of separating gold from waste materials—other products are being developed for further recovery. The Bureau is now developing a process which will produce more than 12 million ounces of gold annually from the same amount of ore. The Bureau will not include in its early production program the heavy metals program, but will produce 10 percent of the domestic gold supply.

New sources of gold are being discovered and evaluated. The Bureau is now developing a process which will produce more than 12 million ounces of gold annually from the same amount of ore. The Bureau will not include in its early production program the heavy metals program, but will produce 10 percent of the domestic gold supply.

Four billion of the 100 million ounces in the deposits discovered by the Bureau of Mines are in Alaska, Washington, California, and Montana. The 9 million ounces that can be mined economically under present conditions are primarily in South Dakota and Nevada.

Gold production in the United States is increasing less than one-third of the amount produced in the rest of the world in several operations. Any improvement in the gold supply and production situation would help stabilize the price of gold.

The Bureau of Mines is now developing a process which will produce more than 12 million ounces of gold annually from the same amount of ore. The Bureau will not include in its early production program the heavy metals program, but will produce 10 percent of the domestic gold supply.

"Production of gold from waste materials—other products are being developed for further recovery. The Bureau is now developing a process which will produce more than 12 million ounces of gold annually from the same amount of ore. The Bureau will not include in its early production program the heavy metals program, but will produce 10 percent of the domestic gold supply.

New sources of gold are being discovered and evaluated. The Bureau is now developing a process which will produce more than 12 million ounces of gold annually from the same amount of ore. The Bureau will not include in its early production program the heavy metals program, but will produce 10 percent of the domestic gold supply.

